NUNAVUT WATER BOARD
HEARING
MARCH 28, 2000

Application for Renewal of
Water Licence # N7L2-0925
for the Lupin Mine Operations
Contwoyto Lake, Nunavut
by Echo Bay Mines Ltd.

NUNAVUT WATER BOARD HEARING
ECHO BAY MINES LTD.
Lupin Mine License #N7L2-0925
March 28, 2000

Chairperson: Thomas Kudloo

[TK = Thomas Kudloo	DH = David Hohnstein	LW = Lee Webber
PP = Philippe di Pizzo	HD = Hugh Ducasse	BC = Brian Collins
DF = Dionne Filiatrault	BH = Bob Hansen	AW = Anne Wilson
JB = John Brodie	BD = Bill Danyluk	KT = Kono Tatuinee
JM = Jerry McCrank	MK = Moses Koihuk	SP = Unidentified Speaker]

[Start of Tape 1 - Side A]

[Inuktitut]
[simultaneous translation]

TK: ...exploration project.

Before we begin this public hearing, I would like to briefly talk about the Nunavut Water Board, which is a new institution of public government established under the Nunavut Land Claims Agreement Article 13 as the responsible authority for fresh water management and regulation in the Nunavut settlement area.

The Board was officially established on July 9, 1996, when it took over the roles and responsibilities for water management from the Northwest Territory Water Board, which had jurisdiction, power, and authority in the Northwest Territories until that time.

The Nunavut Water Board is responsible for (use) management and regulation of fresh water in the Nunavut settlement area. In other words, this means that the Water Board must approve any water use for disposal of waste, whether it be liquid, gaseous or solid need for water.

This includes municipal services, mining exploration, mining development, water storage and (???), and any other water uses, or disposal of waste, which could adversely affect the quality, quantity, or break, or flow of water.

Article 13.9.1, of the Nunavut Land Claims Agreement, states, “The approval of the Nunavut Water Board is required for water application. The applicant shall not proceed until approval has been granted.”

When approving an application, the Nunavut Water Board may include any conditions it deems appropriate with respect to that water use, and disposal activity, including provisions for the financial (???) security deposit, which in a sense guarantees the government and the tax-payers will net be left with the clean-up bill should a mining company disappear or go bankrupt, as it has happened over the years in the Arctic.

Generally speaking, this means that before approving any water use of disposal of waste, Article 13 of the Nunavut Land Claims Agreement requires the Nunavut Water Board to hold a public hearing like this one, to hear the applicant, and the concerns of the general public, and any other special interest groups who may have a role to play, or have an interest in the application under review. This includes representatives from Nunavut government, the Government of Canada, the industry, or regional organizations and other special interest groups.

The Nunavut Water Board may waive the requirement to hold a public hearing if no public concerns are expressed. However, the Board retains at all times the discretion to hold a public hearing on any matter relating to these objects. The Nunavut Water Board has all the powers and authority of the a commissioner under the *Enquiries Act*. This means that the Board can subpoena witnesses to appear before it any time, to provide relevant information that could become part of the public record and will be considered in the decisions-making process.

The Nunavut Water Board decided to hold a hearing on the renewal of a license that has been issued to the Echo Bay Mines Limited, at Lupin Mine, by the Northwest Territories Water Board and brought as the renewal of a license for the Ulu Exploration Project which was previously issued by the Nunavut Water Board.

The first license authorizes Echo Bay Mines to use water and disposal of waste in conjunction with Lupin Mine, whereas the second license deals with advance exploration. Both licenses are due to expire May 31, 2000.

In order to avoid repetition, we will deal with both applications during the same hearing. However, we will start with Lupin Mine application, and proceed with the presentation by Echo Bay, and the interveners, then we'll do the some with the Ulu.

Unless a matter is directly relevant to those issues, the Board will not consider it in its deliberations. So I will formally request, from time to time, the interveners and members from the general public to limit the scope of their interventions or questions to the matters under consideration.

The Nunavut Water Board does not carry out inspections, and does not enforce licenses that it approves. Those functions are held by the Department of Indian and Northern Affairs, Canada,. The ultimate jurisdiction over fresh water in Nunavut is invested in the Crown - that is, the Government of Canada - under the Canadian Constitution.

Because of its fundamental nature and properties, water does not belong to anyone. It belongs to everyone. On Inuit-owned lands where Innuit have water rights, under Article 20 of the Nunavut Land Claims Agreement, the ownership of water is still vested in the Crown. Inspectors designated by the Minister of DIAND under a Memorandum of Understanding with the Nunavut Water Board, can conduct regular inspections of all activities approved by the Board. They will also prepare reports on compliance, with the terms and conditions of the approval.

The Water Board approval, in the form of a license or a permit, is a legal document, which has the force of law. It binds the licensee to its specific terms and conditions.

To conclude my opening remarks, I invite you to take some information brochures which explain more about the water management regime established under the Nunavut Land Claims Agreement.

I will now give you some brief instructions on how to proceed with your presentations or submissions. When you come up to make your presentation, please state your name for the record. Spell it out if necessary. Anyone who will present evidence shall do so under oath or affirmation sworn before Mr. Bill Tilleman, our legal counsel, who, by the way, is not here at the moment. He will be here tomorrow. For unexplained reasons, he was unable to make his connections to Kugluktuk.

But this requirement does not apply to persons who simply want to ask questions. All questions shall be directed through the Chairman, who will in turn ask Echo Bay, the interveners, or any other person, to answer it.

Since we have simultaneous translations in Inuktitut and English, it is very important that only one person speaks at any given time. So please speak clearly and slowly. Juliana Boychuk, and Ben Kogvik will be our interpreters. Their job is extremely difficult and stressful, so it is very important that only one person speaks at a time, in a clear and paced manner.

Thank-you. We will now proceed and follow the agenda as outlined in the order of events. At this time I would like to introduce the Board members and staff.

The Board is made up of eight members, plus the Chairperson. All members... four Board members are appointed by MTI, two by the Government of Nunavut, and two by Indian and Northern Affairs.

As I already stated, my name is Thomas Kudloo, Chairperson of the Nunavut Water Board. I am from Baker Lake, and I was nominated and appointed by the Board... to the Board, by the Minister of Indian Affairs. Before my appointment, I was a civil servant working as a meteorological and water resources technician for the Government of Canada for almost 25 years.

To my left is Mr. Robert Hansen, who is the Vice-Chairperson of the Board. He is from Iqaliut. He is also the Chairperson of the Nunavut Business Credit Loan Board.

To his left is George Porter, a member of the Nunavut Water Board. He is from Gjoa Haven. George is also a Director of the Nunavut Arctic college, and Nunavut Senior Society.

Also there is Guy Kakkiamiut, the member of the Water Board from Kuugaarjuk. He was appointed to the Board in May 1997.

And we have Jackie Nakoolak, who is a member of the Water Board since July 1999. He originally from Coral Harbour, and now residing in Rankin Inlet.

We also have Kono Tatuinee, a member of the Nunavut Water Board, and he is up from the community of Arviat, and he's been appointed to the Board since July 1996. And he is recently the Vice-President of Keewatin Inuit Association.

We also have Thomas Kabloona as a Board member from the community of Baker Lake, and he was appointed to the Water Board in July 1999.

We also have Lootie Toomasi from what was formerly known as Broughton Island, which is now known as Qikiqtarjuaq. In fact, he is the Mayor of that community. He was appointed to the Nunavut Water Board on July 1999.

To my right we also have Board member Joe Ohokannoak from Cambridge Bay. He was appointed to the Nunavut Water Board on July 1999, and he is also the Chair of the Nunavut Arctic College.

In our audience we also have Donald Watt, and Putulik Papikattuk sitting here, and they are both from Makivik, representing the Inuit of Nunavut on the Nunavut Water Board. Donald Watt is also an alternate member to the Nunavut Impact Review Board. He is also an alternate member to the Nunavut Planning Commission. By the way, Putulik Papikattuk is also an alternate member of the Nunavut Planning Commission. They are here as observers and will not sit on the Board as members at this hearing.

The Nunavut Water Board's head office is over at Gjoa Haven, and I would like to introduce Philippe Di Pizzo who is the Executive Director of the Nunavut Water Board, and in the back, there is Dionne Filiatrault, who is the technical advisor. Rita Becker is the licensing administrator, and Ben Kogvik is the Secretary to the Board. And as I stated earlier, our legal counsel is Mr. Bill Tilleman, who will not arrive here until tomorrow.

We also have Mr. John Brodie as an independent expert on mine abandonment and reclamation retained by the Board. Mr. Brodie is here to assist the Board... Mr. Brodie is here not only to assist the Board, but all parties who understand the issues, and is available to answer question during the public hearing.

We will now take a 15-minute recess, and I ask all interveners who wish to make a presentation, submission or verbal comments to register with the Nunavut Water Board staff, and indicate who they will represent. We will now take a 15-minute recess.

[Recess]

TK: For your information, here, the staff is going to try to re-arrange the room so that we can fit everybody.

[tape blank]

TK: For your information, we've got problems with these... we're still having problems. We've also got a limited number of this type. Those who may not really need this might want to give them to the unilingual people. Thank-you.

[tape blank]

TK: I will now do a role call to see who is going to intervene, and the name of their agent or legal counsel if they have one. We will receive intervention statement from DIAND. We will also receive intervention statement from Environment Canada, and DFO.

[tape blank]

TK: Thank-you.

SP: Mr. Chairman, if we can, any time you want to speak, please come to the microphone, say your name, if needed spell it, please spell it. Everything is being recorded for the future, for us. Thank-you.

TK: And for your information, Philippe Di Pizzo, the Executive Director for the Nunavut Water Board will give oath before the Board receives public comments. Thank-you.

We now have several representatives from Echo Bay present today. Could you please introduce yourselves and your colleagues and tell the Board and the audience who will make the presentation on behalf of the Echo Bay Mines.

DH: Good afternoon, Mr. Chairman. My name is David Hohnstein. I'm the environmental coordinator with Echo Bay Mines at Lupin. Did you want last name spelt first time off? David Hohnstein, last name spelled h-o-h-n-s-t-e-i-n, and I'm accompanies by, to my immediate right, Mr. Hugh Ducasse, who is the manager of Loss Control and Environment for Echo Bay at Lupin. Last name's spelled d-u-c-a-s-s-e. To his right is Mr. Bill Danyluk. He is the Mine Manager at Lupin. Last name spelled d-a-n-y-l-u-k. And to his right is Mr. Gerry McCrank, m-c-c-r-a-n-k. He is the Vice-President of Operations for Echo Bay Mines. And I will be doing the initial presentation for the Lupin Mine site. And Mr. Hugh Ducasse will follow-up with a follow-up presentation.

TK: Thank-you very much, sir. At this time I would like to invite any Elder to speak, if they wish. The Board considers that traditional Innuit knowledge has an important role to play in the decision-making process, along with Western scientific knowledge.

[Inuktitut]

Thank-you. To my knowledge, the only person or agencies that have submitted a formal presentation to the Board are DIAND, DFO, and Environment Canada.

As stated earlier, John Brodie will make a presentation later on.

The (???) counsel for DIAND. Please introduce yourself and the name of the organization whom you represent.

LW: Thank-you, Mr. Chairman. I'm Lee Webber. I'm with Justice Canada, and as you've indicated, I'm here assisting DIAND.

LK: Thank-you, sir. Are there any legal counsels or representative who wish to introduce themselves? [pause] Thank-you.

As of now, no one else has expressed a desire to speak or to present evidence on matters under consideration at the hearing. I invite anyone to make a presentation to the Board to come forward and state their name and the organization they represent. At this time, this invitation is for presentation only, and not for questions. [pause] Are there any objections to holding of the hearing? [pause] No organizations of individuals have stated written objections to holding of this hearing. At this time, I call any organization or individual who have an objection to holding of this hearing to state their concerns and reasons for their objections. [pause] If no one has an objection, we will proceed without further delay.

Echo Bay, please make your presentation. [pause] Please state your name for the record.

PP: Place your hand on the Bible, please, and state your name and spell it for the record.

DH: Is this microphone working?

PP: Do you swear that the evidence that you are about to give is the truth and nothing but the truth, so help you God?

DH: First I have to state my name.

PP: Forgive me. Start over.

DH: My name is David Hohnstein, and first name's d-a-v-i-d, last name's h-o-h-n-s-t-e-i-n.

PP: David, do you swear that the evidence that you are about to give is the truth and nothing but the truth, so help you God?

DH: I do.

HD: My name is Hugh Ducasse, d-u-c-a-s-s-e.

PP: [inaudible]

HD: This is fine.

PP: Okay. Mr. Ducasse, do you swear that the evidence you are about to give is the truth and nothing but the truth, so help you God?

HD: I do.

PP: Thank-you.

TK: Thank-you, gentlemen. As mentioned earlier, because of the technical nature and legal nature of these issues, please ask your witnesses to be very clear and paced during your presentations. Thank-you, gentlemen.

DH: David Hohnstein with Echo Bay Mines. I man the Environmental Coordinator at the Lupin Mine site, and I'm here to make a presentation on behalf of Echo Bay on the Lupin Mines license renewal, and I'd like to thank the Board for the opportunity to present our information, and make ourselves available for questions.

SP: I think the problem is they can't hear you.

DH: Thanks again, Mr. Chairman, for the opportunity to attend and present our information to the Board, and to the people in attendance. I am going to make the presentation on behalf of Echo Bay and Lupin Mine for the Lupin license renewal.

I had planned on using both overheads and slides, but I'll restrict the overheads simply to diagrams and illustrations to keep the simplicity of the presentation.

