MACKENZIE VALLEY ENVIRONMENTAL
IMPACT AND REVIEW BOARD

TECHNICAL SESSION FOR
PRAIRIE CREEK MINE

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HELD AT:

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Day 1 of 3

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Frank Palkovits	)	Mine Paste
Monique Dube	)	Engineering

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THE FACILITATOR: Because we've begun a bit late, I'll quit there, basically. And I'll turn the mic over to Canadian Zinc Corporation and let them introduce themselves, first of all.

MR. ALAN TAYLOR: Hello. Everybody hear me okay? Good. Well, good morning, ladies and gentlemen. My name's Alan Taylor. I'm the COO of Canadian Zinc Corporation. We've been working with Prairie Creek for many years now, and it's good to see that we finally are advancing through the operations applications here. And -- and I anticipate a good, constructional three (3) day session. Then, hopefully, it will alleviate all concerns and issues, and we can move this project forward in a -- in a timely manner.

I do have with me some of my colleagues. To my left is Dave Harpley. He's the lead for the environmental assessment here, and he'll be doing the majority of the discussions and leading here.

I also have my colleague, Chris Reeves, Joseph Lanzon, Wilbert Antoine, and our -- our chief from Nahanni Butte and our rep from Nahanni Butte, Jim Betsaka. Thanks to them for coming. And we have a number of consultants that are available from time to

time whenever necessary. And I have one (1) in front of us today, Byard MacLean. He's lead engineer from SNC-Lavalin. He's been helping us out with various aspects of the operation, and he should be able to address any of your questions, hopefully, too.

So I'll look forward to a productive session here. And, with that in mind, I'll thank the Board, and let's move ahead.

THE FACILITATOR: Thank you very much. So we'll begin with our agenda -- the first agenda item, which is spe -- the access road, and, specifically, access management for the road. I know people from INAC are specifically here to address this item, and -- and so I'd like to hear from them, please.

And there's a microphone that will be passed around to the tables, as well as a standing mike for those who prepared -- prefer to stand. So I'm not going to pick on anybody to start, but whoever would like to start, please start.

(BRIEF PAUSE)

MR. PETER REDVERS: Peter Redvers. I'm helping to represent the Naha Dehe Dene Band on -- with respect to the EA. If I just maybe put the -- the issue

of access in context before Darnell speaks, and that way, I think, what he'll be speaking to might make a little more sense.

There has been, certainly, agreement between Canadian Zinc and the Naha Dehe Dene Band that the preference is to have limited access and controlled access to the road.

There seems to be some empathy for that among some of the other agencies. Certainly Parks, we understand, will be controlling access of their boundary or looking in that, but have some interest also in, perhaps, having the control further towards the Liard Highway, on what are now considered to be, or viewed legally as, Crown lands.

So we pursued that. The Naha Dehe Dene Band pursued that in cooperation with Canadian Zinc and in meetings with the regulatory agencies to try and find out whether or not that is possible.

The current legislation doesn't allow for restricting access on what would be considered a public road on Crown land, even though it is being constructed by Canadian Zinc. Once constructed, apparently it is designed a -- reviewed as a public road, and, there -- therefore, access can't be restricted.

We looked then into the idea of leasing of

the Naha Dehe Dene Band, or directly, or through the Tthenaago Development Corporation, leasing a large area of land. I don't know if my little pointer will go quite that far. A little too far, I guess. Oh, did I get you in the -- yeah, right in around.

There's interim land withdrawals, a large area in here that falls under interim land withdrawals under the Deh Cho process, and there can be no leasing or -- of -- of lands in that area. So once you move along the base of the -- the Nahanni range there and get just outside of that interim land withdrawal area, the Nahanni Butte Band was looking at leasing a fairly large area, and, therefore, trying to control access by having a lease on the land. But in discussions with INAC it became clear again, looking at the legislation regulations, that the leasing would not allow for control because the road through the lease would still be deemed as being non-leased lands, crown lands, and, therefore, it would still be a public road.

Now certainly there has always been the option and is the option of establishing what would be referred to as a voluntary checkpoint, and Canadian Zinc could set that up. It could be set up, again, as a partnership between Canadian Zinc and the Naha Dehe Dene Band.

It is voluntary, however, and, therefore, people could still come on that road and would not have to stop or -- but at least there could be some monitoring. We also learned that there could be posting of some fairly strong warnings, signs at that point, basically trying to, in essence, scare people away by indicating that there would be no support services, no towing services.

Parking could per -- perhaps be restricted along the road or at the turnoffs that the trucks would be using to pass each other, et cetera, so, basically, letting people know that if they go on the road they're on their own, period. And that might certainly restrict some people from making the decision to go on it.

But the other thing, and the last thing we looked into as an option, was for the -- the band through -- again, possibly through Tthenaago, the development corporation, to purchase a section of land immediately outside of the interim withdrawal area, and, by doing so, negotiate a simple access agreement with Canadian Zinc through that area and be able to at least set up a checkpoint for that particular section of the road.

And, obviously, if that first or preliminary section of the road is controlled, then the rest of it is essentially controlled, as well. So where

we left off, I guess, is that we had put -- sent a request, I guess, to INAC to look into whether that was an option, and also table any other options that might be possible. And I believe that is what Darnell is going to be speaking to this morning.

So, hope -- hopefully, that provides a little bit of the context in which INAC has -- is speaking from at this particular session.

THE FACILITATOR: Thank you. A followup question.

MR. DARNELL MCCURDY: Good morning. I'm Darnell McCurdy. I'm the Director of Operations for Indian and Northern Affairs Canada. The Land Administration Unit falls within my directorate, so I will attempt to answer Peter's question. In a general comment, the summary that Peter provided is correct. We've looked at those options that he discussed, and the answers were given, and those were the correct answers.

In a general summary, there's -- there's really nothing in regulation that would prevent the Development Corporation from purchasing land, that -- that parcel of land. However, there's -- there's a number of principles that INAC has to follow.

The first one is that we dispose of territorial lands to meet -- to meet the legitimate needs

of the people and institutions living and conducting business in the north.

The second is an important one when it comes to land purchasing. Purchased land becomes fee simple, and that is the highest ownership that you can have. And, as an owner, you have the ability to do with it what you like. So the second principle is to protect the environment by regulating and controlling activities and operations taking place on territorial lands.

Fee simple ownership would prevent that type of regulating because there is no ability for INAC or any other regulator to step in and say, You have to do something. It is your land. You own it.

The third principle is that we provide lands to the territorial governments and other government departments and agencies to enable them to carry out their legislative mandates.

And the fourth is that we ensure that, in disposing of the lands, consideration is always given to the question whether or not action impacts a special fiduciary relationship with government with aboriginal peoples, and that's all aboriginal peoples.

The -- these principles are applied throughout the Northwest Territories, not on a case-by-case basis, so it is something that INAC takes very

seriously. In the end, the -- the Application may end up having to have an easement put through because the road is an existing entity and it's similar to any easement that you end up with in the City of Yellowknife.

On my private property, I have an easement for a public utility which allows the power company to come on my property whenever they see fit to do work related to that utility. So there may be that requirement that's -- that is there anyways, as an existing third party interest already there.

Ultimately, we have to look at whether there are other options to take care of the concerns that Naha Dehe Dene Band has brought up. If it's a wildlife concern, we may have to look at wildlife considerations through other government agencies, other regulatory authorities.

Gating is not the only means to control the actual impact that is being indicated, which is a fear of the -- of wildlife impacts. So I think that there -- there needs to be some additional thought put forth to consider, with other regulators, alternate methods to meet the requirements that Nahanni Butte is putting forth.

THE FACILITATOR: Chuck here. Does anybody have a follow-up response to that?

MR. PETER REDVERS: Yeah, just for clarification, I guess, Darnell. The route that is -- over which -- or the area in which the purchase might occur or might be proposed is not an existing right-of-way because it's the -- it's the newer area and there haven't -- hasn't been particular interest granted in that at this point in time. So it wouldn't be on the current corridor. It would be in -- in the area of the proposed realignment.

So I think an argument could be made that there isn't -- isn't, in fact, an existing interest in that. The issue, and I'm glad you raised the issue of looking at alternate methods, including, you know, perhaps looking at protection of wildlife. When one moves into having to, in essence, restrict harvesting, then the -- you've mentioned the fiduciary responsibilities, Darnell, that INAC has, and the Section 35 responsibilities are quite -- certainly -- and the need for consultation on that are quite significant.

And I would suggest, and I think we -- we have had that discussion, that trying to put any kind of a restriction on -- on harvesting using the -- the available sort of Wildlife Act and other tools would be highly problematic, and would be much more difficult.

Recognizing that even, you know, a

purchase, that there are some fiduciary responsibilities, basically, Section 35 interests that might be affected by removal of a -- in the grand scope of things, a relatively small parcel of land would likely require a lot less consultation, and certainly, because it's clearly within the Nah Dehe Dene primary land use area, may not be problematic and mi -- might be a much more easier route to go in terms of INAC Section 35 responsibilities and dealing with those.

So the wildlife one, I -- you know, we've looked at it. Again, would likely be very problematic. So what I'm hearing is that, in principle, it is possible to pursue the option of purchasing; that there would need to be some consultation.

Because there is a proposed route, one would assume that Canadian Zinc would have input into that as they do have an interest, an -- an expressed interest, in the land, even though it's not consolidated in any way, but I -- I don't think that would -- would be a problem. I'm sure that issue could be resolved or worked out.