The application for a renewal of the Lupin Operations water license was submitted on July 5th of 1999. Lupin has been in care and maintenance since January of 1998

through December of 1999, and is currently in the final stages of re-commissioning the Lupin Mine for beginning production some time the first week of April. We're actually looking at operations beginning some time by the end of this week.

Echo Bay Mines is seeking a license term of eight years to correspond with the mine plan and current mine life at Lupin. There are no terms or conditions of the current license that Echo Bay Mines wishes to bring to the attention of the Board, or to have addressed or changed in the drafting of the license renewal.

The Lupin license history first began back in 1981 with the issuance of a license from the NWT Water Board. That license had an expiry of May 31, 1987. There were three amendments issued during this term, and an extension of the license to May 31, 1990. The license was renewed in 1990 for a five-year term, to expire in 1995. There is only one amendment granted during this license period, allowing the placement of tailings material as a back-fill in the underground workings of the mine. In July 1999, a renewal application was submitted for renewal of license N7L2-0925.

Echo Bay Mines began its history in the North with the Port Radium silver mine at Great Bear Lake. Two different sources were mined from 1964 until closure in 1982. The Lupin property, which is located approximately 285 km south-west of Kugluktuk was obtained from Inco in 1979. The Lupin Mine began producing gold in 1982, and has since produced approximately 2.8 million ounces of gold. The current proven and probable reserves are estimated at 2 million tonnes, containing approximately 543 ounces of gold.

While the Lupin Mine was under care and maintenance from January 1998 through 'til November 1999, an engineering study was commissioned and completed by Echo Bay engineering staff. A new operating plan and a budget forecast gave an estimated cash production cost of about US $245 per ounce of gold. With the restructuring and budget changes, an annual operating cost of more than $13 million was realized.

This included a reduction in manpower from about 400 employees to 320, and reduced work shift from a 12-hour day to an 11-hour day. Air transportation costs were also reduced, mainly by the reduction of one flight per week to the mine site, and reducing on-site inventory requirements.

The mine life and mine plan includes a daily processing rate of about 1,830 short tons per day, compared to a historical high of about 2,400 tons per day. The annual production at Lupin is planned to recover approximately 150,000 ounces of gold per year over the first five years, with a reduced production rate over the following three years.

The current mine plan includes the potential to use a satellite property at Ulu. A significant increase in the price of gold is required, along with a stable operation at Lupin, before that exploration property can be looked at in the future.

With the restructuring plan and the engineering study, an assessment of mining methods was recommended... had recommended an installation of a second hoisting system to be located underground in the Lupin Mine. The current trucking method that was used up until closure had been seen as too costly.

The first stage of the new hoist, which is referred to as a wins(?), and we've brought a drawing along that outlines the ore body and where this new hoisting system would be located. This new hoist system will be installed at a capital cost of about $6 million, and provide access to an additional 250 meters' depth in the ore body.

A second phase of the wins is planned for the year 2003, which will be at a capital cost of about $2 million, and will allow access to an additional 250 meter depth in the mine. This will provide access to the current known depth of the Lupin ore body, and as our geology indicates, there is still potential for additional ore reserves at Lupin. They need to be further explored.

The Lupin Mine is an underground operation. Ore is hoisted to the surface for processing in the mill. I've brought along a processing spreadsheet I'll use to try and explain to the Board and the people in attendance how this processing system works.

At Lupin, the ore is brought up from underground to the Lupin Mill, and it is put through a crushing circuit which reduces the size of the rock brought from underground to about 3/4 of a inch. From this crushing circuit, the ore is fed through a grinding circuit, which includes a rod mill, which uses steel rods to grind the material, and two ball mills, which uses steel balls to grind the material further. That reduces the rock brought from underground to almost the consistency of a flour or fine sand, that sort of a size.

And from the grinding circuit, the material is taken through a system of cyclones which... it removes the finer material and sends it on through to the thickening, or recycle the coarser material back for further grinding.

In the first-stage thickener, water is removed and recycled back into the grinding circuit, and this is one method in which the Lupin mill recycles water and continually uses it, as much as it can.

From... within the first-stage thickening, the water is removed, and a slurry - or a thicker solution that has water and the ground or crushed-up ore - goes into a pre-aeration circuit. This pre-aeration circuit is simply used to oxidize some of the materials that are on

the fine particles of the ore, to reduce chemical consumption within the remainder of the recovery process.

From the pre-aeration circuit, the material - or slurry - goes into a leaching circuit. This is where the main chemicals used in gold extraction are added. That includes lime, which is used to adjust pH, and the chemical cyanide, which is actually used to extract the gold from the ore. And the lime is used in order to control the solution and keep the cyanide within the solution that is being used in the process.

Through the leaching circuit, all the finely-ground material's being continually mixed, and the gold is being removed from the ore, and brought into solution by the cyanide.

From the leaching circuit, the material goes to another thickener. At this point, the water, or solution, is taken... withdrawn, and sent to recovery. This water, now, has all the gold within it. The remaining particles, or the remaining ground material, and some water, is sent to a filter system, which is used to wash the remaining gold solution from the ground material, from the rock, and essentially clean and remove any remaining gold from that material.

So, from the filters, you've actually got a fairly clean material that is essentially a waste product of the system, and it's fed either to our tailings pump and out to our tailings pond, or as has been used in the recent past, the material is being used underground in the form of back-fill in the mine workings.

This material is sent to a system that's know at the mine site as a paste back-fill plant.

[End of Tape 1 - Side A]

[Start of Tape 1 - Side B]

DH: ...material is mixed with cement, and pumped underground to fill the underground workings and provide some stability and support, and also allow us to mine certain areas of the underground that we wouldn't be able to, due to the openings that are already there.

From the thickener, as I mentioned before, we've got the solution being withdrawn, and it goes through to a set of filter presses. Within these filter presses, zinc metal is added, which actually... it promotes precipitation of the gold. It removes the gold from solution. The zinc remains in solution, and the gold comes out as a precipitate, or a solid. And it's filtered and then taken to our refining system, our two furnaces, and it's melted down to form a gold bullion.

I want to add that since the paste back-fill system was put into operation, which was initially in 1995, approximately 35% of the tailings material produced from the mill has been sent to the underground workings for back-filling the open areas. This amounts to a total about one million tonnes, of material, in comparison to the approximately 10 million tonnes of ore that has been mined at Lupin since start-up.

In order to carry out the processing at Lupin, water use is required. Contwoyto Lake is the source of all water used for the Lupin mining and milling operations. The current license allows for a fresh water use of 1.7 million cubic metres per year. In 1997, a total of 1.57 million cubic metres of water was used. This is the highest historical use of water since start-up.

However, the staff at Lupin feel that with the planned lower tonnage to be processed, and the better control within the paste back-fill plant, water can be maintained within the current license amount, and no change is being requested.

I just brought along some... the information on water use over the history of the (???). Since 1985, water use has been maintained below the 1.7 million cubic metres allowed per year. As I mentioned, in 1997, water use was at its historical high. However, the mill operations people believe that control within the paste back-fill plant could have been responsible for the increased water use during the year since the paste back-fill plant was started in 1995. This was mainly due to the use of water for flushing lines in order to clean the material out of the lines and prevent the paste from blocking lines and causing problems. They now believe that they probably used a lot more water than they felt, and that water use can be restricted, and our total water use will be kept within our licensed limits.

One other area that water is used at the mine side is with the camp and accommodations, and regular... potable uses, I guess, is the best term for it. The sewage system at the mine site has separate water quality limits for discharge, and we discharge annually during the spring and summer.

Using an all-natural treatment, and a two-stage system, the water quality has continually met or exceeded license requirements in both chemical and biological parameters. The slide that I’ve got on the screen right now shows the two-stage sewage treatment system, and the discharge to the environment on the bottom right-hand corner.

That discharge flows through a natural wetland environment, and actually appears to be one of the greatest benefits at Lupin. The water quality is excellent coming from the system, and the benefits downstream are seen in the, I guess, the frequency of caribou,

muskox, other wildlife, wild fowl. There's nesting Sandhill Cranes that I see down there all the time. It's a fairly active environment.

As I mentioned, the water quality from the sewage lakes effluent stream has been excellent. Lime has been used since 1993 for pH adjustment, and this was mainly due to the effect of a spill from our tailings line that occurred back in 1987. And with the follow-up sampling, we determined that the tailings spill was actually providing run-off to the system that was on the acidic range, and a follow-up clean-up program was put in place.

Since 1995, there's been a reduced amount of lime being required, and in 1999 there was only a minimal amount of lime that was needed. We feel that, given time, we will be back to the system the way it operated previously, where we won't have to add any lime.

Tailings management at Lupin is one of the most important aspects of our water license. The tailings containment area is managed in a manner that provides maximum natural removal of contaminants from the processed waters. Cyanide, arsenic and many metals are removed through natural processes, and minimal chemical addition.

The tailings containment area consists of two major components, which are referred to as cells and as ponds. And I'll use the schematic diagram on the screen to illustrate how the system works.

Just a very basic description of how the facility is operated. From the mill, tailings material is pumped through an 8-inch steel line that comes into the tailings facility in what are know, or referred to, as cells. These cells are responsible for containing the material, and allowing the solid portion of the tailings to settle out and remain within these cells.

The water, or solution from the tailings, is then either decanted or siphoned over-top. In some areas we pump the water, and previously, back in 1990, we had a system of overflow pipes installed in the internal divider dams that contained the solids.

From here, the solution is brought over to our #1 pond, and in this area there is natural degradation that takes place, and that means that you're exposing the tailing solution to natural elements such as sunlight, air, wind, and this allows the... number one, the cyanide that is in the solution to decompose. It breaks down into its natural elements, and when it does so, it also releases some of the metals that it's been complexed with in the water. So you have metals such as nickel, zinc, copper, and in some cases iron, I guess, that are released when the cyanide is broken down, and these metals precipitate and settle out of solution and remain in the pond, as well.

If, at the end of our pond #1 stage, we still have some residual arsenic in the water, which has been a concern on initial license applications, we have in the system a method of adding ferric sulfate to the solution, which binds with the arsenic, and it forms a precipitate that settles the arsenic out of the water, and remains in the pond.

This process has been proven, and we've been able to reduce the amount of arsenic in the water up to 95%. And currently. the last... in 1997, 1998 and 1999, we transferred water from the upper areas of our tailings facility to pond #2 without the addition of ferric sulfate. There was no need to add it because there wasn't a significant amount of arsenic in the water. And that we attribute to the management of the tailings facility in the upper end of the system.

From pond #1, the water is transferred into pond #2. It may be it's treated with ferric sulfate. What we have been doing is also adding lime to the system to adjust the pH and help maintain the pH of the water above our licensed limit of 6.5... or, 6. Six.

In pond #2, there's further ability to allow for natural degradation, mainly in the area of cyanide, and in recent discharge years, we've released water that has had negligible cyanide content, and that's meaning it's down to the point where it's barely detectable in the water with current analytical methods.

The extended holding time within the Lupin system is responsible for allowing the natural breakdown of cyanide and complex metals within the process waters. Nearly three years passes from the time waste streams enter the tailings containment area to the time that it is decanted into the environment.

I'm going to give a brief description of just where the tailings movement is from the mill to the tailings facility, and then describe, with a photo, where it actually goes through the system.

So, from the mill facility, the tailings line runs approximately 7 km to the tailings containment area, and in the middle of the photo, there, running from the centre to the left - if Bill can show it - is the tailings line heading to the tailings facility. About halfway along that line in the photo is a tailings line dump station, and... right up there, yeah.

This is in place to allow for emergency dumping of the tailings line in case there's a problem within the pumping system or the tailings line itself. That tailings dump station has the capacity to hold all the material within the tailings line, and I believe it has the capacity to hold at least three or four full dumps of that line before it has to be taken and removed to the tailings facility.

It's not a clear photo, but it's the second tailings line dump station along the tailings line, and there's a little bit of water that is contained within that dump station area. Annually, every spring, the maintenance staff at Lupin pump that water back into the tailings line, and send it to the tailings facility. So, naturally, during spring run-off, there's some water that is contained in there, and rather than pumping it out, it's pumped and removed to the tailings pond, assuming that there's some contamination to the water.

The tailings area at Lupin is approximately 650 hectares, I believe, and it consists of ponds and cells. In the immediate foreground, on the left, is cell #3, and that has tailings material in it that has been deposited since... I believe it is about September 1990 through to 1997, or January 1998.

From that area, water flows... the solids settle in the cell, and water flows from there to the right into cell #4. There the water is allowed to remain, and undergoes natural degradation for the duration of a summer. From that point the water flows to the right, to #1 pond just above that. And annually, every fall, we transfer water from cell #4 to pond #1, where it remains through to the next year.

At that point, water is transferred over the J dam, which is in the middle, and flows over to pond #2. The water remain in that pond through 'till the next year, when it is sampled and analyzed, and if meeting all license requirements, it is discharged to the environment during the summer.

If we would take a tour, I guess, in a counter-clockwise movement around the tailings facility, the water body on the front, on the immediate right, is cell #2, and cell #3 is in the background.

This is again pond #2 with one of our main containment dams on the right-hand side, and our discharge... just above that, right up there - no, a little further - right there. That is the location of our discharge siphons. I believe the next slide shows a little clearer picture of the siphon system at Lupin.

In the foreground, there is a provisions with five 20-inch diameter pipes that are used to siphon water from the pond to the environment. Currently, with our license, we are limited to a discharge of 70,000 cubic metres per day, and with that volume we can operate two siphons at any given time. Each siphon transfers about 35,000 cubic metres per day.