And as far as the other points that you mentioned, I'm not sure that they -- any of those would really create problems, depending on the nature and wording of the -- of an application. So what I'm hearing

is it -- it might be worthwhile to pursue that as an option. Correct me if -- if I'm wrong or if you were listening to all those points to try and dissuade the community from pursuing that option.

THE FACILITATOR: Thank you. And that was Peter Edwards for the transcription record.

MR. DARNELL MCCURDY: Thanks for your question, Peter. Darnell McCurdy with Indian and Northern Affairs.

As I indicated, there's nothing in regulation or legislation to prevent it. I didn't indicate that, in principle, it's a good idea. The proposed route has not even been determined yet by Canadian Zinc so to -- for INAC to accept any type of application on a proposed route, we would not do that. There's no guarantee that that road is going to go where it's going to go.

The other thing is the Dehcho Land Claim process is in place. There's been an order in council to withdraw lands and the idea of a development corporation purchasing additional lands is one that is not acceptable. If there was concerns in the lands that have been withdrawn, then that should be included in the Dehcho process.

So while I said there's nothing in

legislation, there are processes and procedures that we will follow and, though there may be the ability to apply, there will be checks and balances put in place that may end up rejecting that particular application.

THE FACILITATOR: Thank you. Comments in the back?

MR. JOE ACORN: Joe Acorn, Dehcho First Nations. I just want to understand you a little bit better. You say legislation prevents you from preventing access to the road, and you mention these principles. What piece of legislation, exactly, is it, and why can't you change that legislation? Legislation changes all the time.

So, I mean, the MVRMA is going through another round of amendments now. So why not make that switch? Because this concern isn't a project-specific concern, this project -- this issue has been raised with Paramount Cameron Hills, it's been raised with the pipelines, been raised in projects all over the NWT. So why not fix it by fixing the legislation?

THE FACILITATOR: Thank you. A response, please?

MR. DARNELL MCCURDY: Darnell McCurdy with INAC. Fixing legislation isn't as easy as saying, Fix it. We have political masters and we have

parliamentarians who decide what and when is going to get fixed, and the Territorial Lands Act is not an Act that is up for any type of updating or renewal.

MR. PETER REDVERS: Thanks, Darnell. I'm not sure we're going to fully debate and resolve this at this particular session, and certainly that's not the intent. But, just for clarification on the land withdrawals, the land withdrawals were specifically around conservation lands and, certainly, the land withdrawals don't represent what would be a full land quantum under the Dehcho process. So -- so, certainly, Dehcho is not limited to land selection if they go that route on -- on -- simply on the -- on the interim on the withdrawn lands. Those are, again, primarily -- were put in place as a conservation measure.

So all I'm hearing, I guess, is that, simply put, is that if, in principle, and there isn't legi -- if there isn't legislation or regulations that restrict, in principle, the Nahanni Dene Band applying for a section of land, irrespective of what it's going to be used for, for economic development purposes outside of the interim land withdrawal, then certainly the Band can initiate that process and then that can get tested and -- under the principles that -- that might apply, and processes can kick in that would allow for those kinds of

issues to be -- to be resolved.

So that is something that the community is -- is going to have to reflect on and consider in terms of where that would lead, as opposed to trying to pursue some sort of wildlife restriction which I -- again, I think it would be really, really highly problematic and -- and much more complex than this process. But, for now, certainly, the intent here was to at least get a sense of what the options are, legally, and then for the community to -- to reflect on those and to determine whether or not one of those might be pursued ,gain, respecting the fact that the final fallback is -- is a voluntary checkpoint with some, you know, fairly strong language in terms of people using that road at their own risk, which can also have some effects as well, there's no question about that.

So, at this point, if you have any more comments, I think we certainly understand what the issue is and where there may be some options, and it's a matter of reflecting on which one the community may want to pursue.

THE FACILITATOR: Thank you very much. Does the developer have -- oh, sorry.

MR. DARNELL MCCURDY: Darnell McCurdy with INAC. Just as clarification, the interim land

withdrawal for the Dehcho is a land selection process, not solely for conservation from an INAC point of view. It is to take care of the concerns that have been raised in the aboriginal and treaty rights that are in that area. So, in fact, it is to deal with this type of thing, not just conservation.

MR. ALAN TAYLOR: It's Alan Taylor, Canadian Zinc. Just to make a quick comment on -- on this debate, which won't be resolved today, but, you know, just from a logistical, practical, operations perspective, the company needs access restriction, and that's just to preserve the integrity of the operation and avoid any safety issues and what have you, and that -- that -- we -- we do need that. And that will be enforced in some -- in some way, shape, or form, and maybe -- maybe, perhaps it can play into and int -- integrate with Nahanni's wishes and such, too.

MR. DARNELL MCCURDY: Darnell McCurdy with INAC. Thanks, Alan.

Access to federal crown lands to the public cannot be restricted, that is something that has to be understood. Federal crown lands are available to every member of the public and, as the government is representing the people, the crown lands are the people's lands. They have the ability to access them.

There are no other licences of occupations in the Northwest Territories that allow for any type of access restriction. The winter road that runs the -- up to the go -- the diamond mines has no restrictions. They have voluntary monitoring stations. This is a common, standard practice that is applied throughout the NWT, period.

And every industrial road that is being developed is being treated the same way. Ultimately, at the end of the day, under section 44 of the NWT Act, existing roads are the GNWT's responsibility. The GNWT is not taking authority over those roads yet. And, in the absence of that, we have a choice. INAC can walk away and there will be a regulatory hole where there is no governance, no regulatory compliance, no enforcement, or INAC can step in and make sure that the environment is protected through a regulatory instrument. That's kind of where we sit with this at this point.

We are working with I -- GNWT/MACA to allow them to develop their processes and policies and -- and instruments so that they will take over these roads in time. But in -- until that happens there is a loophole. And it's up to us, as people in the NWT, as companies with social licence, and as others, to protect the environment through a regulatory instrument. If

that's not the way that -- that the people want to go, then we can revert to a different manner, a different method, which will see there being no regulatory instrument for that road.

So that's the point we sit at. INAC is not going to allow access. We're not going to step away from our standard practices that we apply consistently throughout the NWT, where we have an interim land withdrawal, we have a Dehcho process on the go to allow a road to be restricted in access.

I honestly think that we have to look at other methods of taking care of what is concerned, which is -- which is wildlife. And I honestly believe that if wildlife is that concern, you deal with it specifically, not use a Bandaid approach to present -- to prevent wildlife harvesting by putting a gate in.

MR. ALAN EHRLICH: Before I move the mic any further, I just noticed that -- and that diverges from the subject -- but there are a lot more people in the room than there are names on this list. Our transcripionist in Calgary, later on, is going to be trying to capture and attribute every statement that's made here. It makes her life much easier if this is complete. I'm going to circulate this while the comments are going. I hope it's not a disturbance. But just

look, and if you're name's not on this, please put your name on this.

THE FACILITATOR: Thanks very much, Alan. As a followup to those -- these remarks, and they've been well laid out, I'd just like to mention my -- my experience, work experiences in the Yukon.

Pre-devolution, there was a mine called Kudz Ze Kayah. It's a lead zinc mine. In that instance, a lease was granted for the road by INAC, and they found a way somehow under the Territorial Lands Act to make that happen. And I don't know -- I was with the Yukon Government at the time. I'm not quite sure how -- how that was actually put into -- into being, but it was -- it was -- it's an INAC lease in the name of Cominco and it still sits there.

And the purpose of the lease was, specifically, to protect wildlife. So while it may not have been done in this territory, across the border a way was found to have a lease on federal land for an industry-specific access road.

Post-devolution, a similar lease has been placed on the entrance to the Wolverine Mine, as well, also in the Yukon. So, just as a note, that -- as -- as a followup to those comments.

Any other comments on access management?

UNIDENTIFIED SPEAKER: We've got a comment right here. Please start with your name.

MR. DAVE HARPLEY: Dave Harpley, Canadian Zinc. Obviously, what we're looking for is access to the site, control of that access if possible, and minimizing impacts at the same time.

But I think we have to recognize what it is that access entails. From the Liard end it means the road is available for approximately two (2) months of the year. And -- and when it's available it's in heavy use. There is a lot of traffic on that road, something in the order of forty (40) or fifty (50) trucks a day. So it's going to be a busy road. And it's only going to be a single lane with turnouts.

In addition to that, I think we also have to think about what kind of impacts are possible. Bear in mind that, as far as non-aboriginal access, they can only basically go to the park boundary. So it's the -- the first half of the road.

In terms of wildlife, we know from our data that we're not looking at high numbers of animals along the road corridor. They're certainly there, but they're not -- it's not a high traffic area. There are some moose in the area. I imagine Nahanni Butte people will have opportunity for harvesting, and let's perhaps

consider that first opportunity, because we fully expect the Band to be involved in road construction and road management in terms of security.

In terms of caribou, again, our information indicates that while there may be a few caribou in the area, it's certainly not an area where we see great numbers of a particular herd. So that's kind of the backdrop. We, as a company, would prefer if there was a regulatory instrument to restrict access, but, at this point, it seems that's problematic either from a legal instrument or from a wildlife specific instrument. Both require a fair amount of work and consultation, what have you.

I guess what I'm saying is, as a company, we don't mind either of those approaches, but I'm not sure that we feel either one is specifically necessary for protection.

We know we -- at this point we can't stop people using the road, but we can certainly do as much as we can to deter people from using the road, both aboriginal and non -- non-aboriginal, with assistance from folks from Nahanni Butte and literally point out to people that it's a very busy road, it's a dangerous road, you really don't want to be on it.

And I can't honestly see that a lot of

people would want to use it given that fact and given that their opportunity for wildlife harvest is probably going to be fairly limited fairly quickly.

So, as a company, I guess we're saying that we would support an instrument if there was an opportunity for it to be brought forward, but at this point we want to move forward on the basis that we're not sure it's essential, and we'll do our best to -- to manage the road, to minimize impacts and promote safety. And that's basically where we feel we're at.

MR. MIKE SUITOR: Mike Suitor, from Parks Canada. I felt I should speak up here and give you what Parks' perspective has been on the access issue. This is -- is a matter that is of concern to us to some degree. Obviously, we have nothing to do with controlling access outside of park boundaries.

At the park boundary our -- our intent is to, at the very least, deter access using motorized means, and we'd probably do that via a gate of some sort. Unfortunately, most of us that have worked with access control know that gates aren't very effective. They just keep the honest folks out. So there -- there is some issues associated with that and -- and we are aware of that.

That's one (1) reason we've been

interested and wanted to be involved in -- in problem solving on this, just because we can come up with an effective means of -- of managing access. It will -- whether it's in the park or outside the park, it -- it helps us address our concerns within the park.

Speaking to some of what those concerns are, we do have concerns about -- about wildlife and fisheries, of course. You know, we're talking about an area that really has no access into it, and now we're -- we're dealing with, at the very least, improved access.

Concerns such as damage to the landscape from people getting off the road is -- is a possibility. If folks are accessing it during non-frozen periods, then there's potential damages that could occur to stream beds and banks during crossings.

We also need to consider that this is a mine development and mine developments every once in a while do shut down because of low prices, what have not, and you will now have an access road pushed that -- that is accessible. And that means that in winter you may not have vehicles on that road, so there -- it -- it does provide an opportunity in -- in some cases, or it may, at the very least.

I -- I also would tend to remark that I don't quite believe that the access road is only going to

be accessible for two (2) months. I -- I've taken a good look at the access in that area, or the proposed route. It's on fairly dry terrain. And I think once that road is in, it -- it's going to be quite accessible without a doubt, so people will be able to move up that road. And we do need to consider that.

As -- as far as I'm aware, talking to various people from the community, people do use the old alignment right now, although I think they do so probably with great difficulty because it is through wetland country and it's grown in quite considerably, but this access route will be much more direct on drier terrain.

Specific interests of wildlife, I -- I -- you know, to some degree I'll -- I'll hold my comments until we discuss wildlife, but my specific concern, even though it's not my jur -- jurisdiction, in this area would have been sheep.

Sheep are a species that there's not a single access road in the no -- in the Northwest Territories that directly accesses sheep habitat, and this will be probably the first I'm aware of.

So I -- I guess where I'm going with this is, as we move forward, we may or may not be able to come to a solution on this probably definitely not during this technical session. But when we start at least assessing

the impacts of access on various components within the system, be it wildlife or fisheries, I -- I would like to see access considered a little more readily in -- in terms of impact, because I don't think that it's going to be an easy solution, you know, and I think our conversation today has -- has, you know, supported that conclusion.

MR. ALAN EHRLICH: Alan Ehrlich with the Review Board. I'm going to take this opportunity to pipe up a couple of comments that I think people should bear in mind throughout this session.

One (1) of them is: Although there's a possibility of a second round of IRs, there's no certainty of a second round of Information Requests, which means that this may be your last opportunity to get the information you need to prepare your arguments for the Hearing.

I just encourage everyone in the room to take the opportunity seriously and make the most of it because, next thing that happens, you'll have the actual Board members who are making a decisions on this listening to you.

So if you do have issues here that you want to discuss, you need more information either from other parties or from the developer, please take the

opportunity. This is being done well with the road, but I just want people to remember the context of this session.

Another thing that I'd like to remind the developer and other parties is that, yes, if this mine proceeds there will be regulatory processes. However, unless this -- if there are significant adverse impacts that are likely, in the Board's view, and these are not mitigated, the project will not be going ahead to regulatory. So regulatory -- relying strictly on regulatory instruments to resolve impacts is not satisfactory if those are deemed to be significant impacts.

I'd encourage parties to remember the impacts you want to focus on here are the ones that you -- you view as potentially significant, and I'd encourage the developer to remember that those -- the potential significance of those impacts has to be dealt with during environmental impact assessment.

The regulators are only legally permitted to deal with projects for which the Review Board does not feel there are outstanding significant adverse impacts.

So I just want to provide a bit of context, both to the session, practically, and in the -- the -- the legal setting here. And back to you, Chuck.

Correction, back to Darnell from INAC.

MR. DARNELL MCCURDY: Darnell from INAC. Just to follow up with Chuck's comment on the lease in the Yukon, we have to realize that the -- there is an OIC here, and the OIC for the interim protection prevents any type of issuance of this -- or any type of disposal of land. And a lease is a disposal of land.

So though there may have been a lease issued in the Yukon, we're dealing with a different set of circumstances here because the road originates from the Liard Highway and runs through the OIC, so it's not the same circumstances that were found in the Yukon.

So though there was some type of -- of instrument put in place, we don't know the -- the background and the circumstances and the decision-making process that went behind allowing that lease to occur.

That being said, though we're both bound by the Territorial Lands Act, we -- or we were, when there was -- prior to devolution, we still have our processes and practices that we have to follow.

And I outlined those four (4) prac -- principles and those are still the things that we follow through with. And we have to make sure that we take into account that OIC which prevents the withdrawal -- or, sorry, the withdrawal which prevents the disposal of

lands.

THE FACILITATOR: Thanks very much for that clarification. I appreciate it. That's Chuck Hubert. Comment from Peter.

MR. PETER REDVERS: Peter Redvers. I lied when I said I wasn't going to speak again.

Darnell, just for clarity on that, recognizing that the first portion of the proposed realignment is in land withdrawal areas you mention, certainly, and we're very clear on that, but that the fact that it is within a -- an interim land withdrawal under an Order in Council prevents you from granting issuance in terms of either, certainly, a lease or purchase.

But in terms of the use of a road, I mean, under that Order in Council can that section of land be used for the purposes that are being proposed by Canadian Zinc under -- with the realignment of the road or is there anything that would prevent that happening?

I -- I'm -- you -- you've -- you have raised some issues to do with the OIC and perhaps if you could clarify whether or not there would be any extraordinary steps that would have to be taken in order to use that portion of the road, proposed road that's in the OIC, covered by the OIC, for the purposes of a -- of

a mine haul.

Some clarity on that would be useful. I don't know if Canadian Zinc has pursued that at all or looked at that. So if you have it now, that's fine. If not, that's something we would -- we would certainly need to know.

Again, we do note that if there was to be a lease or a purchase by the Band or Tthenaago, it would be outside of the interim land withdrawal area, it wouldn't be within it, so it wouldn't be covered directly by the OIC.

And just one (1) quick point, Alan, with the point you raised, is that we recognize that there isn't a -- there may not be a second round of IRs in the technical hearing and certainly the opportunity to speak. My understanding, though, is there's still a community hearing and certainly the opportunity for the community at that time, if some of these issues haven't moved a little further along, and to articulate impacts or potential impacts, as -- I'm assuming that's correct.

So there still is that forum, from a community perspective, at least, to continue to raise and -- and perhaps speak to where this particular issue is at, at that time.

MR. ALAN EHRLICH: Alan Ehrlich for the

Review Board. Yeah, that's right, Peter. There will be the hearing but, ideally, what you have for the hearing is you've already figured out where you stand on what issues and you know what you want to persuade the Board for to do that. If you need additional information to formulate your arguments, I was encouraging people to -- to work hard to get the information they need at these sessions, as an opportunity.

But you're -- you're absolutely right. At the hearing there are opportunities to question but by that point, hopefully, you're not -- you know, it's not likely you'll still be putting together your argument, you'll be making sure the Board understands your argument.

I'm -- I should also point out, if anyone here is as desperately reliant on caffeine as I am, there's a substance that's a lot like coffee in the tall carafe at the back now. We apologize that that wasn't ready beforehand and if you need to quietly slip over there and fill a cup, you know, we -- we do understand.

Next speaker?

MR. DARNELL MCCURDY: Darnell McCurdy with INAC. To answer your question, Peter, in general terms the construction of a new road, whichever route Canadian Zinc is going to go, would be done under a land

use permit. A land use permit is not considered a disposal and, therefore, it would be allowed under the OIC.

THE FACILITATOR: Thanks very much. Any further follow-up questions on access management? If not -- oh, sorry. Please.

(BRIEF PAUSE)

THE FACILITATOR: Go ahead.

CHIEF FRED TESOU: Good morning. My name is Chief Fred Tesou from Nahanni Butte. And the reason why we want to control this road is because this is our -- our yard, this is our back yard. We have to live there, me and kinder, both from the community, and this is our land and we need to protect it. And, you know, we need to control it. And I know, there's regulations and there's a lot of stuff but this is our land. We have to live there all our life, our children has to live there.

Oh, just to make one thing clear, is that we -- we need to protect it for people going in there and we need to control it. This is our community, this is our land. I just want to makes -- make it clear to you guys, we -- where we stand from Nahanni. Thank you.

THE FACILITATOR: Chuck Hubert. Thanks

very much. Developer?