We have one other siphon completely set up in case we have a failure, or air leak in one of the ones that we're using. Though at any given time we only operate two, we've got three in place.

I believe I had this photo in here just it illustrate one of the main dams that have been constructed at Lupin in the recent past. In the foreground is dam #4, and that was constructed in 1992. That is the main containment dam for #4 cell, and holds water within the facility. Originally, with lower water levels within the pond, water would actually flow from outside over into the area that is now cell #4.

Some concerns have been raised in the past regarding the tailings containment area and its storage capability. The Lupin tailings containment area currently has approximately 5 years of storage for the solids component, or the tailings material, without any improvements, but it utilizes all available areas.

Echo Bay would prefer to limit the areas that are disturbed, and to upgrade either cell #3 or cell #5, which would allow cell #4 to continue to function as a water-holding pond. And that ultimately helps assist in our water quality and our natural degradation of the component... the contaminants within that water.

An evaluation of improvement options is currently being assessed by the Lupin engineering department, and it appears as if we probably will go ahead with an upgrade to our cell #5, which is an internal modification.

TK: Before you move on, there, could I just interrupt you for a sec, please?

I would just like to remind the Elders that they are more than welcome to speak up at any time at this hearing. [repeated in Inuktitut] Thank-you.

DH: I've got a table here that's fairly complicated, it's got a lot of numbers on it, but what I wanted to bring to the Board's attention is the life-of-mine contribution of tailings within the tailings containment area - and that's the second column from the left... from the right - at 3.3 million cubic metres. And currently there's - without any changes to the system, without upgrading some of the internal containment cells - we've got approximately 2.5 cubic meters of storage available. No, right on the bottom, there. Middle column.

So, during the life... the expected life-of-mine, we're looking at doing some upgrades to our system, but they're all expected to be internally, and simply with regards to the containment cells, and providing additional storage by raising the internal dams.

Additional concerns have also been raised regarding the current water levels in our #2 pond. During the last two seasons of operation, we have not discharged water, and we have been transferring water from the upper cells and holding cells that originally contained tailing solution from the mill. The water elevation currently is well below historical levels from 1985 and 1986, and at the present elevation there is still considerable holding capacity remaining.

The current operational plan is allowing for discharge to take place in the year 2000, which will provide maximum storage and natural treatment for future process waters.

I'd like to go on to historical effluent water quality from the tailings area. The water quality of the tailings containment discharge has varied considerable throughout the life of the Lupin operation, and has, in general, improved consistently since initial discharge in 1985. Water quality limits as specified in the water license have been consistently met - with minor exceptions - and water quality improved, where possible, beyond these specifications.

Since 1985, cyanide, arsenic and copper levels in the effluent have improved continuously. Most recent discharge levels were less than one-tenth of the permitted values. Zinc and nickel concentrations have increased in recent years. However, the addition of lime in the spring to increase the pH has been effective in maintaining levels suitable for discharge.

What I've got on the overhead right now is a historical summary of discharge monitoring. Starting from the top left is a summary of arsenic concentrations within the effluent from the tailings containment area. This is monitored at our SNP - or surveillance network station #10 - and as you can see from... 1985, it should be, through to 1997, the arsenic concentrations have continuously decreased, with the exception of a minor increase in 1997.

The cyanide concentration, as well, in the effluent, has decreased. I must explain the scale on the cyanide graph. The y-axis, or this axis, is listed in a logarithmic format. If I was to have the graph strictly a linear graph, these first initial concentrations would be at the top, and the current effluent concentrations would be at the very bottom. You wouldn't even see a line on there. And unfortunately I didn't bring along a linear graph. As you can see, the concentrations here, this in .001 milligram per litre. It goes up to .01, to .1, and then 1. So, every division is an increment of 10, this point .01 through to .1. Our license limit on discharge is .8, which is the line across the top.

Copper concentrations, as well, in the effluent, over the historic discharge, have decreased considerably. Again, in 1985 through to 1987, levels were higher, and I have to add in here that the license limit on this graph is the current license limit. They were changed in 1990, and at that time our license limit was .3. So it was up on the top end of the graph, here. These two points here were discharged within license limits at that time.

Nickel and zinc, unfortunately, are still being discharged at levels that are historically unchanged, and as I mentioned these concentrations are controlled with the addition of lime, in the spring, to the tailings pond water, and historically have been within license limits. And again... I can't read that number on there... zinc has a limit of .4, and I believe nickel is .2. And all discharges have been below .1.

Discharges from the tailings containment area have occurred annually since 1985. Due to shut-down in operations, discharge did not take place in 1998 or in 1999. The volume of discharge has been consistently around 1 million cubic metres from 1987 through to 1996. An increase in 1992 was due to added transfer of water from pond #1 to provide storage for water from cell #4.

Just the bottom left-hand graph, there, shows the water volumes being discharged from the tailings containment area, and as can be seen in the graph, the volumes have been consistent through up until 1996. In 1997 there was a considerable increase. That was, actually, the result of transferring water from pond #1, which was equivalent or better in water quality than the water that was already present in pond #2, so rather than keeping all the water from pond #1 for another season, we transferred as much as we could from the tailings containment area.

Another method of assessing discharge is by looking at what is referred to as the loading, or the contaminant loading to the receiving environment. The contaminant loading is a function of the concentration of the specific contaminant within the water, and the volume of that water released to the receiving environment. In general, the contaminant loadings to Sun Bay of Contwoyto Lake have decreased annually, with the exception of zinc and nickel which as remained constant. The zinc and nickel loadings have remained consistent due to the contaminant concentrations. Lime addition has been effective in controlling these levels.

An increase in loading to Sun Bay was apparent in 1997, and this was due mainly to the larger volume of water transferred from the tailings containment area.

I won't go into any greater detail on these graphs, other than to illustrate the fact that contaminant loadings have decreased since initial discharge back in 1985, with the exception of zinc and nickel, which have remained fairly constant. The arsenic loading, which is the top left-hand graph, his decreased consistently since initial discharge. However, 1997 - as I mentioned earlier - all discharge loadings had increased, mainly due to the increased volume of water.

Just, again, to point out... as I mentioned earlier, I had a couple of graphs that were graphed with a log scale on the y-axis. The upper two... actually, all these graphs are logged on log scale, and in order to illustrate the decrease in loadings of arsenic and cyanide, I did bring along a couple of graphs that are graphed on a linear basis. And if you take a look at the upper left-hand graph, which is arsenic, compare it to the linear graph that I have right here, and you can see the substantial decrease in loading since initial discharge in 1985.

In 1985, the loading consisted of 2,700 kg of arsenic, whereas in 1997, the release was 78 kg. We reached an all-time historical low of only 8 kg in 1995.

As well, the cyanide is illustrated here on a log scale. On a linear scale you can tell the considerable decrease from initial discharges in 1985 through ’87, to an all-time low of only 10 kg in 1994. And, as mentioned before, slight increase, 57 kg, in 1997, due mainly to the increased volume of water.

I’d like to briefly touch on the compliance history of Lupin, and Echo Bay Mines. Echo Bay Mines has demonstrated an excellent compliance record at Lupin since first production began in 1982. DIAND and other regulators - including Environment Canada and Fisheries and Oceans - have reiterated this status in this and previous license renewal applications. Compliance with the water license involves being pro-active in environmental management approaches, providing preventative rather than reactive measures, meeting all conditions within the license and attached Network Surveillance Program, including all the administrative functions of the license.

Unfortunately, there are some instances of non-compliance. In the most recent license term, there have been only a few minor areas of non-compliance associated with the SNP and discharge of water from the tailings containment area, and the sewage lake systems.

These are minor, and consist of the following. The tailings containment discharge rate was exceeded on four occasions in 1997. These occasions were considered minor as they were less than 10% of the allowable rate.

The water quality effluent requirements were exceeded on two occasions, with regards to suspended solids and pH. The suspended solids levels, however, were a result of a storm event, and the sandy beaches that are near the tailings discharge siphons, and simply the wind action on the water resulted in some sand being transferred from the tailings area through the discharge siphons and being monitored and analyzed at the discharge.

The pH of the sewage effluent was recorded below a pH of 6 once in 1995 and once in 1996. On both occasions, lime was added to adjust the pH and discharge was completed for each year.

During the recent license term, spills at Lupin have been limited to that of fuel, paste from the back-fill process, and minor tailing spills during a refurbishing of the tailing volume. All spills have been reported, remediated, and inspected to the satisfaction of DIAND inspectors to date, and there are no known outstanding issues.

One major important portion of our water license is that of reclamation. A progressive approach to minimize the impacts and reduce the end-of-mine-life liabilities is the goal of Echo Bay. On-going since 1995, Echo Bay has carried out progressive reclamation. Prior to this, in 1988, a test portion of cell #1 - referred to as cell #1-A - had been filled in and covered with esker material as a final cover project.

In 1995, cell #1 and a portion of cell #2 was covered with a 1-metre level of esker cover. As is shown in this photograph here - this is from 1995 - and it is during the process of covering the tailing cell with esker material.

On the left-hand portion is cell #2, and cell #1 is in the upper... a little further to your right, there, Bill. There you go. That's the initial covering on cell #1. Pond #1 is in the immediate foreground on the right.

In 1995, cell #1 and a portion of cell #2 was covered with a 1-metre layer. In 1997, additional cover work was completed on cell #2, and currently approximately 3/4 of that cell is covered with a 1-metre cover.

This is a different angle, but it shows all of cell #1 and cell #2, with the exception of a small portion of it in the upper right-hand - other right-hand - corner [laughter].

I'd mentioned earlier that we'd had some problems with our sewage pond effluent, due to a tailings spill in 1987. On 19... oh, you slipped this one in on me. I'll elaborate just on this slide, here, quick. This is the initial portion of cell #1 that was covered in 1988. In 1995 an additional covering of esker was placed on this corner of cell #1, and the patches you see on the slide are actually original material from the esker that we were utilizing for material. It was the vegetation cover, I guess, on top of the esker, that was removed and brought to cell #1 and just spread out overtop. That area actually has a considerable amount of vegetation growing on it right now. Unfortunately, there isn't a lot of natural material with organics in it that can be used in a reclamation program.

In 1987, a tailing spill occurred from the tailings line, just outside of the sewage lakes area of the Lupin Mine. During the period that followed, we had some water quality

problems with our sewage effluent, mainly to do with pH depression. The pH was lowering to a point where we were having to add lime. We did some monitoring of the tailings spill area, and decided that in the years that had passed, some oxidation of tailings had taken place, and the resulting lower-pH water was reporting to the sewage lake system. In 1994, we applied for a land use permit to access the area and do reclamation work on that spill.

The photo that we see on the screen right now is at a point where approximately 90% of the material has been removed from the affected tundra area, and in the immediate centre of the photograph you can still see... no, up to the top, there, you can see two trucks and a loader that are still working in one corner.

Following removal of all the contaminated ground, fresh esker material was hauled in, and the area was completely brought back to grade, and leveled out. And the following slide shows the finished reclamation project of that area.

I think one more shows an aerial. This in an aerial view of the affected area, and coming down from the tails line, to the right, it flowed down towards to sewage pond. The straighter area, there, that is crossed by the spill, is the location of our original Twin Otter airstrip that was used in the early construction days. That area has, as well, been reclaimed, graded, and the ground broken up and scarified to allow natural vegetation to take place.

I should bring to the attention of the Board that in the years since that airstrip has been abandoned, and prior to doing some of the work out there, there was considerable amount of vegetation starting to take hold, and we refrain from moving any of the material, or reworking the ground where there is vegetation starting to come in on its own.

General reclamation in other areas, in the last four years, have been in areas of unused roads that have been taken out of service, and regraded and scarified. The original construction camp water supply has been completely cleaned up, pipes removed, and roads regraded and scarified.

Planned future reclamation is limited to and will include the final addition of cover material to the exposed area of cell #2, and some minor leveling of some area in cell #1.

Just as a follow-up to our reclamation work that has been done at Lupin, I thought I would bring along some historical work that Echo Bay has been active in, and that’s been at their Port Radium site at Great Bear Lake.

And I've got a couple slides of the Port Radium site, as it looked in 1981, I believe. So you can see a lot of the buildings and roads and facilities in place in 1981. In 1982, the mine was shut down, and Echo Bay proceeded with reclamation of the site, and completed reclamation in 1985.

This site shows... this photograph shows the site as it looked in 1985. There's also a poster that we've put up outside, in the lobby area. It was meant to go up on the wall for everyone to see inside the hearing process, but limited space, we put it up outside, so if we can encourage everybody to have a look at the posters outside, and take a look at the photographs side-by-side.

[End of Tape 1 - Side B]

[Tape 2 - no recording on both sides]

[Start of Tape 3 - Side A]

SP: In the same section - 4.1 - there is reference to water being discharged from pond #1 to pond #2. I would like to ask whether or not the definition of discharge should be also included in their initial recommendation under Section 2.0, as my understanding of discharge is from the tailings containment area to the receiving environment. We at Lupin transfer water from one area to another, but discharge does not take place.

BC: Brian Collins. Transfer would be a better term in that case. So discharge is not what we are intending there.

TK: Thank-you.

SP: Again, with transfer of water from pond #1 to pond #2, the requirement to sample within the tailings facility was removed from the water license... I believe it was in 1990, not in 1995, but I haven't got the licenses in front of me. And it was removed for the reason that the NWT Board had felt that monitoring within the facility was not required, and was not a concern of the Board at that time. I would like to ask the members representing DIAND if the... if DIAND is now concerned, and is wanting to know the information within that

facility, and what, I guess, ultimate reasons there is for requiring that information when we do meet our discharge effluent requirements at the discharge point.