MR. DAVE HARPLEY: Dave Harpley, Canadian Zinc. Mitigation was mentioned a few minutes ago and I -- I don't want to go through this in detail but I just did want to cover a few points, the -- the biggest one of which is, this is currently the -- the eastern end of the road. And if you can follow my pointer, this is the old winter road going around the Granger River (phonetic) here out to the highway.

And what we propose to do is to realign the road to come along the -- the lower slopes of the Nahanni Range here towards Nahanni Butte.

To me, this is the biggest single mitigation that we are implementing because we are bringing the road closer to the community, not through the community but closer, so that the community is much better able to police the use of the road and monitor it, and also take advantage of the benefits that would accrue from their proximity to it.

So I kind of see this as the biggest part of our mitigation, to -- to -- to really bring it into their backyard, as it were, as opposed to being further out where there -- it's much more difficult for them to control.

In addition to that, we've talked about

control points, monitoring signs and what have you, and we'll -- we'll look at that in more detail. But I just wanted to point out what I thought is the biggest mitigation at this point.

THE FACILITATOR: Thank you. Alan, go ahead.

MR. ALAN EHRLICH: I'd like to ask INAC in response to that: In INAC's view, does the community have the legal authority to control use of that road?

MR. DARNELL MCCURDY: Darnell McCurdy with INAC. Legal authority? No, because their authorization is issued under INAC. Any -- the -- the Licence of Occupation is an INAC authorization. The inspectors who would look at that Licence of Occupation are appointed according to the Territorial Lands Act, and you have to be appointed by the Minister of DIAND to be any type of enforcement officer under that authorization.

MR. ALAN EHRLICH: Thank you.

THE FACILITATOR: Thank you. Any further comments or follow-up questions on access management? If not, then even though the -- well, my minimalist agenda doesn't actually mention coffee breaks, I think we'll probably have one.

So, fifteen (15) minutes coffee break and, as Alan mentioned, coffee is on. We'll see you in

fifteen (15).

MR. ALAN EHRLICH: Also going to remind you that you're -- you're in a beautiful community here. It's a great day outside. You might want to stretch your legs a little bit and have a look around. It'll make the session better; it'll probably make you feel better, too. Thanks.

--- Upon recessing

--- Upon resuming

THE FACILITATOR: Okay, with that, folks, we'll continue with our agenda. Next topic -- the next topic we have -- sorry -- Chuck Hubert, Review Board. Darnell was asked to provide some brief clarification on our last topic, access management. Go ahead.

MR. DARNELL MCCURDY: Darnell McCurdy with INAC. In discussions with Peter, it appears that I may have not completely answered the question or provided some clarity, so I'll do so now.

It regar -- it's in regards to the purchase of the private lands that are on the north side of the interim withdrawal area.

If the lands were purchased and the road went through the lands, there would be a need for an

easement on those lands to reflect the ownership of the road by the GNWT. Because Canadian Zinc builds a road doesn't mean they own the road.

The road, by virtue of Section 44 of the NWT Act, once it's constructed, becomes the property of the GNWT. So if the GNWT was looking at maintaining that road -- and when I say "maintaining", I don't mean gravelling and snow plowing -- but if they were looking at keeping that as a public road, there would need to be an easement put across the pub -- the private lands which would then allow for the public to access the road through those private lands.

And that's what I was making reference to when I was talking about my private land where I've got an easement for a public utility.

So does that provide the clarity, Peter?

MR. PETER REDVERS: It's the kind of quer -- kind of clarity that leads to more questions.

MR. DARNELL MCCURDY: Yeah, just to carry that the one (1) step further then in the discussion we had that if an easement was granted, you mentioned that easement would become the property of the GNWT.

At that time, the GNWT does have or would have some decision-making ability as to whether that was a public easement versus a private easement, and maybe if

you could just speak to that a little bit.

And there -- there seems to be, by the fact that GNWT hasn't picked up sort of the obligation that they have under legislation and regulations, that there's a bit of a gap there. But, in fact, that could happen or that there -- there is certainly feasible for the GNWT to have policy or regulation in place that would allow that to be a private easement versus a public easement. Is that -- and he's nodding his head. Peter Redvers, by the way, speaking.

THE FACILITATOR: Thank you. A response, please?

MR. DARNELL MCCURDY: Darnell McCurdy with INAC. I -- I certainly can't speak for the GNWT but in general land management practice, you -- you're correct, Peter, you can have a public or a private easement. It's going to depend on the legislative framework under which the GNWT is working; it's going to depend on their policy framework. But there are the two (2) options for the easement and it's general land practice that it could be one (1) or the other.

THE FACILITATOR: Thanks very much. And I'll remind parties that because these topics overlap issues there's some transfer. And perhaps on the third day when we discuss traditional land use and harvesting,

the issue of the access road may come up again and that's fine. We can -- we can talk more about it then.

Now I'd like to move on to the second -- or our next agenda item, and it's Fisheries. And my understanding is that Fisheries may not take up the entire time until lunch but feel free to have time now to ask questions. Any party, for that matter, can ask questions, Fisheries related.

UNIDENTIFIED SPEAKER: I'm -- I'm assuming the DFO corner over there is probably a group that has something to say about the Fisheries.

Do you have questions?

MS. LORRAINE SAWDON: Good morning. Lorraine Sawdon with Fisheries and Oceans. We're going to keep this part short. A number of our questions are -- will be addressed underneath the different headings in the agenda. But we thought we'd take this opportunity to identify that at this point in the process we're not sure if we'll be issuing an authorization or not, as we're waiting for -- or we will require more information to make that decision.

As we get that information we're more than willing to work with the Board and obviously post things on the Board's website. And our specific comments, like I said before, will be coming up as the components over

the next day and a half are -- are brought up.

THE FACILITATOR: Thank you. Chuck Hubert. What -- if I can ask, what additional information would you require in making the determination?

MS. LORRAINE SAWDON: Just a couple of things. The diffuser or the pipe that the effluent's coming out of, we just received the design last night. We haven't had sufficient time to review it. I believe there will be some additional information required about that, how the pipe is going to be protected, for example, footprint of the pipe, that kind of thing, downstream impact, whether or not there will be avoidance by fish from particular downstream habitat.

We still have questions about aggregate sources and some of the borehole sites. Some of them, looking at the map that were provided in the most recent IRs show those locations to be in what may be alluvial flood plains and so we want to have some conversations around that.

We're still looking for clarification around a number of the different crossings and certainly looking at areas that either we -- we're not sure what type of crossing is going to be used or if the crossing type has been specified, what some of the installation

construction removal procedures will be.

And that information will be required before we will be able to determine whether or not we may have an authorization to issue.

We also want to work with Canadian Zinc to avoid authorizing something. We want to promote use of mitigation measures so that there isn't going to be a harmful impact to Fisheries.

THE FACILITATOR: Thank you very much. Do you have any specific questions for the developer at this time?

MS. LORRAINE SAWDON: Lorraine Sawdon, Fisheries and Oceans. We have a number of different questions about a number of the different components of the project, everything ranging from the diffuser or the effluent pipe at the mine site, different road crossings, borehole site, you know, looking at some of the different containment possibilities for the transporting of various components to and from the mine site. And these are going to be addressed in the agenda. And we thought that it would be helpful to include our questions during those specific topics.

THE FACILITATOR: Understood. Thank you. Sorry if I repeated myself and made you repeat yourself.

With that, any other questions, Fisheries

related, that -- okay, Peter...?

MR. PETER REDVERS: Peter Redvers. Just a clarification from DFO. There is -- it is acknowledged and, certainly, more clearly in the most recent consultant report, that there is a -- is going to be a loss of habitat, about 1800 square metres of habitat. And there is the requirement, or the consultance [sic], in the most -- the recent report that was released in response to the IRs, was that there would be some compensation looked at, including the creation of some new over-wintering pools.

And I -- you've mentioned, though, that you weren't sure whether there would be authorizations required. Wouldn't -- wouldn't that require an authorization, or is that covered under previous authorizations?

MS. LORRAINE SAWDON: Lorraine, Fisheries and Oceans. I believe what you're referring to is there's an appendix or an annex in here that had a letter, I think, from 2008, from Golder. And I think it was, I'm going to get the year wrong, but 2007, I believe, Canadian Zinc proposed doing road repairs between kilometre zero and kilometre 10 from the mine site, 10 kilometres out. They had four (4) sections they wanted to repair.

DFO issued an authorization in conjunction with those works. And the memo that I've seen in the information provided were the options that were being looked at for that authorization.

At this point in time, we're not sure if we're going to be issuing a new authorization or an additional authorization. Does that answer your question?

THE FACILITATOR: Thank you. Is there a follow-up question, Fisheries related?

MR. PETER REDVERS: Peter Redvers again. Yeah, just when would there be some -- I -- I had -- I guess the way I had read the most recent information was that there had been previous authorizations, and that included HADD, and that one (1) of the comments in this was that the compensation actually hadn't been carried out yet. So that was an issue.

But I also got the sense that there was going to be some new damage or, I guess, or disruption to some pools and that there was being proposed looking at creating -- or compensating by creating some new pools in Prairie Creek. The damage would -- would have been in the Funeral Creek. So please clarify that. I may be misreading that wrong. Perhaps the developer can clarify whether the -- the -- we're simply dealing with the

previous authorization or whether there -- there is new work being done.

Now the second thing it would be -- question following that one (1) is just that I'm -- DFO is involved with some research and tracking of fish species. Nahanni Butte is involved in that. I wonder if you could just provide a little update or information on -- on what sort of baseline work DFO is producing right now, and when that might be available.

And, secondly, whether it encompasses just bull trout or whether grayling is also being looked at.

UNIDENTIFIED SPEAKER: So I heard three (3) questions from Peter Redvers. One (1) of them was: Is this stuff covered under previous HADD work by DFO? There was also a question on the company's view of that. And then a question on whether or not Nahanni Butte -- correct me if I'm wrong on this, Peter -- but whether or not Nahanni Butte was going to be involved in upcoming or ongoing research in the area, and another question on whether or not that included bull trout. I think I got the second part wrong.

MR. PETER REDVERS: Yeah. No, Nahanni is involved with that. I was just asking for an update on that research work, or that baseline work that DFO was involved in. The third question then was rela --

relating to whether it was bull trout, or bull trout and grayling.

UNIDENTIFIED SPEAKER: Okay. That's helpful, thanks. I'm going to go to DFO first. You can answer the -- them through, and then I'll -- I'll let the developer respond if he wants to.

MS. LORRAINE SAWDON: Lorraine Sawdon, DFO. Sorry. So for an update, there's a number of different people working together, DFO Science, DFO Habitat, Parks Canada, and Nahanni Butte. And what we have started this August is looking at movement and habitat of the bull trout, and bull trout only. We're not looking at arctic grayling in this study.

We're looking at the movement of bull trout in the area of Pinot Creek (phonetic) and Prairie Creek. And so for an update, in August, we went out and we were able to capture a number of fish. We tagged these fish. They've got acoustic tags, and we put receivers in the Prairie Creek and Funeral Creek, and some of the tributaries. And these receivers, when the fish swims by them, if all the conditions work, the receivers record which fish swam by, which of the tagged fish swam by.

And so what we'll be doing is downloading the data from these receivers to get a better idea of

where the fish are moving and what -- what -- where habitat is more important. I think that's the update.

And arctic grayling, we're not looking at, it's just bull trout, to answer that question. The study's going to be ongoing for at least a year, potentially longer. We'll see. No commitment there.

And when something will be available for release, we can't give you a date right now. As I indicated before, we're doing this with DFO Science, and they go through a peer review process. I can find out how long it would take to get through that process, but depending on how long we do the study would impact the length of time before things start to go through that peer review process.

(BRIEF PAUSE)

MR. DAVE HARPLEY: Dave Harpley, Canadian Zinc. Just a few comments on the -- the discharge. We'll get into this probably a little bit later, but maybe just to clear up a bit of confusion, we had previously indicated that we were looking at a diffuser to discharge water from the site into Prairie Creek. And this would consist, essentially, of a pipe extending into the creek bed with ports into a -- a kind of a deep part

of the -- of the bed, in order to promote mixing.

We've done more work on this through the summer and, essentially, determined that the deep spots we were looking for, while they're there, they're not as deep as we hoped they would be, and came to the conclusion with our hydraulic engineer that that's not the -- the best way to go.

So we're currently proposing what I would consider more like an outfall. So just to avoid some confusion, we're not calling it a diffuser anymore. It's literally more like a pipe which would come out of the side of the catchment pond, more or less at the elevation of the -- the bottom of Prairie Creek bed, and wouldn't extend very far at all into the creek itself.

The reasons for this are, we -- we know Prairie Creek is of a highly dynamic system with a lot of energy during flood events, and we're particularly nervous of possibility of damage to any discharge. And we just think that a single pipe is a better way to go for protection.

We'll still get some mixing. We're at the point of estimating how much mixing will occur, how quickly, in other words, the plume definition. And we'll bring that information forward pretty soon here.

I guess we've got a bit of time, so we may

as well just continue on kind of things fish related, I assume. Maybe we can take things off the table for -- for later.

As far as aggregate sources are concerned, we can confirm that nowhere along the road would we be looking to borrow aggregate from alluvial sources. So I think we can assume that's a given.

As far as compensation goes, we have an existing authorization to provide compensation for the repairs to the winter road that we implemented over the last few years along Prairie and one (1) section of Funeral Creek.

We have been investigating options for that compensation and it's not as easy as we first thought, so it's taking more work and more consideration, but it's -- it's still in the process.

As far as future compensation goes, that's up to DFO at this point, in terms of whether it's necessary. I -- I believe they will need to make a determination based on the design of this outfall that I'm talking about, as to whether it requires an authorization or not.

THE FACILITATOR: Thank you. Question over here.

MR. NATHEN RICHEA: Hello. It's Nathen

Richea with Water Resources with INAC. I just wanted to follow up on, I guess, the discussion about an update to the diffuser/culvert, and whether that was submitted to the Board or if that's available to other reviewers yet.

MR. DAVE HARPLEY: Dave Harpley, Canadian Zinc. We literally got it yesterday, and for the sake of providing the -- let's -- let's say the main people who were interested in it as much notice as we could, I -- I did forward it to DFO. So, no, it's not been made available generally yet, but it can be.

MR. NATHEN RICHEA: Nathen Richea with INAC Water Resources. You mentioned that you're going to be doing some work to determine mixing from the new design, and I was wondering when that might be available.

MR. DAVE HARPLEY: Dave Harpley. I'm hoping to get something today. I obviously need to look at it first before I consider releasing it, but it's -- it's imminent.

MR. NATHEN RICHEA: Yes. It's Nathen Richea, INAC Water Resources. One (1) followup on that is we'd be very interested in this new information. And we would be particularly interested to look at mixing over the range of flows, high flows versus potential low flows, and what conditions we may be expecting in the downstream type environment from this new design, and

whether that will influence the impact assessment of locations downstream from the point of discharge.

I guess one (1) final thing I would like to add, I guess, on that is, sometimes we come up with additional information requests directly related to the information that's provided, and I don't know how the Board or the Board staff feel about a process on that. And I was wondering if someone can speak to that.

THE FACILITATOR: Thank you for those comments. I can speak to that. Chuck Hubert, Review Board.

Currently, in our work plan we have an item scheduled next called "Information Requests if Required". Now this means that parties, if, after this three (3) day session, believe that further information is required from the developer, they should submit that in writing to me or to the Board with rationale for why the Information Request is -- is needed by the particular party.

If I -- if we can have that by -- well, Monday's a holiday, next Monday -- so Wednesday, say, at the latest, formal letter to the Board with rationale for why any additional IRs, if there are any, might be required, and that will be brought before the Board and the Board will make a determination on that.

Thank you, Alan. Well, one (1) additional item is: As you are aware from past assessments, we do encourage parties to meet with the developer on the side, and have meetings and record those meetings and -- and provide that material to -- to the Board so that -- and we'll put it on the registry so that all parties can -- can review that material and -- and are aware of the discussions that have -- have occurred between the developer and -- and parties.

MR. ALAN EHRLICH: It's Alan Ehrlich here. I'm just going to jump in. I got you her (INDISCERNIBLE). The -- the point that Chuck is making here is an important one. We -- you -- you shouldn't be left with the feeling that Information Requests are your only vehicle for finding out more about, for example, new technical aspects of the project that have been, you know, recently introduced.

You are completely free -- any party is free to meet with any other party, including the developer, whenever they want and discuss whatever they want. Although the Board's processes have to be open and public when the Board is involved, parties are free to meet with themselves to your -- your heart's content.

What we request is that if you're going to hold one (1) of these meetings, the Board can't notice

that something exists unless it's on the public record. The public record is the Board's universe when it comes to decision-making.

So when you do meet together, if you want the Board to be aware of what you've discussed and what you got to with that, you have to write up a little summary that says who was there, where you were, what subjects were discussed and what came of it, as well as if there are any new commitments that came out of that meeting.

If -- if you do that, you could meet on your own and then you can still get the information on the public record, and you might be able to have a -- a less formal and less structured flow of information about new technical aspects of the project.

I -- I -- I don't want you to be left with the idea that another round of Information Requests is your only recourse at this point. I -- I cut David Harpley off, so I'm going to go back to him, and I know that Nathen has another point after that.

MR. DAVE HARPLEY: Dave Harpley. I was going to say that a second round of IRs is one (1) course. Another course might be that the company would be motivated to be in contact with agencies requiring additional information and would be keen to look at ways

of providing that information in a -- on an efficient basis, not necessarily through the formal IR process.

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. I guess first I'll talk a bit about -- we can provide a letter regarding, you know, what we talked -- what you mentioned previously, about why a second round of Information Requests may or may not be required. The specific details of that will be dependent on the information and with -- we have time to receive it and review it prior to that, so it might be general, it may not be specific.

And, I guess, further and potentially another way to deal with the additional information would be a focussed technical session to deal specifically with diffuser, the new design and how that changes anything that's already on the record. It's just an option -- throwing it out there.

THE FACILITATOR: Thank you, and feel free to suggest something like that formally.

MR. ALAN EHRLICH: Alan Ehrlich with the Review Board. Also, let's not forget that you've got three (3) days here where you can ask each other questions to your heart's content.

I know that you only got the information recently, but if you're able to work with colleagues to -

- to go over it and try and articulate questions by Day 3, and I -- I know that's not a lot of time, but you do have a -- an easy opportunity to get that discussion on the record, as well, because of the transcripts here.

Back to Nathen.

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. Yeah, we could try our best to do that. We haven't seen the information to date, and it looks like the mixing zone stuff hasn't been provided yet and it may not be provided by the third day.