BC: Brian Collins. This is basically just an information request. We are interested in the information to assess what's happening within the system. If we can... and basically we're only asking for one or two samples per year to give us an idea of what's happening between those cells, what treatment is occurring in the first cell, as opposed to in the second cell, so it gives us an idea of what's happening within the system.

DH: Thank-you, Mr. Chairman. David Hohnstein again. The requests include... or the recommendation for ICP mass spec metal scan on the effluence, I was curious to know - and I would like to ask the Department - if that is information that is not in-hand with the Department. I believe that the Department and DIAND inspectors, when they do their inspections, on an annual basis, and they sample our effluence, that they have that information in-hand from the analysis that they perform. And whether or not we are effectively sampling and repeating work that has already been taken... has already taken place, and whether or not that information has revealed concerns to bring this recommendation into license.

TK: Thank-you.

BC: Brian Collins. Certainly the inspector has, you know, the freedom to be able to do whatever analysis he sees fit during an inspection, or during a collection of samples. We're merely suggesting this as, again, additional information that would be useful in assessing the long-term effects of the discharge. And we're proposing that it's something that can be relatively easily done, and no more... certainly not significantly more costly than by doing what sampling they're doing right now. They can have the analysis done for the 24 elements at this point for not much more cost than it is costing them to do the individual parameters required at this point.

TK: Thank-you Mr. Collins.

DH: David Hohnstein. On Table 2 in the submission, there is apparently an error. I would like to ask DIAND to clarify the error. On my table I have an oil and grease parameter with a license limit of 1,000 CFU per 100 mils. I believe that is incorrect. If they could clarify that for us.

BC: Brian Collins. Yes, that is incorrect. My apologies.

TK: What should the number be?

BC: Brian Collins again. 5 mg per litre is what I recall it to be. We'll check that.

TK: Dionne.

DF: Thank-you, Mr. Chairman. Dionne Filiatrault. I just want to confirm that you... you're now, at this point, adding oil and grease at 5 mg per litre. (I would also changing?), where it's written oil and grease, and changing that to fecal coliform. Correct?

BC: Uh, yeah. Sorry, Brian Collins. Yes, that would be correct.

TK: Mr. Collins, would you repeat that, please?

BC: Brian Collins. Yes, what Miss Filiatrault explained is correct, that there should be parameters for fecal coliforms that would be in the area of a thousand coliform units per 100 ml, and an oil and grease requirement for 5 mg per litre.

DF: But oil and grease in not sampled in table... in the effluent quality for that -

BC: Okay, not at this point.

DF: ...sewage treatment plant. No, not at this point.

BC: Okay, so... Brian Collins again. At this point, there is no requirement for oil and grease sampling, and what we would... we would recommend the 5 mg per litre limit for oil and grease.

DF: [inaudible]

TK: Thank-you.

BH: Mr. Chairman, Mr. Hansen. For some reason, people, I'm having a really hard time hearing. I don't know what it is, if you're not talking close to the mike, or you're not speaking up loud enough. I did not hear one word you said, and I hardly heard any of yours. For me to make a decision, I have to hear you. Please speak clearly. I have an extremely strong voice, I'm sure you all do too. Thank-you.

TK: DIAND. [pause] Okay.

SP: Mr. Chairman, in the presentation that was made, there was reference to the cell #4 being contaminated with tailings, and I would like to ask the Department what reference they're using for that, and given the fact that the Echo Bay reclamation plan has suggested that the area will be flooded with water at the time of closure, is there any need to be addressing the use of cell #4 for a contamination that might be in cell #4?

BC: Brian Collins. What we're saying there is that there would inevitably be some... regardless of how careful you are there are going to be some solids that do flow through with the liquid, so... and those solids would settle to the bottom of cell #4. And what we're saying is basically that any reclamation that's required of that area should be considered in the reclamation cost.

DH: Mr. Chairman, David Hohnstein. The recommendation to monitor mine water from the mine, I would like to question the Department on the, I guess, the basis for the request, in

that previous license renewals have addressed that process stream, and have applied effluent quality limits with regards to that mine water on our sewage effluent, and the effluent quality limits that are in place are to protect the environment with regards to effluent... or water that is being removed from the mine. And I believe the concern with mine water is addressed through the effluent quality limits.

BC: Brian Collins. This is merely a suggestion, that is, something that should be considered in start-up. The mine has been shut down, now, for approximately two years, and there may be some increased acidification of the water in the underground workings, and we're merely saying that that's something that should be considered in any treatment of those waters. And certainly, what Mr. Hohnstein was saying is correct, the effluent requirements will still be in place, and will still ensure that what's being released is safe for the environment. But we're merely pointing out that this is an area that needs to be looked at.

TK: Thank-you.

SP: Thank-you Mr. Chairman. I believe most of the other points I have in my write-up are clarification of information, and as has been requested, they cannot be brought in at this point in time. I would like to ask whether or not we will be allowed to clarify the information that has been presented, or if we have to rely on information that is already available to the Board.

TK: In that case I would like to ask Philippe to give us an idea.

PP: Thank-you, Mr. Chair. Phil di Pizzo. It's hard for me to tell you what to do for not having seen Mr. Hohnstein's document, so maybe what I can suggest is to table this document as exhibit. Let us go through the items, and if need be either reject them or give interveners the opportunity to reply within an adequate period of time, if this proposal satisfies DIAND counsel.

TK: In this case, here, we would be willing to accept them as exhibits, and give the interveners time to respond. Would you be prepared to accept that?

DH: Thank-you, Mr. Chairman. As I mentioned before, unfortunately I've got all comments or clarification information in one document for DIAND, Environment Canada, on both the Lupin license and the Ulu license, so if I may be permitted, I will submit it as one document, and have the information available to the Board that way.

TK: Thank-you.

LW: Lee Webber. Thank-you, Mr. Chairman. We have... we're quite in agreement with the basic thrust of what Mr. di Pizzo has proposed. Also, if Echo Bay would like to submit all the comments in one document, that's all right with us. I would just add in a reminder that

our understanding is that this is to by reply information, not information which could have - or should have - been presented as part of Echo Bay's initial presentation. Thank-you.

TK: Thank-you. Thank-you, Mr. Webber. Are there any further questions from the floor, with regard to written... Mr. Webber?

LW: I'm sorry to interrupt again, Mr. Chair. Lee Webber. Just so that there's no possibility that we, or I in particular, have thrown at me the same concern that I voiced about Echo Bay's proposal, I wanted to draw to the Board's attention at this point something which I'd initially had in mind to mention in our final comments, namely that we would propose that the Board include in the license language which clarifies the power of the inspector to enforce. This would be language we would be prepared to provide draft language. It would be essentially identical to the language that was proposed in the Iqaluit case.

TK: Thank-you. Are there any other questions from the other interveners to the submission that was done by DIAND? [pause] I would like to remind the Elders that they are more than welcome to speak up at any moment during this hearing. [repeated in Inuktitut] Thank-you very much.

Okay, before we get into Environment Canada, can we please take a 10-minute break, here? I'm just sweating.

DH?: Yeah, I'm not too sure if everybody's... we've requested to ask a couple more questions of DIAND. Is that the point we're at right now?

SP: This is a request.

SP: Thank-you.

TK: Is that what you are requesting right now?

DH?: Yes, please.

TK: Yes, okay. All right, Mr. Webber.

LW: Lee Webber. Despite the fact that questioning of DIAND by Echo Bay was concluded before the break, DIAND is prepared to answer a couple more questions.

TK: Thank-you, Mr. Webber. Please proceed.

DH: Thank-you, Mr. Webber. David Hohnstein, Echo Bay. There is just two more questions we had that we wanted to ask of the Department, and the first one was whether or not the information quoted in the effluent quality tables under the... there's a report that was referenced, referring to a report on technologies applicable to the management of Canadian mining effluence from Environment Canada from 1999. We were wondering if the Department had provided the Board with that document, and if it's available for the public record.

BC: Brian Collins. We have not provided it at this point, but we are prepared to provide it to the Board. You may have a copy already, I'm not sure, but we can provide it if you require it.

TK: Thank-you. Okay.

BC: Then, Mr. Chairman, if I may.

TK: That will be Exhibit #3. What's the title? What was it again? [pause] Dionne.

DF: Respectively, Mr. Chairman - Dionne Filiatrault - they are making reference to page 3 in their... in DIAND report. With respect to Final Report on Technologies Applicable to the Management of Canadian Mining Effluence, by Environment Canada, dated March 1999, we do not have that in our office, and yes, as Exhibit #3.

TK: Thank-you. Mr. Webber.

LW: Lee Webber. If I heard Miss Filiatrault correctly, she said that you do not have it in your office? Okay, DIAND does not... as I understand it, DIAND does not have, right here and now, a copy of the document, so that would have to be submitted later.

TK: Thank-you, Mr. Webber.

DH: Thank-you, Mr. Chairman. David Hohnstein. Under Section 6.0 in the... under the security deposit discussion, there was made reference to a discussion paper on reclamation policy for the North West Territories. The question directed to the Department is whether or not this discussion paper is in reference to existing mines, or if it is in reference to new mines that are coming on-stream.

TK: Thank-you.

BC: Brian Collins. The short answer is I'm not sure. I would have to check that. And we can also provide that document if required. I apologize, but I'm not sure if it's to existing mines or new mines.

TK: Thank-you Mr. Collins. Do you have any further questions? No more questions? Thank-you.

DF: Thank-you, Mr. Chairman. Dionne Filiatrault. With respect to David Hohnstein's question, we are aware that this policy paper was in draft form last year. What's the status of that? Is it still in draft form, or has it been finalized? And we, again, do not have this - if it is finalized - in our office, and would need this to be provided to us.

TK: Thank-you, Dionne.

BC: Brian Collins. I should... I spoke a little too quickly. I should make sure, first of all, that this is a public document that we can release, so I will check that, and if it something we

can release, and if it is a completed document, then we will release it. If not, then we won't be able to.

TK: Thank-you very much. Next intervener. Anne Wilson, representing Environment Canada.

PP: Please place your hand on the Bible, and state your name, and spell it for the record.

AW: My name is Anne Wilson, a-n-n-e w-i-l-s-o-n.

PP: Do you swear that the evidence you're about the present is the truth and nothing but the truth, so help you God?

AW: I so swear.

TK: Please proceed.

AW: Thank-you, Mr. Chairman. My name is Anne Wilson. I am here presenting the intervention for Environment Canada, and the Department of Fisheries and Oceans, who are unfortunately not able to attend. What I'd like to do is just read our intervention into the record as it was presented, and I will go over it and just speak to the highlights of it now. So I'll just start with the introduction, here.

The Lupin Mine operation began production using underground mining in 1983, and gold is presently milled in a 2300 tonne per day process plant, with a total of 2.8 million ounces of gold produced to the present date. The operation of the mill incorporates crushing and grinding of the ore, use of a cyanide leach process to liberate gold particles, followed by filtration, and then recovery using zinc precipitation.

The main by-product of the mining and milling process is mine tailings consisting of both solids and liquids, which is piped as a slurry to the tailings containment area, or used in paste back-fill underground.

Sewage from the camp, and a portion of the mine water, are directed to the sewage lakes. Waste rock amounts are nominal, and are generally used for back-fill.

The recommendations presented in this submission are based on information supplied to date by Echo Bay Mines, Limited, and any new or additional information that is brought forward by the proponent, or identified during this public hearing, will be re-examined, and any changes brought to the attention of the Nunavut Water Board.

Our submission outlines both the mandates of Environment Canada, and the Department of Fisheries and Oceans. I won't read those. I would like to go straight to our technical comments and recommendations at this time.

The first one deals with the water use amounts, and at first off I apologize for my mistake with bullets in my intervention. I went A B A, so the bullets are all mis-numbered

there. If you bear with me, I will speak to them in correct order. So A is water use amounts.

Echo Bay Mines Limited has applied for water use at the current withdrawal level, which have a maximum of 1.7 million cubic metres annually. Environment Canada and DFO encourage Echo Bay Mines to continue to strive to reduce water usage through improved conservation and recycling practices. This will reduce withdrawals, as well as the amounts of water requiring treatment and handling.

Item B deals with modification of the SNP, and there are several items which we would like to see changes in the surveillance network program. The first is the issue of nutrient loading to the very pure waters of Contwoyto lake. This is something that has not been looked at previously, for this project.

We recommend that phosphorus and nitrogen, in several forms - as outlined in our submission - and ammonia be monitored for the sewage lakes discharge, and we recommend adding ammonia to the tailings containment area discharge measurements. We would like to see these measured weekly under the SNP.

To identify levels of nutrients which are leaving the sewage lakes and entering Contwoyto Lake, it's recommended that a new station be set up in the receiving bay of Contwoyto Lake, and that the nutrient parameter there be measured monthly during open water.

The next item for modification of the SNP deals with the idea of toxicity testing.

Over much of the operational period of the mine, Echo Bay Mines Limited has demonstrated a very proactive approach to protection of the downstream fish resources by testing effluent for toxicity.

They used several tests, and passed them consistently, I'm happy to say. The rainbow trout test, the daphnia magna test - which is a water flea - and the microtox bacterial tests. Many jurisdictions are routinely requiring this now. In the NWT, most of the new licenses are having this as a requirement, that they must pass bio assay tests prior to discharge to the environment, the Yukon and Alberta, also, that I know of, and we would ask that bio assay testing of the discharge from the TCA - the tailings containment area - be done both at initiation and at termination of the decant, and that this be included as a license condition.

We had noted - my third item under the SNP - that oil and grease not a regulated parameter for discharge from the sewage lakes station, and because of the potential for any oil and grease in the mine water, or as far as (???) oils from the camp kitchen wastes,

it is recommended that this parameter be added to those which are regulated for Station 925-14, and ask for weekly measurement.

Corrected bullet C deals with effluent limit standardization. This is a minor matter. There are two sets of limits which the company must meet. They have existing limits for the TCA - which is station 925-10 - and a separate set of limits for the sewage lakes discharge, 925-14.

We would suggest that where it is feasible to do so, these limits be combined for simplicity. Some of them this will not work for. Arsenic is higher at the TCA and lower at the sewage, and they are both meeting their limits there. Those could not be combined. Copper we recommend be reduced to the limit at the TCA. Cyanide does not get measured at the sewage outfall, so that is not applicable. However, lead, nickel, zinc, TSS, and pH limits could all be the same for both. And those that are not measured, of course, it wouldn't be applicable for. We don't measure the biological oxygen (???) or the bacteriological at the TCA.

Bullet D deals with the evaluation of acid rock drainage potential, and we ask that data collected to date on acid rock drainage, or ARD, for the tailings, ore and waste rock, should be compiled. Prior to final abandonment, it will be necessary to identify all sites which may be potentially acid-generating, and to prepare plans for testing of construction rock, and for prevention of tailings acid generation. There is a need to demonstrate that granular cover is effective in reducing permafrost foundation... sorry, formation, and preventing the release of acid drainage from the tailings. And some coarse kimberlite cover has been included in some of the test closure, and that should be evaluated, as well, where it has been used so far.

Bullet E deals with surface contamination identification. There will need to be further planning for mine closure during this license term, and this should include the identification of any areas of surface contamination. Over the years there have been spills, and these locations should be identified for testing. There's been, likely, areas subject to chronic leaks where refueling occurs, adjacent to the emergency dump ponds, or near any fuel or chemical storage areas. Plans for surface testing should be drawn up, and implemented early enough before mine closure that any required remediation can be done.

Bullet F deals with abandonment and restoration planning. The current abandonment and restoration plan, I understand, is under revision. It's recommended that this is a license condition, and that the revised version should address concerns identified in the review of the 1996 draft. It is recommended that this be completed within the next

12 months to facilitate planning of progressive restoration work, and identification of any information gaps.

The next item is G, deals with the tailings containment area. Tailings dams, geotechnical monitoring. The report recently released identified no significant concerns for the 1999 inspection. However, the lack of thermisters was noted. In order to detect any thawing of dam foundations, it is recommended that installation of thermisters and dam #1a and #2 be done as recommended in the report.

With respect to the tailings pond capacity, the renewal information lists several options for the management of the TCA capacity over the next license renewal period. What we would like to see is rationale for the selection of which options will be used to increase the capacity beyond the currently-estimated 5.1 years available. Environment Canada encourages the selection of options which avoid use of End Lake, thus keeping the footprint to the minimum possible within the TCA. The survey should be done to confirm current capacity levels, notably for cells #3 and #5, over the next ice-free season.

Item H deals with the compilation of the 1992 spill data. I think it was in June 1992, a significant tailings spill occurred from cell #4 into Long Lake, and a summary and interpretation of data collected on the recovery of the lake and residual effects should be compiled and placed on file with the Nunavut Water Board.

Item I, license term. Echo Bay Mines has requested 8 years for their license term. Because of potential for changes in the TCA management, or associated with satellite ore bodies and/or possibly diamond processing, it is recommended that the term of this license be no more than five years, so that any evaluations needed - such as tailings, chemistry, or behaviour - can be identified and done prior to issuance of the closure phase license.

And last item is J, security deposit. The current security deposit of $1 million does not reflect the actual costs to abandon and reclaim the site, which have been estimated at between $12.6 [million] and $21. 1 million for the water-related components. And I did not have John Brodie’s intervention... or presentation, rather, at the time of writing, so I don’t know what his would be for just water-related. But it is recommended that the license requires the security deposit to match the actual reclamation liability amount for these components, and the status of the reclamation of the reclamation costs to be reviewed annual, and provision should be included for credits or refunds to be granted back for progressive reclamation work completed.

And I won’t read the summary, as I have just gone through the bullets, but if there are any questions I would be pleased to try and answer them.

TK: Are there any questions?

DH: Mr. Chairman, Dave Hohnstein again. I have, again, my written set of clarification responses to Environment Canada and DFO's submission. I've been writing frantically to try to re-create them in a question format, but my thinking process is slowing down, here, this late at night. I've got a few questions that I might be able to put to the Board, and possible get some answers with regards to concerns that Echo Bay has with the submission.

With regards to the recommendation on nutrients, and nutrient loading from the sewage lakes discharge and the tailings containment discharge, my question is that, I believe, some work has been done in the past with regards to monitoring in various areas of Contwoyto Lake, and background levels, and I believe they did include some nutrient monitoring. I was wondering if the information that was available, then... and I was wondering whether or not the information available then has brought about the concern for nutrients, and the nutrient levels in the sewage effluent and the tailings containment area effluent.

AW: Thank-you, Mr. Chairman. Anne Wilson. I haven't seen those data and would be very interested in getting them, if I could. That answers your question in that no, that was not the cause of concern. This has arisen in connection with BHP and the dramatic effects of nutrient loading to our 15 nutrient-poor Arctic lakes, and we just realized that this has been completely overlooked with some of the past mining operations, and we really should see what the effects are at this time. And we are not suggesting that this is regulated. We just want to see it monitored at this point.

DH: Thank-you, Mr. Chairman. Dave Hohnstein. The... under the nutrients recommendation, the recommendation has been to monitor, on a frequency of weekly, and currently all monitoring at the sewage effluent is done on a monthly basis. I was... I would like to ask the Department whether or not the recommendation is going to reflect on all monitoring at that station or simply on the nutrient recommendation.

AW: Thank-you, Mr. Chairman. Anne Wilson. That would be specifically for the nutrient monitoring. My understanding would be if it's monthly, over open water, we may get three or your measurements. Would that be correct?

DH: Mr. Chairman. Yes, that would be correct for the new station that has been suggested in Contwoyto Lake. However, I believe the submission also requested nutrient monitoring at the effluent station on the sewage lake system.

AW: Thank-you. Anne Wilson. Because I imagine there will be a fair amount of variation at the sewage lakes outfall, and depending on how much mine water goes in, and how much dilution there is, how much rainfall, and so on, I would like to see the output measured weekly, whereas we can measure the effects monthly at the other end.

DH: Thank-you, Mr. Chairman. One last question on the nutrient requirements or recommendations from the Department, and that is whether or not the recommendation has been brought about with regards to the mine water being discharged to the sewage lakes systems, and if we were to revert back to a system of pumping it out to our tailings pond, would these recommendations still stand?

AW: Thank-you, Mr. Chairman. Anne Wilson. The... I think we're going to see more nutrients coming in from the camp sewage discharge, and so regardless of where the mine water is directed, we would still like to monitor it. And with the wetlands treatment which occurs between the last point of control of the sewage lakes and where it enters Contwoyto Lake, I believe we're going to see a lot of removal, but I would really like to see that confirmed, so that's why the monitoring.

DH: Thank-you, Mr. Chairman, and I'm going to ask one more question on the nutrients subject, and maybe it's relative, maybe it's not, but I would like to know how the effect of one or two or three hundred thousand caribou coming through and wandering through our wetland area of the sewage lake system is going to affect the nutrient loading in the receiving area of Contwoyto Lake.

AW: Thank-you, Mr. Chairman. Anne Wilson. I don't have an answer to that, except maybe we should monitor sites where the caribou don't go, as well. We can factor out that. Certainly that would have some effect on the bacteriological parameters, but, again, if we can tie in what's coming out of the last point of control to what we're seeing in the lake, we'll have a pretty good idea, transient caribou notwithstanding.

DH: Thank-you Mr. Chairman. My next question is with regards to the bioacidity recommendation, and as was mentioned in the Environment Canada submission, Echo Bay has proactively been carrying out bioacidity analyses on the tailings pond water since initial discharge began in 1985. And as of last discharge in 1997, there was no failures on toxicity testing from the Echo Bay tailings containment area.

The recommendation to have toxicity testing done at the point of commencement of discharge, and at the end of discharge, is questioned with the, I guess, basis that Echo Bay believes toxicity testing done prior to discharge would more adequately serve the

purpose of the Board in the fact that there would not be any discharge of water before receiving water quality... the actual results back from the laboratory.

I guess the question to Environment Canada would be as whether or not the sampling that Echo Bay has done in the past would more reflect the purposes of toxicity testing rather than what has been recommended in the submission.

AW: Thank-you, Mr. Chairman. Anne Wilson. Certainly, testing of the effluent prior to release demonstrates compliance with Section 36 of the *Fisheries Act*, and that it is safe to release to the downstream environment. The concern is that there are changes in the composition of the effluent as it is drawn down within the pond, and if that is the case, doing a test at the end would demonstrate that it is still non-toxic.

DH: Thank-you, Mr. Chairman. With regards to.. David Hohnstein. With regards to the oil and grease recommendation, adding this parameter to the sewage lakes monitoring, again, the sewage lakes effluent is monitored, initially, at the start of discharge, and monthly thereafter, and the recommendation, again, is for weekly monitoring, and I was wondering whether or not the Department felt that that recommendation was meant to be on a weekly basis, or to follow the protocol that has been in place with the license in its current state.

AW: Thank-you, Mr. Chairman. Anne Wilson. Certainly, if the other parameters are measured monthly, I was mistaken in putting weekly. It's just to be in line with the other parameters.

DH: Thank-you, Mr. Chairman, and that's where I ran out re-writing my original submission into questions. I guess one final question to the Department... or, to the Board, excuse me. Dave Hohnstein. One final question I wish to ask the Board is whether or not the Department feels that the operations within the tailings containment area is a responsibility of Environment Canada or of the Board, or whether or not that is the responsibility of the mining company, and should be not included in the water license.

AW: Thank-you, Mr. Chairman. Anne Wilson. I was present at the 1995 renewal, and that was when they had decided it was part of the workings, internal to the mine treatment system, and that we did not need to know that. And I do tend to agree that as long as limits are being met at the last point of...

[End of Tape 3 - Side A]

[Start of Tape 3 - Side B]

AW: ...then, as an SNP station, we don't really to know, you know, what the internal ones are, as long as the mine is measuring it, and optimizing their treatment, which, of course, you have full incentive to do.

DH: David Hohnstein. Thank-you, Mr. Chairman. I have no further questions.

TK: Thank-you very much, Mr. Hohnstein. Are there any questions? Dionne?

DF: Thank-you, Mr. Chairman. Dionne Filiatrault. Just going back through the submission, with respect to the modifications to the SNP, for items one and two, and even three, are you suggesting that this will be monitored throughout the full term of the license? Specifically for item one, where you just want confirmation of what's actually happening, that you are getting nutrient uptake, and whatnot?

AW: Anne Wilson. The intent is for this to be continuously monitored. There may be fluctuations and changes. There will be cumulative loadings over time with any wetlands treatment. There is a potential for a breakthrough point, where you could get more releases into the lake, so it would not be short-term. It would be, like, over time, continue to monitor.

DF: Thank-you, Mr. Chairman. Dionne Filiatrault. I notice in the... what is label A but I believe is E, you are proposing a combined limit, and for the limits that can be combined, it appears that you've gone to the lower limit of either of the two parameters, whether it be 925-10 or 925-14. What's the justification in that? And, I guess, an additional question which would then be posed to the mining company is, is there potential that by going to the lower limit, that that would then put you... cause problems in being able to meet the discharge requirements? So, first to Environment Canada.

AW: Thank-you, Mr. Chairman. Anne Wilson. As I mentioned, this is a minor point. It is a chance to move the limit downward, which is something Environment Canada likes to see, lower limits, and the company is meeting them by an order of magnitude in all the cases where I had suggested the lower ones. For example, with respect to the copper at the sewage where it is .2, they were an order of magnitude lower. Like, they're .02 range, generally, so in all cases the historical results from the SNP that I was able to review looked like it would be problem. I'll let the company speak to that.

DH: Thank-you, Mr. Chairman. David Hohnstein. I'm trying to recall the pass-on question from Dionne, but I believe it was with regards to choosing the lower effluent limits on the standardization of the limits. And I would like to, I guess, clarify on that. Yes, we are meeting those limits, and we are substantially below those limits, and have been for a number of years. Initially, in the first five years or so of operations we hadn't been. I believe that's due to some better management of the tailings facility, some maturing of the tailings facility and how it's operated. And I would like to additionally pose a question to the intervener with regards to the limits that are being recommended, and whether or not

they are standard throughout industry, and whether or not Echo Bay may be penalized for doing an excellent job on the management of the tailings facility in that we are meeting the limits and we are one order of magnitude lower, which is our view of being assured that we will be within license limits, and not just below a new set limit. Thank-you.

AW: Thank-you, Mr. Chairman. Anne Wilson. The limits which other industrial operations in the north are subject to are generally in line with the metal mining liquid effluent regulations, or MISA, municipal industrials standards for... I don't think I got that quite right. Anyways, Lupin's limits are considerably below those already, and they aren't being penalized for doing a good job. I think it's recognized that this is a very protective set of limits that they've got for the environment, compared to other operations, particularly cyanide-based gold mines. And just by moving them to the lower limits we're not talking huge moves, here, you know, within the same order of magnitude. Now, as I said, it is a small matter because, regardless, they are meeting, you know, well below either of the limits. It was just a house-keeping matter, by and large.