To change gears or maybe to go on something a bit different, it's not Fisheries related, but I -- I did want to talk a bit about sort of the monitoring plan and INAC's Aquatic Effects Monitoring Program guidelines.

And I'm just wondering, first off, if you're familiar with Aquatic Effects Monitoring Program guidelines that INAC released?

MR. DAVE HARPLEY: Dave Harpley. I'm not sure "familiar" is the right word. I'm aware of them, but we will have tomorrow, from eleven to twelve o'clock, Monique Dube available by teleconference.

And if there are questions on derivation of the site-specific guidelines, aquatic monitoring programs, I would suggest that that's a good time to ask

those sorts of questions.

We're aware we need the appropriate monitoring plans. I think we feel comfortable that we have at least got a good baseline as far as aquatic monitoring because of the work that's already been done by University of Saskatchewan and INAC Parks Canada, upstream, downstream and in the catchment in general.

So, like I say, familiar may be a bit too strong, but we'll get to it.

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. Thank you for that. Maybe the majority of where I was going to go with this will be held till tomorrow, because I would like to speak with Ms. Dube, and there wasn't an agenda item that -- that specifically was for monitoring. That's why I brought it up.

But are you also aware, generally, of the requirements for effluent, EEM-type monitoring, as regulated under Environment Canada?

MR. DAVE HARPLEY: Dave Harpley. Generally, yes.

MR. NATHEN RICHEA: Thank you for that. It's Nathen Richea, INAC Water Resources. I guess one (1) final comment before we talk about it, I guess, tomorrow with Ms. Dube, is that INAC would be willing to sit down with Canada Zinc (sic) and discuss the

monitoring and cooperation of -- of, sort of the EEM-type monitoring and the guidelines that we've kind of established for monitoring in the North and to work out some details on a conceptual plan.

We understand it's going to be evolving and it won't be finalized for some time, but just to get the discussions going and -- and - and work together on that. I'd like to share that with you. Thank you.

MR. DAVE HARPLEY: Dave Harpley. We'd be happy to do that.

MR. ALAN EHRLICH: Okay, in light of -- it's Alan Ehrlich with the Review Board -- in light of some new information coming up and what sounds like quite late in the -- in the process, in other words very little time -- parties have had very little time to process any new information between getting it last night and the information session today.

And Can Zinc has indicated that it can make its -- its experts available, as well, to try and -- and discuss any -- any issues that -- that parties have with us.

What I'm wondering, and I've discussed it with Chuck, he's amenable to it -- is if Friday afternoon, say after lunch on Friday, Can Zinc, you can get your -- your various consultants available, at least

online since you weren't able to bring them in here in person today.

And I'm wondering whether or not the parties can find the opportunity to at least get some of their -- their main questions on the table because you'll have -- this can give you a -- a live Q and A opportunity that is faster, easier, more efficient than -- than a paper process.

Do you think that between now and -- and Friday noon -- and I'm looking at Nathen Richea of Water Resources when I say this -- do you think that -- that you'll -- you can absorb enough of the material so that that would be helpful to -- to have Can Zinc's specialists available for a portion of this IR session?

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. It's difficult to say at this time. I have not reviewed the modification or the additional information. And I think it was mentioned that it may not be released until tomorrow at the earliest because I think he wanted to review it. He was expecting it today and then he was going to review it prior to having it submitted. So I -- I can't commit to having that -- a full analysis done before Friday afternoon.

However, if there are any immediate concerns we can potentially bring that forward if the

consultants are available, but I -- I can't speak to the -- you know, a full in-depth review by the end of Friday.

MR. ALAN EHRLICH: Thanks, Nathen. I wasn't wondering if you could do anything exhaustive because I understand that, well, for one thing you're -- you're here, which stops you from being somewhere else.

And Can Zinc or Mr. Harpley, do you think you can get your consultants standing by on the telephone after lunch on Friday so if there are questions on the new aspects they can at least field the -- the immediate questions?

MR. DAVE HARPLEY: Dave Harpley. Firstly, I can certainly provide you a copy of the outfall conceptual design at the next break. I can't speak to the plume model and -- because I obviously haven't got it yet, although it may be sitting in my inbox.

As far as having our hydrologist on the telephone, he's already scheduled to be available Friday morning, I think it's 10:00 till 12:00, because there are some hydrology issues that morning in any case. So I would suggest that would be perhaps the best opportunity to cover additional items.

THE FACILITATOR: Okay. Thank you. Chuck Hubert, Review Board. We can certainly discuss the

new information that you provide during that time frame as it -- it is related to some of the items on the agenda there.

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. Yeah. The only caveat I have on that it would -- that would give us less time, so it would be even more preliminary, I guess, but --

THE FACILITATOR: Good.

MR. NATHEN RICHEA: -- nonetheless...

MR. ALAN EHRLICH: I want to re-emphasise, the Board is committed to a fair process and procedural fairness, part of what it's required to do. However, it's also quite determined to avoid undue delays. And it's unfortunate that new technical information has only been put on the table shortly before a three (3) day technical meeting because the parties really haven't had much of a chance to go through this.

The Board will do what it can to avoid any additional delays in its process as -- as a result, but that's part of why I'm -- I'm hoping we can pack as much into this meeting as possible. I know that it doesn't give you the opportunity for exhaustive review, but a first kick at the can I thought might be -- it might be helpful, at least kind of face to face with the experts on the phone.

THE FACILITATOR: Thank you. Any other further questions, Fisheries related? Peter?

UNIDENTIFIED SPEAKER: Actually, Chuck, there -- there was -- just in midstream back there, there's a comment from back here that -- that was before Peter. So is it okay if we proceed in the order that the -- thank you.

MR. JONAS ANTOINE: Okay. My name is Jonas Antoine with the Dehcho First Nations. Under Fisheries, I guess -- excuse me. I have a little comment first. You know, only in a foreign system can you take the fish out of the water and manage them separately, that's what I see here.

Anyways, I think -- I might have a question here and if I do have a question it would probably be directed to Lorraine from DFO.

I understood that you give authorizations. And also in listening to this earlier discussions, I heard Peter Redvers mentioning something about 1,800 square metres of fish habitat would be destroyed. So I think Fisheries and -- and I thought through this here and I just can't think a way through this -- Fisheries, like everybody else, I think in its best efforts to manage their -- kind of have a catch-22 situation because I know you have -- you give authorizations and in

some of your authorizations you also prevent, as well.

And one of your -- the things that you prevent is the use of creek beds and in doing so it allows disruption along the creek beds which washes into the creek beds, so you're caught in that situation. And I -- I know we're dealing with some other technical matters and I think this is something that is of great concern.

And as -- and me being Dene I have a lot of humane concerns and this is something that -- a project like this, you know, we expect these things and I think we're here to determine how much damage can be done. And -- and I -- it's -- it's kind of hard for me to -- to really express what I -- I've got in my -- you know, what I'm trying to say, you know.

But we all have to work together in order to do what we have to do, you know. I think it's just not one (1) person's job, and not just one (1) department's job, but everybody's job to take care of all of these things. So if -- if things are going to proceed it has to be done to the best standards. So I think what I'm trying to say is that, in your authorization, I think in doing so you're also allowing for the disruption of fish habitats. I think that's what I'm trying to say. Mahsi.

UNIDENTIFIED SPEAKER: Mahsi. Lorraine, would you like to respond.

MS. LORRAINE SAWDON: Sure. Thank you. Lorraine, Fisheries and Oceans. You raised some very good points and they're -- I'll try to -- to respond.

When we assess projects we look at the project for -- we look to assess the project to determine if there's going to be an impact to -- to the fisheries, to the habitat. And if we think that there's going to be and we issue an authorization most of the time we require that the proponent provide what we call compensation or -- or compensatory habitat.

And so while we're authorizing the damage or the impacts to some fish habitat, we require that there is a provision of fish habitat to an equal or better quality. And we work quite hard to try and do this, it's -- it's not something we find easy by any stretch. And when you look at an area, such as where the Prairie Creek Mine is, it certainly gets a little bit more difficult.

But what -- we do strive towards our no net loss policy. And this is where, if there is going to be impacts to fish and fish habitat, that habitat of an equal or greater value is provided so that we will always have habitat for our fish.

UNIDENTIFIED SPEAKER: Thanks, Lorraine.

MS. SARAH OLIVIER: Sarah Olivier with Fisheries and Oceans. And maybe just to clarify one (1) point that seems to be coming out a lot is the fact that there was mention of compensation within the IR responses and how that relates to a previous authorization. And that was reviewed under a previous EA for the phase 3 drilling.

I guess just to kind of keep those separate because again, that -- that was reviewed under a previous EA and that authorization was issued. And the compensation, though it is still outstanding, Canadian Zinc has been working very closely with DFO to find some compensation options. I think what we're saying now too, is that now we're assessing this new project and DFO still has some outstanding questions that whether or not there will be a need for an authorization.

And I think the difference between DFO's authorizations as compared to a lot of other types of authorizations is that, yes, we are authorizing an impact. And so that's why it's very important for us to have as much information as possible to be able to assess how much of an impact that is and whether it's acceptable or not.

And then compensation is another way of

kind of mitigating those impacts to make sure that they're not significant. And, yeah, we usually work with the proponent to -- I guess -- our last case scenario is to give an authorization. We try to work as best we can with the proponent to avoid any authorizations. So I think our last case resort is to give out an authorization.

THE FACILITATOR: Thank you very much. Any further questions, comments, responses?

UNIDENTIFIED SPEAKER: May I just ask for clarification? I want to be sure I understand the last point.

So your point is that DFO strives to prevent or mitigate the impact and if not, then mitigate for it in a larger way with compensating so that -- that giving an authorization to do the impact is your last recourse. Thanks.

Peter, you've been very patient. Thank you.

MR. PETER REDVERS: Just for clarity on the previous discussion between Water Resources, the issue of sedimentation and -- and a sediment plume, I'm assuming that Rick, the dis -- Peter Redvers, by the way -- I'm assuming the -- the issue of mixing and sort of downstream effects was including a discussion of -- of

sediments and sediment plumes, is that correct?

I was trying to follow quite where you were in terms of the issue being dis -- being discussed because the -- I mean, we know there -- or it would appear anyway, that there will be some high suspended solids because of the nature of the material and -- and how fine it is. And so there was some interest in at least determining how the mixing would occur and how that would impact on sediment plumes.

I just need clarity if that's the issue that you're going to be looking at discussing once some of this new information comes out. I'm not quite clear on that, to be quite honest. So whether we raise that now, or we leave that to the water discussion as a part of the overall water discussion tomorrow, that would be fine. Or again, perhaps become involved in any subsequent discussions if that is an issue discussed at that time.

THE FACILITATOR: Would Waters just like to respond? The developer first?

MR. DAVE HARPLEY: Dave Harpley. I haven't seen the plume data yet, but I'm pretty sure that it will not specifically address sediment.

Peter, you referred to fine sediment and I think maybe you're referring to fine sediment that we're

currently getting through our water treatment system in the use of sodium sulphide to precipitate metals. And that fine sediment does occur, but it's an issue because the fineness of it makes it difficult to settle and, therefore, increases the concentration of metals in the discharge. It's not that the suspended sediment levels are elevated in the discharge.

We have never had a problem of suspended sediment being elevated in treated water or site runoff and we don't think that will change through -- through operations. So the -- the plume model will focus, really, on the metal's concentrations.

UNIDENTIFIED SPEAKER: Just for clarity, that's the information that will be tabled shortly once you've had the opportunity to review it.

MR. PETER REDVERS: Okay. Thank you.

UNIDENTIFIED SPEAKER: Peter, are you looking for a response from Nathen Richea, as well?

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. I guess in response to what Peter was mentioning, we would be interested in that, as well, the sedimentation part of the plume. If it's not part of the mixing characterization that's available, I think it's an important component of any type of effluent plume going into a water body and it -- it needs to be considered.

It may very well be maybe not significant but it -- it's something that definitely needs to be assessed. Yeah. So I guess that's all I have for that.

THE FACILITATOR: Thanks for those comments. Anything further from parties?

If not, then because there is, as been noted, a fair amount of overlap between subjects and water quality and quantities, next I would suggest that we proceed directly to that topic.

What I'd like to do, however, is find out if there's anybody on our teleconference. Is there anybody on our teleconference line?

(BRIEF PAUSE)

UNIDENTIFIED SPEAKER: And that sounded like Anne Wilson to me. Just hold on one (1) second, we're working through a technical difficulty here.

(BRIEF PAUSE)

THE FACILITATOR: Okay. Let's take a five (5) minute break while I try to get the teleconference going then. Thanks.

(BRIEF PAUSE)

UNIDENTIFIED SPEAKER: Do you have another comment, Anne?

MS. ANNE WILSON: Okay. I missed what the comment was to be on. Can you re -- back up on that for me?

THE FACILITATOR: Sorry. Chuck Hubert here. Anne, we have concluded with a brief chat about fish and aquatic life and we're going to move on now to the agenda item that was originally planned for after lunch, but since we have time we will proceed now with water quality and quantity issues.

So I'd like to give you the opportunity to ask the developer questions on that topic.

MS. ANNE WILSON: Okay. So as far as the water quality goes, we're still looking at various aspects of that. Our concerns are around the toxicity of the treated effluent and getting a sense that there is going to be a treatment contingency to ensure that the toxicity is -- is taken out of the combined process and mine water. So may -- should I stop there and let the company go with that one (1)?

UNIDENTIFIED SPEAKER: Can. Zinc?

THE FACILITATOR: Are you prepared to

answer that question or do you need other personnel, David?

MR. DAVE HARPLEY: Dave Harpley. I wonder if we can just take a couple of minutes because the -- Anne is still not coming through really clearly. I think if we can fix that mic it'll be better for continuing, and I need a couple of minutes just to...

THE FACILITATOR: Okay. Chuck Hubert. Can we take that five (5) minute break revisited, please.

--- Upon recessing

--- Upon resuming

THE FACILITATOR: Okay, ladies and gentlemen, if we can take our seats we'll proceed with the water quality and quantity portion of the agenda.

Because we have Environment Canada online with teleconference, we'll begin with questions for the developer from Environment Canada. Anne, please.

MS. ANNE WILSON: It's Anne Wilson here from Environment Canada, and I've got quite a number of questions and I'm not really sure if I'm approaching this in a logical format.

But I'm going to start with the release of the effluent, and based on the toxicity testing that was

done for the process and the mine water, there is the potential or likelihood of problems passing the acute toxicity test at end of pipe.

And I'm looking for more information from the developer on what treatment contingency plans might they have in mind.

Did that come through okay?

THE FACILITATOR: Yes, excellent, thank you. Developer, please go ahead.

MR. DAVE HARPLEY: Dave Harpley. Anne, you can't see this, but on the screen here I've got a spreadsheet and the lower part of which shows the -- the flow rates on a monthly basis of the treated mine water, treated mill water, and I've also estimated flows in the site ditches.

And the reason I did this was I wanted to get an impression of what the blend of the three (3) streams would be in order to get a sense of what the end-of-pipe discharge would be.

And what it shows is that from March to December -- that's the period when we are discharging, treating and discharging process water -- the ratios of process water to the other two (2) streams, in March it's a little over twenty-one (21), and the -- the low point is in April which -- and it's currently two point three

(2.3), so, in other words, one (1) part process water, two point three (2.3) parts mine water and runoff combined.

The issue here is that when we did the toxicity testing, we, at that point, had not finalized our water management strategy, so we tested the individual streams rather than a estimated blend for the end of pipe.

And the toxicity results that came back for the process water indicated that that water is acutely toxic by itself. And that was the reason we did not continue to do chronic toxicity testing on that water, because there would be no point.

So we recognized that, at this point, we don't have data for acute toxicity for a mixed stream, and the way we propose to resolve that is we will do further testing in the -- the startup phase when we're actually producing the real effluent from the plant, and then we will store that water until such time as we can demonstrate that the discharge will not be acutely toxic.

This, of course, means that we have to make sure that we provide for water management through the startup phase and have adequate storage. But bearing in mind that we're essentially starting from a completely empty water storage pond, we're pretty sure that we are

going to have plenty of storage to play with and plenty of time to do testing and confirm that the toxicity is not an issue.

If we were to find that the toxicity still is somewhat of an issue then we still have recourse to making changes.

The process water treatment system is based on a -- a first of pH reduction to approximately five (5), and then the addition of sulphide to precipitate metals, followed by the addition of lime to raise the pH back again.

This is a process that we can tweak somewhat. If we find we still have toxicity because of some metals remaining we have the option to incrementally reduce the pH a little more on the first step to make sure we're dropping out the metals of issue and then we would obviously re-do the testing.

So we're confident that we have the opportunities to resolve this data gap during the start-up period.

MS. ANNE WILSON: Should I pause at this point to see if anyone else has questions or -- or thoughts on the toxicity aspect?

THE FACILITATOR: Please continue with -- oh, sorry. Question here from the floor from a party.

MR. PAUL GREEN: It's Paul Green with INAC Water Resources. Just looking at the spreadsheet that's on the -- on the wall here, those numbers, like, they don't match the water balances that I have from your original submissions. Are they new numbers or are they -- they've been updated since the submissions we received?

MR. DAVE HARPLEY: Dave Harpley. No, they're not new numbers. They're numbers extracted from the same water balance you would have been looking at.

The key numbers are the estimated treated mine water and you're looking at a number there of approximately 41 litres a second, and that's assuming that we have a mine flow of approximately 50 litres a second. The difference is because some of that water is taken up in other losses in the system.

Now obviously, if we have more mine water than fifty (50) then we're going to have more treated mine water. And if we have less, then we have less treated mine water. The treated mill water flows are as they were before without any changes.

As far as the treated mine water goes, I retained the 50 litres a second because right now that is the best estimate of what we expect to see based on what our consultant is telling us. And you'll learn more about that this afternoon.

MR. ALAN EHRLICH: Can I ask a couple of -- it's Alan with the Review Board -- a couple of just general clarifications. As you know, I'm fairly new to the file, Chuck is leading this EA. But I didn't fully understand why you were unable to do chronic toxicity testing. Could you just in layman's terms just describe why not?

MR. DAVE HARPLEY: Dave Harpley. To do toxicity testing you have to have a representative treated water sample obviously. And that's relatively straightforward for mine water because we can collect mine water right now and do any type of testing we wish.

The problem with process water is you have to duplicate the process that will actually take place on site, the metallurgical process, which includes firstly a representative mineral -- a sample of the mineralization and then crushing, milling, flotation, everything else.