TK: Thank-you. Any further questions? Mr. Philippe di Pizzo.

PP: Thank-you, Mr. Chairman. Philippe di Pizzo. On point 3-H of your submission, you state that the actual cost of abandonment and reclamation of water-related components is estimated between $12.6 and $21.1 millions. Are you able to give us a substantiation of these figures right now?

AW: Anne Wilson. Those figures were drawn from the review that Echo Bay had done for the Golder estimates. They had extracted, in one of their documents, the cost. The $12.6 [million] was the cost that Echo Bay had estimated as being realistic. The $21.1 [million] was the Golder cost for water-related only. We don't have expertise on reclamation, or abandonment costs, at all, so, you know, we'll go with the experts, but that was the range that I found in the documentation.

TK: Are there any further questions to the intervener? John Lyle.

JL: [Inuktitut]

AW: Thank-you, Mr. Chairman. Anne Wilson. To my knowledge, there are no studies currently being done, but can I refer that to the company to see if there's anything on their plans?

TK: Thank-you. Okay.

DH: Thank-you, Mr. Chairman. David Hohnstein. The company is currently not conducting any studies on the fish in Contwoyto Lake. The last study that was conducted was the one I had mentioned in my presentation, in 1995, and that study was regarding movement of lake trout within the Sun Bay area of Contwoyto Lake. And prior to that, studies had been

completed on fish tissue metals analysis, and, I guess, estimation population studies within the Sun Bay area of Contwoyto Lake, but recently the 1995 study is the most current study that had taken place.

TK: Thank-you. Does DIAND have any questions for Environment Canada? DFO? Thank-you. Let's take a 15 minute break, please. Thank-you very much, Anne.

[break]

TK: Welcome back. I will now invite Mr. John Brodie, representing Brodie Consulting Limited, to make his presentation.

PP: Please put your hand on the Bible. State your name and spell it for the record.

JB: My name is John Brodie, j-o-h-n b-r-o-d-i-e.

PP: Mr. Brodie, do you swear that the evidence you are about to give is the truth and nothing but the truth, so help you God?

JB: I do.

PP: Thank-you.

TK: You may proceed. [pause] We're having translation problems, equipment problems, here. Please bear with us. [pause] Okay, we're all set. Mr. Brodie, please proceed.

JB: Thank-you Mr. Chairman. John Brodie. Mr. Chairman, I'd like to make my presentation in two parts, one a very brief description of my qualifications and background, and then secondly a summary of my report as I've presented, regarding the reclamation at the Lupin Mine.

I'm a geotechnical engineer by training, and I'm a registered Professional Engineer in North West Territories. I specialize in the assessment of mine reclamation liabilities, and I've been involved in nearly 50 such assessments in the last 10 years. Some of these have included the BPH Ekati Mine, the Diavik Project, the Nanisivik Mine, Colomac Mine, Giant Mine, Mount Nansen(?) Mine, and Brewery(?) Creek Mine, both of those in Yukon.

The work that I have done has been an behalf of both industry and government, and I have evaluated proposed mines, operating mines, and also closed mines, with respect to mine reclamation liability. And of the total sites that I have assessed in my career, approximately 50% of these have been in Yukon and North West Territory, or Nunavut.

In addition, I am currently the project manager on behalf of DIAND for the care, maintenance and closure work at the Colomac Mine, which was recently orphaned as a result of the bankruptcy of Royal Oak Mines.

Moving on to the... my review of the reclamation liability at Lupin, the objectives of my review were to evaluate the abandonment and reclamation plan, to asses if it is

conceptually viable, and that the scope of the proposed reclamation measures are reasonable; to review the estimated cost of carrying out the reclamation work, assuming that the work to be conducted on behalf of the government, an not carried out by the company; and then finally to identify any requirements for further studies, design work, or reclamation trials that may be necessary in order to successfully implement the reclamation work.

I'd like to state that I have not visited or inspected the Lupin Mine site.

The reclamation plan for the Lupin Mine involves three main areas of activities: sealing or back-filling the openings to the underground workings; covering the exposed tailings, which are acid-generatings; and the removal of buildings and equipment.

Based on my understanding of the mine site and the current conditions, I find that the A&R plan is reasonably complete, and that the proposed reclamation measures are likely to be acceptable. However, I have some comments on the details of some of those reclamation measures.

The most important aspect of the reclamation plan is the cover work for the potentially acid-generating tailings. Some of the temperature monitoring data in cell #1 indicates that freezing conditions have been maintained at a depth of 1.75 metres, but just barely freezing conditions. And in fact, where more granular material was used in the cover, the depth of freezing extended to nearly 2 metres. Consequently, it is my opinion that a cover thickness of 2 metres should be assumed for the cover of the tailings, and that that would be reasonable assuming that, one, there is a sufficient quantity of appropriate grain size material to cover the tailings, and secondly that it can be demonstrated that through modelling, the 2 metre cover thickness would be sufficient to maintain the tailings in a permanently frozen state under conditions of unusually warm winters, such as this winter, or the effects of global warming, as may come to cause climate change in the future.

Additionally, I believe the closure plan needs to include provision for removing and treating any surplus supernatant in the pond before the covers are placed.

In the 1999 geotechnical assessment conducted, I believe, by Golder Associates, a number of minor structural problems were noted with the... with 7 of the 8 tailings dams, and these problems should be addressed in the final closure plan.

There is discussion in the closure plan work presented by the company regarding potential storage capacity or accessing the available storage capacity in the mine workings

for demolition and demolition debris. And it's my recommendation that the closure plan be based on allowance for an on-land landfill and covering of that landfill.

Regarding the reclamation cost estimate, I have prepared my estimate on the assumption that, for whatever reason, Lupin Mine does not carry out the reclamation work, and it becomes necessary for the government to do the work, and that the government would hire contractors to carry out this work. And it's important to understand this assumption, because it's quite possible that the company could carry out the work and do it in a less expensive manner, or at a lower total cost, than under the scenario that I'm assuming.

Having reviewed the closure plan, and in particular, the detailed estimate that was prepared by... or, for Lupin Mine by Golder Associates, and PCL Constructors, in 1997, I find that the 1997 estimate is, in fact, a fairly detailed estimate, and I think it forms a good basis for estimating the closure liability of the mine site.

Having said that, it's also important to note that in that estimate, the estimators identified a number of items that were not included in their estimate. Some of these included access to the site, transportation of fuel, and other things which I have attempted to address in my estimate, and I'll address those sequentially as I carry on, here.

In general, what I have done in preparing my estimate, then, is to review the unit cost and quantities of work for those items covered in the 1997 estimate. I have attempted to provide a cost for items which were not included in that estimate, and I have attempted to provide adjustments for the cost of work should it be necessary for the government to carry out the reclamation work, as well as any other omissions in the scope of work.

In general, I find that the unit costs that were provided by Lupin for the demolition of buildings are reasonable, and that the unit cost for the earthworks for the tailings, in fact, are reasonable, and also are supported by previous contractor work on the site, which gives confidence that the estimates for that critical component of the reclamation work are reasonable.

In preparing me estimate, I have basically started with the 1997 Golder Pacific Constructors' estimate as a base, and I have adjusted for the work which has already been done, the old air strip... and I can't remember the other aspect of reclamation which was already completed.

I have deducted an amount of $2.5 million from their estimate for not having to cover cell #4, and that amount is as provided in the subsequent review by Lupin of the Golder estimate.

I've adjusted that those amounts for inflation from 1997 to date, and I've used an inflation rate of 4%. And I recognize that this is somewhat... slightly higher than the Canadian Consumer Price Index, and that was done intentionally to reflect the recent substantial increases in the price of fuel that we've observed in the north, of late.

I've added, in addition, to the costs and allowance for removal of hazardous materials from the underground mine. I have adjusted upwards considerable from the estimate amount from the Golder for the on-site bioremediation of contaminated soils, and the adjustment is made to reflect the probable scope of work that would be required to remediate contaminated soils consistent with current regulations and practices for contaminated soil.

I've added a cost allowance for the decontamination of pipes and tanks in the mill circuit. I've also provided for covering demolition waste which could not be disposed of in the underground mine. I've provided costs for the treatment of tailing supernatant. I've provided, in my estimate, an amount to stabilize the tailings dykes to ensure long-term stability, and I've also provided for re-vegetation.

In my estimate, I've also included the cost of site access via the winter road. The winter road cost that I've used is the cost as reported by the Golder PCL Constructor in the 1997 estimate, and I've assumed that the winter road would be required on a full-scale basis for at least one of the three years, to carry out the reclamation of the site, that intensive-use year being the year when the majority of the demolition work is carried out on the site, and there may be a fair bit of vehicle movement onto the site to carry out the demolition work, as well as to remove any large debris that may not be buried on-site.

In preparing my estimate on the winter road, I've also assumed that there are no other users of the winter road, and that the winter road costs associated with the reclamation of the Lupin Mine site would be the full cost from Yellowknife to the site. In other words, I've not assumed that it's only the incremental cost, say, from (Lac de Gras?).

And I recognize that this is conservative. However, this was the approach that was recently adopted in the review of the Diavik Diamond Mine, where we also assumed there that there was no other activity in the area, and that reclamation would require the full cost of the winter road to that site.

I provided a cost allowance for the shipment of fuel to the site. The cost allowance that I've used here is based on recent Government quotes that we've received for shipment of fuel to the Colomac Mine site.

I've provide a cost allowance, in my estimate, for the mobilization and demobilization of equipment, plus the stand-by of equipment on-site while the reclamation work has been carried out.

In my estimate, I have included an allowance of 1.5% of the total reclamation cost for engineering work, and a number of studies have been discussed by the other interveners, as well as some which are described in my report. I think that given the nature of the site, and the scope of the studies, I think the allowance is reasonable, and I'd like to note that it's also one of the lowest engineering provision amounts that I have provided in reclamation reviews.

In my estimate, I've also included a contingency of 10% of the total reclamation liability, and I've selected 10% based on judgement, and it reflects the fact that the detailed engineering has been carried out on a number of the reclamation aspects, and it incorporates site-specific data, specifically with respect to the tailings work, and also incorporates the costs of having done that work. This is also a low contingency rate compared to that which I've recommended for other projects.

Having incorporated all those elements into my estimate, it's my opinion that if the owners of the site were, for any reason, to not carry out reclamation of the Lupin Mine site, and it became necessary for the Government to do so, the Government's cost to do that work would be in the order of $44.6 million.

A revised cost estimate was also presented by Echo Bay in 1998, and in that estimate they suggested a reclamation liability of $18.9 million. Considering the things which were not included in the original estimate, I think that it's optimistic, and it's unlikely that the company... even the company could do the work for that amount of money, and that if the Government were to do the work, that is not even close to a realistic cost.

Finally, in the event that there is on-going mining activity at the site, and the cell #4 is used during the term of this license, then the liability could be increased by an additional $2.5 million.

Just... I'd like to review my notes quickly and make sure I've covered everything. [pause] I have assumed that there is zero value for inventory and salvage of materials on-site. This is consistent with practices elsewhere, and is also consistent with the recent Government experience with the abandonment of the Colomac Mine site, and also with the abandonment of the Mount Nansen Mine site in the Yukon where, in fact, there was

virtually no salvage value remaining on-site at the time of surrendering the site, or the site becomes orphaned and the responsibility of the Government.

That concludes my presentation, Mr. Chairman.

TK: Thank-you, Mr. Brodie. Are there any questions off the floor? [pause] Are there any questions from the other intervener? [pause] Questions from Lupin Mine?

HD: Yes, Mr. Chairman. Hugh Ducasse. One question for Mr. Brodie. Do you feel that you could have provided a more accurate assessment of Lupin's liabilities with a site visit and interviews with site personnel?

JB: John Brodie. Contrary to what I would normally say is yes. In this particular case, given the quality of data you've presented, I'm not sure that I would have come to a substantially different conclusion, although a site visit would certainly would give further confidence to my conclusions.

HD: Mr. Chairman, Hugh Ducasse, again. One of the statements was made concerning disposal of material in a land-based landfill, as opposed to disposing non-hazardous material in the permafrost region of an underground mine. What are the benefits of the land-based landfill, as opposed to an underground mine?

JB: John Brodie. There's two parts there, I guess. One is the disposal of hazardous materials, and the other was the land-based landfill. I think that if an evaluation was presented which showed that there was no potential for release of hazardous materials after disposal in a permafrost environment, then that would be acceptable, although it is not a standard practice, so I would expect the company to present some rationale as to how they would dispose of hazardous materials underground, if that's what they chose to do, and in a manner that would ensure a permanently frozen containment.

Secondly, with respect to the on-land landfill, my comments there related more to the disposal of demolition waste, and what appears, based on the information provided by Lupin, that it will be difficult to get all the demolition waste into the mine site, so I'm implying there that if scrap steel and other building debris cannot be disposed of underground that it could be reasonably disposed of on-site, and buried on-site.

HD: Hugh Ducasse, again. Thank-you for that clarification. In your report, you subtract an amount of $2.5 million from the Golder report for reclamation of cell #4 which, as you state, does not have to be done because it's not contaminated, right now. According to the Golder report, the total cost for reclaiming the TCA - tailings containment area - is in excess of $15 million. Of that, 28.7% was for cover material in cell #4. How did you

arrive at a $2.5 million figure, as opposed to 28.7% of the total reclamation cost for the tailings containment area?

JB: John Brodie. I took the $2.5 million directly from the 1998 internal memorandum on closure cost as prepared by Lupin.

TK: Any further questions?

HD: Yes, Mr. Chairman. I'm not sure to which memorandum is referring. Hugh Ducasse, again. Sorry. I do have another question. The labour rates that were illustrated in the Golder report were, as I'd mentioned earlier, based on PCL's construction union rates with over-time at anything over 40 hours per week, based on an 84 hour week. The Echo Bay engineering report represented another independent contractor's labour rates, a contractor from the north, Nuna Logistics, which did not have these over-time rates build in, and so, as a result were significantly cheaper, something to the tune of $4.7 million. Why would you select the PCL rates as opposed to the Nuna rates?

JB: John Brodie. It was not clear to me in the description that was provided... maybe I should just back up a little bit, because you asked which internal memorandum I had used, and it's relevant to answering your second question, here. The internal memorandum I referred to is entitled Echo Bay Mines Limited Internal Memorandum Re. Review of Lupin Closure Cost Estimate, and it's dated December 11, 1998. And in that memorandum it does discuss the issue of labour costs, and my interpretation of that discussion was not that a different contractor was providing different rates, but rather that the mine owner would be carrying out the work, and doing the work at salary levels, rather than contractor employee rates, which are considerably higher in most cases.

BD: Bill Danyluk, Chairman. Mr. Brodie keeps alluding to the difference between the company doing the work, as opposed to the Government having to hire contractors to do the work. Within our reclamation plan, a substantial part, or a majority of the work, is going to be contracted out already, and I just wonder why he thinks it would be so much more expensive for the Government to hire this contractor, as opposed to us hiring him.

JB: John Brodie. I believe, if you read my report carefully, you'll find that I have accepted as relatively good estimates the estimates provided by Golder and PCL as being contractor rates for the majority of the work, and incorporating the results of the contract work that was done in covering cells #1 and #2 in the tailings containment area. So I believe those contractor rates are reasonable, and the assertion that's provided subsequently that brings the cost estimate down from the Golder estimate of $29 million to the Lupin estimate of

$18.9 million appears to based on the assumption that demolition work and/or tailings reclamation work is carried out by mine employees, not by independent contractors.

BD: Bill Danyluk, Chairman. During Mr. Brodie's list of his qualifications, he listed a number of mines in which he's conducted similar reclamation reviews, and from the list that he mentioned, to my knowledge, none of them have been reclaimed at this point. And as you can imagine, there's a substantial difference between our estimate to do this reclamation and from the estimate Mr. Brodie has provided. And I would just like to know, if, of the mines he has provide an estimate for, you know, have the final costs come in, and how closely they have come to his estimates, as compared to the estimates provided by companies or the actual people doing the work?

JB: It's a question that I wanted answered for a long time. Unfortunately, the time lag between when people ask me to do these assessments and when the work gets carried out is so long I'm going to have a lot less hair by the time I'm able to say I've got a good correlation there. However, of the ones that I have been involved in, in terms of looking at the original costs and the subsequent cost, it's a bit embarrassing to say that in all cases, I have significantly under-estimated the cost.

BD: Bill Danyluk, Chairman. I wonder if Mr. Brodie could give us some details as to which mines he was referring to the ones that he grossly under-estimated the cost so that we, in turn, could perhaps do some research of our own.

JB: John Brodie. Colomac Mine is one. The Mount Nansen Mine in Yukon is another. The reclaimed or the initial reclamation work that's been contemplated for Giant is another aspect. Brewery Creek Mine in Yukon, where have done some reclamation work. I can't think of any others off the top of my head.

BD: Bill Danyluk, Chairman. Of those examples just listed, I believe Brewery Creek is still mining. Giant, obviously, hasn't even started reclamation, and I don't think Colomac has either. I was just wondering if Mr. Brodie had any other applicable examples.

JB: John Brodie. In terms of complete reclamation, the examples are hard to find, and when I speak from my experience I look to areas where I can identify completed components of reclamation work. So, when I speak, for example, of Brewery Creek Mine, I've been to the site and seen the reclamation work that they've completed on waste dumps and pits there, and I'm familiar with the scope of work there. I've reviewed the degree to which they've been able to detoxify the heath(?) leach pile in some of the cells, and so I have some experience there. Some work at Giant is currently being initiated with respect to the clean-up of hazardous materials, and the extent of petroleum, or hydrocarbon

contamination in soils. As for as the work at Colomac is concerned, and I'm quite intimate with the situation there as the project manager, I am well aware of the Government's cost to deal with the winter road access to the site, the costs associated with the transport of fuel to the site, the costs that we are facing for initiation of reclamation work based on already-bid components of the work. I'm also aware of the significant logistical problems that we're encountering, in terms of the scope of work there, and the ability to carry out work given the degree to which the site has degenerated. That's about all I can think of right now.

HD: Mr. Chairman, Hugh Ducasse. I was wondering where the inflation rate of 4% came from, when the CPI over this period has not exceeded 2.5%?

JB: John Brodie. As I mentioned in my presentation, I do not know what the exact inflation rate is. I'm aware that the CPI is in the range of 2.5%, and due to the recent substantial increases in the price of fuel in the north, I arbitrarily selected an amount that was somewhat higher that 2.5%, and I selected 4% as the basis for my estimate.

HD: Mr. Chairman, Hugh Ducasse. As I'd mentioned in my presentation, we had only received Mr. Brodie's report on March 23rd, and have not had a chance to review it in detail because we haven't had access to our files, which are at the Lupin site. I'm requesting time to review that document and reply in writing to any concerns that we have. Would that be possible?

TK: Would you repeat what you said, please?

HD: Yes, Mr. Chairman. Hugh Ducasse. We received Mr. Brodie's reclamation assessment on March 23rd. At that time, neither Dave nor I were at the Lupin site. I was in Yellowknife and Dave was in Edmonton. In order to accurately review our numbers that we have for our existing cost for reclamation, we need access to our files, and we haven't been to the Lupin site yet. We would like an opportunity to go over Mr. Brodie's report and compare his costs to some of our actual costs that we have incurred at the site, and prepare a written report explaining some of the differences between our report and his report.

TK: The Water Board can grant your request. As I stated earlier, there, we exercise procedure of fairness and natural justice.

HD: Thank-you, Mr. Chairman.

TK: Mr. Lee Webber. Just one moment, please. I didn't see Philippe's hand raise, there. I'm sorry, Philippe.

PP: Philippe di Pizzo. Probably Mr. Webber will basically say what I want to say, is that all parties will have the opportunity to review... to have an extra period of time to review

Mr. Brodie's report, and also to respond to the report filed by Echo Bay Mines, as well. I assume that the Board will establish a period of time later.

TK: Would you request a specific time-frame?

HD: Hugh Ducasse. Is 21 days a reasonable time-frame in the Board's consideration?

TK: At the most. Normally what we do is we grant such a request as yours by 14 days.

HD: 14 days is acceptable. Thank-you very much.

TK: Do you have any further questions for Mr. John Brodie? Are there any question? Anne Wilson.

AW: Thank-you, Mr. Chairman. Anne Wilson. Just a point of clarification of concern to me. It is my understanding from the reading of the current abandonment and restoration plan that all hazardous materials that are not consumed in the mine operations are to be shipped south or otherwise disposed of, not to be put underground or into landfill. Can I get clarification on that, please?

TK: Thank-you.

AW: Either... probably the company.

DH: Thank-you, Mr. Chairman. David Hohnstein. I believe our... I haven't got the actual document in front of me, the abandonment and restoration plan, that's being prepared, but I believe the information in there is proposing that all non-salvageable materials be disposed of in the... and non-hazardous materials be disposed of in the abandoned mine workings. Any salvageable material or hazardous material will be shipped off-site.

TK: Thank-you.

AW: Thank-you. Anne Wilson. Just to reiterate, then, hazardous materials are also to be disposed of off-site?

DH: Mr. Chairman, David Hohnstein. Yes, that is correct.

AW: Thank-you.

TK: Thank-you. I take it that you will naturally supply the information on your research to the interveners and other parties that make their presentations and comments?

HD: Mr. Chairman, Hugh Ducasse. Yes, we will. We'll make it available to all the interveners.

TK: Thank-you. Any further questions?

BH: Mr. Hansen, Mr. Chairman. Thank-you. Just for the people from Lupin, the documents that you have done now turn into questions to the interveners. That is now on record as one of the exhibits. So, if you can get them to us as quickly as possible...

[End of Tape 3 - Side B]

[Start of Tape 4 - Side A]

TK: What we will do for now is that we will adjourn the meeting, and re-convene in the morning with our closing remarks. It's getting late now. We shall re-convene at 8:30 sharp tomorrow morning. Thank-you, and we'll see you in the morning.

PP?: Mr. Chairman, I know for those of us that are living at the Copper Mine Inn, they don't start serving breakfast until 8:00, so 8:30 might be really tight for us to get here. Sorry, Mr. Chairman.

TK: Apology accepted. We'll see you in the morning.

[break]

TK: Good morning. Before we begin, could I ask Kono Tatuinee, Board member, to say the opening prayer please. Thank-you.

KT: [Inuktitut]

TK: Good morning everyone. You will remember that before we adjourned last night we were at... our next item will be final closing statements of interveners and other parties, of course, taking into account matters raised at the hearing. At this time, I invite the interveners. [pause] I am just reminded, here, by Executive Director, for those of you who have not registered, please do so with Rita Becker, Licensing Administrator. Please register, please. Thank-you.

As I started saying, we are now at final closing statements of interveners and other parties, taking into account matters raised at the hearing. So at this time, I invite the interveners and anyone who made a presentation to the Board to make final closing statements, if they wish. And once again, please restrict your intervention to matters under consideration.

Mr. Webber, from DIAND.

LW: Thank-you, Mr. Chairman. Lee Webber. There are a number of points which I'd like to reiterate, with some final remarks. First of all, on the theme of security. We would suggest that the general principle that should guide the Board in setting the amount of security is that there should be no net reclamation cost, or reclamation liability, on the part of the Crown, which is to say, on the part of the public. The amount of security should be set at

such a level that it will cover the costs of reclamation should those costs of reclamation have to be performed not by the company but rather by a third party.

In DIAND's intervention, and in its covering summary of recommendations, # 17, the Board will see that DIAND has proposed that there be a harmonization of the two security deposits, that is, the security that is required under the water license and the security that will be required under the land leases. By harmonization, what me mean is that the two security deposits should add up to the total cost of reclamation. There should be no duplication between the security deposits.

That having been said, we would reiterate that there cannot be, or should not be, a blending of the water license security, and the land lease security. Yes, land and water are related, things that affect land do affect water, and vice versa, but the legislation under which we're all operating does draw distinction between land and water, at least to some extent, and for some purposes. Water boards have authority with respect to water, landlords - and I emphasis "land lords" - have authority with respect to lands.

This Board's authority is to require security for water-related matters, and security provided pursuant to the water license is to be usable for purposes related to the water license. Similarly, the authority of the Crown, as landlord, is to require security for land-related matters, and security provided under the land lease is to be usable for purposes related to the land leases.

Our basic point here, again, is that under current law, it's not appropriate to lump together water-related security and land-related security in a single security deposit.

Now, in calculating the amount of security required, we would urge the Board to omit from the calculation the value of any salvageable assets that might be located at the Lupin site, and the value of any inventory that might be at the site. The purpose of security is to ensure that the costs of reclamation are covered, again, that the public does not get stuck with any portion of those costs. It's unlikely that inventory or salvageable materials would be available to the Crown. In other words, it's doubtful that the Crown would have a legal right to take that property.

For example, there might be others, other people, other businesses, other parties, who would have liens or mortgages or other interests in the salvageable materials or in the inventory. And it might be that those other people... it might well be that those other people would rank before the Crown. When I say they would rank before the Crown I mean that they would have a right to take those materials, to take that property, before the Crown could make any claim to the property.

Beyond that basic legal impediment to the Crown's making any use of salvageable property or of inventory, there would be other difficulties in factoring in to the security deposit, to the calculation of the security deposit amount, factoring in the value of inventory or of salvageable material. For one thing, there would be a question as to whether the Board, at this point, can make any reliable prediction as to what the value of the salvageable material or of the inventory would be at some future time. In other words, at some time, when the Crown would have a reason to go after the property, the seize... to realize on the security, what will the salvageable material or the inventory consist of at some future date? Who will have mortgages or liens on that property at some future date? What will the book value of the property be at that time, and what will it actually sell for? None of these things can we predict at this point.

Beyond this, imposing on the Crown all the practical difficulties of disposing of this material would be contrary to the intention of a security deposit requirement. Echo Bay has pointed out in its submission to the Board, in its written submission, that the Lupin Mine site is 285 km from Kugluktuk, and 400 km from Yellowknife. Before the Crown could do anything by way of recouping value from any salvageable material, or from any inventory located at the site, the Crown would have to transport the material away from the mine site. It would have to worry about preservation of the material, it would have to worry about marketing of this property. All of these things would be very substantial impediments, would decrease whatever value might be in this property in the first instance.

And again, all of these considerations are on top of the basic legal concern, namely that the Crown would, in all likelihood, not have any right to use this property.

We mentioned at an earlier point in the proceedings the idea of putting into the license terms with respect to the powers of the inspector, terms which would clarify that the inspector does have certain powers. What I propose to do, if the Board will allow me, is to read into the record, quickly, the wording of the passages that we would propose to insert. At the same time, I would note that these same passages, the same text, can be found in the submission that DIAND put in for purposes of the Iqaluit application, and that the license produced by the Board in that case, both of those things are public record documents.

What we're proposing is that these terms be inserted - excuse me - in Part A of the license, after what is currently Item #1, so I'll be referring to this new item as Item #2. It's not too long, so again, I hope you'll indulge me.

Item #2 would be headed Enforcement. It would be divided into A, B, C and D. A would read as follows.

Subject to Part A, Item 2-D, failure to comply with this license will be a violation of the *Northwest Territories Waters Act*, exposing the licensee to the enforcement measures and the penalties provided for in the *Act*.

B, subject to Part A, Item 2-D, all inspection and enforcement services regarding this water license will be provided by inspectors appointed under *the Northwest Territories Waters Act*.

C, subject to Part A, Item 2-D, inspectors appointed under *the Northwest Territories Waters Act* enjoy, with respect to this license and for the purpose of enforcing this license, and with respect the use of waters and deposit or discharge of waste by the licensee, all powers, privileges and protections that are conferred upon them by the *Northwest Territories Waters Act*, or by other applicable law.

D, to the extent that the *Northwest Territories Waters Act* is, subsequent to the issuance of this license, replaced with respect to water management in Nunavut by other Federal legislation, including, without limitation a regulation or order referred to in Section 10.10.2 of the Nunavut Land Claims Agreement, and to the extent that the other Federal legislation is consistent with the Nunavut Land Claims Agreement, the other Federal legislation shall apply with respect to this license, and the *Northwest Territories Waters Act* shall cease to apply with respect to this license.

That is the end of wording that we're proposing. We'd be happy to make a copy of that available to the Board and to the other participants.

Those are my closing remarks. Thank-you.

TK: Thank-you. Does Environment Canada, DFO, have final closing remarks?

AW: Thank-you, Mr. Chairman. Anne Wilson. The idea of an environmental trust fund as a means of posting the security for the abandonment and restoration of the site is a new one that just came up yesterday, in the hearing, so I haven't had a lot of time to discuss this with others or find more information. However, I do think it could be a very good idea, in that I'm thinking to the experience with Royal Oak, whereas their security deposits are still tied up, and have not been made available to remediate the sites.

I would like to have more information brought forth by the company on how such a fund could be set up, and maybe have the Board give serious consideration to this type

of instrument as a means by which the Government and the Water Board could access such funds at a time if it became necessary.

Other than that, I have no further remarks, just to thank the Board for this opportunity to present our concerns.

TK: Thank-you very much, Anne Wilson. Mr. John Brodie, any final remarks? Thank-you.

Any members of the public who wish to make a final remark? [pause] Echo Bay, any closing remarks?

BD: Ubalkut. Good morning. Mr. Chairman, Board Members, Elders, interveners and other interested parties, my name is Bill Danyluk. I'm the mine manager at Lupin Mine. I have been with Echo Bay since 1988, holding various levels of progressively increasing responsibility. I would like to thank the Nunavut Water Board for this opportunity to make Echo Bay's closing statement regarding our application to renew our Lupin water license.

As we have stated during our presentations, Echo Bay Mines Limited is very proud of our history in the north. Echo Bay got its start in Port Radium in the 1960s, then continued this early success at the Lupin Mine. From this humble beginning, Echo Bay has build a world-class mining company. During this time, Echo Bay has developed a working partnership with the people of the Kitikmeot region, providing good jobs and training opportunities.

The first IIBA under the Nunavut Land Claims Agreement was signed between the Kitikmeot Innuit Association and Echo Bay Mines for the Ulu satellite property. This Agreement will build even further on this long-standing relationship between Echo Bay and the people of the Kitikmeot Region.

Both Kugluktuk and Cambridge Bay have many satisfied former and current employees of Echo Bay Mines. We are into our second day of public hearings, now, and as of yet there have been no complaints or negative concerns raised by members of this community.

Echo Bay is not the only ones happy about the announcement to re-open the Lupin Mine. We have had many positive... we have had very positive support from all levels of government, the KIA, and many individuals, all expressing their approval and happiness the mine has re-opened.

There has been concern raised by different interveners pertaining to Echo Bay's potential to go out of business, and thereby close and abandon the Lupin Mine. Let me say

that Echo Bay Mines has no intention of going out of business. Echo Bay is in the gold mining business to make a profit at each and every operation that they run.

One reality faced by mining companies, however, is that they have no control over the price of the commodity they produce. World-wide economic conditions produce cycles of both good times and hard times for the mining industry. The last two years have been especially tough on many gold mining companies, Echo Bay included. But Echo Bay has taken necessary measures during the last few years to ensure the future of the company. Some of these decisions, like the decision to temporarily close the Lupin Mine, were tough but necessary decisions to make.

However, after several years of cost containment and restructuring, Echo Bay management now feels that the company is positioned well to move ahead. Echo Bay currently has your operating mines, including Lupin. During 2000, these four mines are expected to produce between 660 and 700 thousand ounces of gold, and an additional 9-10 million ounces of silver, at a consolidated cash operating cost of between US $200 and $210 per ounce. Not bad operating projections for a company going bankrupt.

At year-end, 1999, at its four producing mines, Echo Bay has 4.1 million ounces of gold in proven and probable reserves, including 518,000 at Lupin, and 28 million ounces of silver. At these same four operating mines, in the category of other mineralization, Echo Bay has an additional 1.3 million ounces of gold, including 268,000 at the Lupin mine.

At three exploration properties in various stages of development, including Aquarius in Ontario, Ulu in Nunavut, and Yuga in Burkina Fasso, West Africa, Echo Bay has an additional 1.2 million ounces in the proven and probable category, and 1.2 million ounces more in the other mineralization category. Not a bad reserve portfolio for a company going bankrupt.

During 1998 and 1999, Echo Bay spent approximately $8 million to maintain the Lupin Mine in a state of readiness for eventual re-opening. The re-commissioning costs of getting Lupin back into production will be about $18.4 million, of which most is for inventory. An additional $7.7 million will be spent at Lupin during 2000 on capital projects, the most significant being our wins(?) development.

The wins is an internal shaft which will allow us to mine economically from greater depths at Lupin. This project, which has already started, will extend the life of the mine significantly. Employees have been hired, the mine and mill have been commissioned, and we expect to be pouring gold early this April.

Do these actions by Echo Bay look like the activities of a company planning on abandoning the site? I will let you make up your own minds on that.

Echo Bay Mines fully agrees with the Nunavut Water Board and other interveners that $1 million is not a sufficient amount to past as security against the cost of closure reclamation. In 1990, Echo Bay was required to post $400,000 as a condition of the water license renewal at Lupin. In 1995, the figure was raised to $1 million. Based on this past history, Echo Bay anticipated an increase of a similar magnitude as a condition of our 2000 water license renewal. We do not feel that a policy requiring full-cost reclamation recovery up-front should be applied to any pre-existing mine. Especially should it not apply to an operation such as Echo Bay's Lupin Mine.

For the past 36 years, Echo Bay has proven over and over again that it is the type of company that takes its environmental responsibilities seriously. Echo Bay has a proven track record of cooperation, compliance, awards, recognition, and good operating practice. Echo Bay has fully reclaimed five different mines. The Kettle, Key West and Key East mines in Washington State, the Borealis Mine in Nevada, the Port Radium Mine in Northwest Territories. A sixth mine, the AJ, in Juno, Alaska, will have reclamation completed this summer. Three additional mines, Manhattan in Nevada, Sunnyside in Colorado, and Overlook in Washington State, are presently in the final stages of reclamation. All four of the current operating mines, including Lupin, practice active, progressive reclamation.

A review of the Lupin Mine abandonment and restoration plan, and reclamation cost estimate, has been presented by Mr. John Brodie. While he does state that our A&R plan, and I quote, "presents a reasonable approach for the management of the potential impacts which may arise after closure of the mine," we believe the bulk of his report to be riddled with inaccuracies and poor research. Mr. Brodie readily admits in his report that he was not even... or he has not even inspected the mine site. I might also add that, to my knowledge, neither has Mr. Brodie consulted with Echo Bay employee, except for the Mike Tansie(?) report, to obtain additional information to substantiate his report.

Within 14 days, we will further review Mr. Brodie's report and submit our report, in turn, to the Water Board. However, the large gap between the Echo Bay Mine estimate for site reclamation costs, as compared to Mr. Brodie's, compels me to comment further. It is precisely this type of reporting that promotes a general fear and mistrust about mining companies. Early in the game, as the problem was coming to light regarding the clean-up at the Giant Mine, I came across several published quotes in the range of $500 million to

$1 billion. I think we have all generally accepted the actual cost to reclaim the Giant Mine will be very much lower than that. However, a lot of fear-mongering and damage to the mining industry had already been done. These types of self-serving scare tactics serve no useful purpose.

Furthermore, we find it both unfair and offensive to be categorized along with operations like Giant and Colomac, where the company involved has neglected their reclamation responsibilities. Those types of operations make it hard on the entire industry, as well as for the Government. Echo Bay accepts that pressure is being put on various levels of government, and onto regulators, such as the Nunavut Water Board, to ensure that this type of poor operating practice does not happen in the future. However, we urge these same regulatory bodies to look at each case on an individual basis, taking into account all pertinent factors. All mines are not the same.

Between care and maintenance costs, re-commissioning costs, and the capital spending scheduled for 2000, to ensure the long-term viability of the operation, Echo Bay will have spent approximately $34 million on the Lupin Mine. The gold price is still well below US $300 per ounce. Echo Bay wants to operate the Lupin Mine. We believe the government of Nunavut and the people of the Kitikmeot region also want the mine to operate. However, Echo Bay can only afford so much. A large - and we believe unwarranted - up-front security deposit may prevent this from happening.

Echo Bay has table what we feel to be an acceptable solution to this potential stand-off by proposing the establishment of a reclamation trust fund. In fact, such a trust fund is listed as a option under our current water license, signed by both the Minister of Indian Affairs and Northern Development, and the Chairman of the Northwest Territories Water Board. Part B, General Conditions, Item #3 reads, and I quote, “a reclamation trust fund may be established during the term of this license. The licensee shall implement the terms of the Trust Agreement as approved by the Board.”

Since this condition is part of our existing water license, we anticipated that DIAND, and now the Nunavut Water Board, replacing the Northwest Territories Water Board, would be amenable to entering into such an agreement. At this point, Echo Bay has tabled what we feel is a very adequate proposal, a proposal that would satisfy the requirements of the Nunavut Water Board and DIAND for reclamation security, as well as one that Echo Bay could afford.

Echo Bay Mines does not want to draw from the trust fund for progressive reclamation purposes. Echo Bay will continue to fund progressive reclamation at Lupin by

other means. We would propose to use the money built up within the fund only once final closure reclamation has commenced.

A number of points have been raised during the hearing pertaining to issues such as taxation of the fund and the relative merits of salvage value as an acceptable means to reduce our reclamation liability. Echo Bay maintains that salvage value should be considered in this regard. Such points are important for the Water Board to consider, but should not make the trust fund concept unworkable. Cooperation between all stakeholders can make this proposal work to everyone's benefit. An arrangement similar to the one proposed by Echo Bay is apparently in place at the Nanasivik Mine, whereby that company places $1 million each year toward reclamation.

We propose a similar amount on a yearly basis, but for a longer period of time. Several interveners have suggested that we will require cell #4 of our tailings containment area for tailings deposition. If this in fact is true, it will most likely be because we have found and mined additional reserves at Lupin, or that Ulu has gone into production. In our opinion, both of these scenarios are high-class problems for Echo Bay Mines. If Kimber Lake tailings are ever to be deposited within our tailings containment area, Echo Bay Mines fully understands that we will be required to apply for an amendment to our current license. Our current abandonment and restoration plan calls for reclamation of cell #4 by the use of a water cover, not an esker cover. Even allowing that same deposition of solids has occurred by virtue of using cell #4 to transfer water between cell #3 and pond #1, a permanent water cover will be adequate to prevent acid rock drainage.

Much additional sampling and analysis information has been recommended by interveners to obtain information that would prove interesting or otherwise useful. I would like to say that for the most part, this additional information has no practical usefulness to Echo Bay Mines. If this information is truly required, perhaps joint study programs between Echo Bay Mines and the interested parties can be established.

We have repeatedly heard that each additional test is either easy to get or is not too costly. However, a little here and a little there can soon add up to significant dollars. We have just spent two years re-engineering the Lupin Mine to reduce our cash operating costs to enable Echo Bay to re-open the property. We lowered our cash operating costs by over $13 million by cutting a little here and a little there. Cost containment is crucial if the Lupin operation is to remain viable. We do not want to lose hard-fought ground unnecessarily. Echo Bay Mines would urge that all level of regulatory jurisdiction be cognizant of this fact.

In summary, Echo Bay Mines feels that our water license should be renewed with minimal additional restrictions. Our exemplary record of environmental compliance at Lupin speaks for itself. Echo Bay Mines is a company that takes this environmental responsibility seriously at all of its operations. Echo Bay Mines strongly urges that both the Nunavut Water Board and DIAND seriously consider and accept our reclamation trust fund proposal, and that we begin dialogue as soon as possible to work out the details of this proposal.

Mr. Chairman, on behalf of Echo Bay Mines I would like to thank the Nunavut Water Board for this opportunity to present our application for renewal of the Lupin Water license. Quyannamiik. Thank-you.

TK: Thank-you very much, gentlemen. Now that we have concluded interventions on Lupin Mine, we will now take a 15-minute break before we deal with the Ulu application. However, this hearing is not over because we still have to do the Ulu application, but let's take 15 minutes before we deal with that. Thank-you.

[break]