We did that work at SGS Lakefield and that was the water that we used for the toxicity testing. At this point it would be a considerable exercise to duplicate that work and, obviously, we're not keen on doing it at this -- at this point, and the backup being the -- the fallback position which is we have the opportunity to do it onsite and to make changes if we need to if we do discover that we have acu -- acute

toxicity issues, which we don't believe we will have because of what I'm showing you on the screen there in terms of the dilution of that treated process water stream.

MR. ALAN EHRLICH: I -- I think I -- I get that. And the other thing is when I was onsite, this must have been last year, I remember we -- we went on a site tour. And my understanding at the time, and I think you were showing us around there, was that the thing that used to be the tailings pond, the -- the big dual-chambered thing that used to have the sloping side that's been repaired since, at the time I thought the plan was only to have that holding clean water. It sounds like that's change. Is that right?

MR. DAVE HARPLEY: Dave Harpley. Depends on your definition of "clean." We have, since we issued the project description report, I believe been fairly consistent that we intend to use that pond that was intended for tailings but never was used for tailings, we intend to use it for storage of mill water and mine water, the reason being that that allows us to both dilute and age the process water so we can reuse it in the plant.

So if that's your definition of "clean" then that's what it is, but I wouldn't say clean; it's

probably a stretch.

(BRIEF PAUSE)

MR. ALAN EHRLICH: Okay. Paul Green is indicating that he's -- he's all right with that. Nathen Richea has a question. Can I go ahead, Chuck?

MR. NATHEN RICHEA: It's Nathen Richea with INAC Water Resources. I'm just going to try to follow up with some of the things I think Anne was trying to get at. And I guess for me to sort of wrap my head around it, I kind of need to explain maybe what I think was done. So let me start.

So condu -- acute toxicity testing was performed on the various water, streams, that you expect on the site. One (1) or more than one (1) of those toxicity tests failed for one (1) of those streams. Just one (1)? Was that the process water or the mill water? Was it the process water?

What I gather from the figure that's on the wall is you propose a blend of mill water and, sort of, I guess, surface water and mill water in order to achieve no toxicity. Is that kind of what you propose?

MR. DAVE HARPLEY: Dave Harpley. It's not a -- I wouldn't call it a case of doing this in -- in

order to avoid the toxicity. This is just showing you in reality what the blend will be, based on the water management approach we've selected at this point.

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. So the water management approach that you have presented assumes the inflow to your mine of 50 litres per second. In the documents that you provided to support your case for fifty (50), it indicates that potentially it could go up to a maximum of a hundred (100).

What are the -- what is the scenario for acute toxicity if you rec -- if you reach the 100 litre per second inflow rate?

MR. DAVE HARPLEY: Dave Harpley. Curiously, if we got that quantity of water, it would actually be better from a process water acute toxicity standpoint because the proportion of the treated process water and the discharge would be smaller.

I -- we'll see if we get to a hundred (100). At this point, as I say, our consultant thinks his best guess is in the fifty (50) range. So I -- I've shown you what I believe is, you know, the -- the best shot we have at this point to estimate what that blend is going to be.

Essentially what I'm saying is that the

toxicity testing was done on the process water individually but it does not represent a true end-of-pipe quality. And I'm saying that we can't really know the exact quality of that end of pipe until we actually get into the startup phase when we have the real process and the real mine water treatment, and are able to take a blended stream and test it. Then we'll have true representivity (phonetic).

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. Getting some weird feedback on this thing. But anyway, thank you for that explanation. That helps clarify it.

I guess what I'm trying to wrap my head around now is how the proposed blend will mix in the receiving environment in the condition where there's a new discharge method, I guess, being proposed, how that will mix such that we meet the water quality objectives in the -- in the receiving body. And, potentially, a problem could come about where whatever the water quality objectives are in the receiving body will dictate what the blend will need to be back in the mine.

So I'm trying to wrap my head around how we can understand -- how we can be protective and really understand what the blend will be. Some of that information won't actually happen until you actually

conduct your operation.

But there are ways to do the assessment such that you can look at worst-case scenarios and look at different types of modelling to determine what a various -- a range of blends would do under a range of conditions in your receiving environment.

I'm not sure we're at that point yet, and I don't know how we can get there.

MR. DAVE HARPLEY: Dave Harpley. I guess I assumed too much in, perhaps, how much detail you'd looked at the treatment process. But the treatment process consists of primary treatment of the mine water and the mill water individually.

And after the application of acid sulphide and lime to the process water and lime to the mine water, separately, those two (2) streams then come together for clarification.

So the discharge out of the -- the water treatment plant is a combined flow of the mine water and mill water before it even gets to the catchment pond. Once that stream goes into the catchment pond, at that point it blends with site runoff.

So the mixing occurs for the two (2) treated streams, firstly, in the mill, in the -- in -- sorry, in the water treatment plant, and then, secondly,

with runoff in the catchment pond. And then only after that point does the mixed blended stream discharge to the environment.

As far as how we get to the testing and the modelling, I don't know how we would do that given that we don't have any more process water at this point.

And what I've explained is a way of addressing that deficiency by having the ability to, firstly, do the testing on real water during the startup phase, and then storing that water until such time as we can confirm that the discharge will not be acutely toxic.

And, secondly, if we find that we have an issue, then we still have recourse for modifying the treatment until such time as we can repeat that exercise and again confirm it's acceptable.

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. Thank you for the description of how you're going to manage the water onsite.

I guess I'm still just trying to battle in my mind how the process is going to work. In your Developer's Assessment Report and parts of the appendices, you indicate that the potential exists and it's likely that you're going to exceed your F1 quality criteria in your water licence.

I guess I'm trying to understand. Acute

toxicity is one (1) of the requirements that you will need to meet as part of your water licence, but there'll be other requirements for concentrations in your effluent.

What I'm trying to understand is: One, the process works to sort of manage the effluent such that we don't seek exceedances in the F1 quality criteria.

And in order to make F1 quality criteria applicable and practical for the site, we need to kind of know what we're trying to achieve in the receiving environment.

Typically, what we tend to do is come up with objectives for the receiving environment. And when we come up with a consensus or an acceptable objective in the receiving environment, that informs the decision on what acceptable and appropriate effluent quality criteria should be, that shouldn't be exceeded.

Sometimes there are, you know, problems with the treatment plant or problems onsite where you may see exceedances in your EQC. When that happens, typically the recourse is to stop discharge and to hold the water onsite until you can get the problem rectified.

I see a disconnect in, first, what the mixing zone's going to be. So at what point will we

actually achieve our objective in the receiving environment?

And, then, secondly, what an appropriate effluent criteria is and what needs to be achieve. And I -- I just -- I just don't understand the logic or how we kind of get to that point.

I understand, you know, this is a lot of that have to do with sort of the regulatory phase, but what we're trying to determine here is what the potential effects are of this operation on that receiving environment.

I just -- I have a difficulty in trying to understand. You know, we talked a bit about acute toxicity, and thank you for the information. You know, potentially, the effluent will not be acutely toxic, but there are a number -- a number of other requirements that you'll need to meet.

And I just don't know how we can actually do that when we acknowledge that EQCs may be exceeded or the objectives may not be received -- or achieved in the receiving environment. That causes a lot of problem because then it brings into the consideration whether there will be a potential for signif -- significant adverse effects.

So I'm just trying to get my head wrapped

around that, and that I was hoping I could talk to someone about the monitoring a bit tomorrow and -- and touch on a bit of the acute toxicity.

But I think there's a number of discussions that still need to be had on the topic, so I think that's all I'll have for now, but if someone else would like to --

MS. ANNE WILSON: It's Anne Wilson. Can I jump in again?

THE FACILITATOR: Yes.

MS. ANNE WILSON: I was just going to echo -- Nathan went exactly where I was going next, and that was with the proposed effluent quality criteria that were in the IR responses.

I find those numbers to be quite high. It's good that it's proposed to track loadings, because that's another important factor to the concentrations. But we have to keep in mind that the objectives should be met within a reasonable mixing zone.

And to know what the effects are going to be, we should have some sense of a risk assessment being done to see what -- what the environmental costs are of allowing the receiving environment to attenuate the effluent.

I think that we also need to talk a bit

about the proposed change to the outflow configuration and, basically, we're just looking at using dilution to reach the target levels.

So we -- we do have a fair bit more to talk about on the effluent aspect.

MR. DAVE HARPLEY: Dave Harpley. I would suggest that when we talk about effluent quality criteria -- EQC for short -- we need to be specific on which criteria we're talking about, because we've, in fact, proposed two (2) different sets of criteria: one (1) for end of pipe, and one (1) for in-stream receiving water criteria.

I believe you're talking about the EQC that refers to the end of pipe. Am I correct?

MS. ANNE WILSON: It's Anne Wilson of Environment Canada. That's right, David, and those tend to reflect the Metal Mining Effluent Regulation numbers which are a minimum national standard. And I don't necessarily feel they are appropriate for our pristine northern waters, even in Prairie Creek which is more mineralized than others.

And then we do need to talk about the idea of a tiered or secondary compliance point for the objectives and what that length would be and -- and what risks are associated with that reach of the river being

used.

And I do want to reiterate that the MMER and Fisheries Act are end-of-pipe which would be at the very top outfall from the treatment.

MR. DAVE HARPLEY: Dave Harpley. In terms of the end-of-pipe EQC, we selected the numbers that are in the IRs to give us operating flexibility.

I think you would understand that during normal conditions and -- and -- and even during conditions of low flow, we could not discharge that quality of water and still meet the second set of EQC. We would be over the limit for most of those parameters.

So we're not in -- by -- by putting those numbers out there, we're not suggesting that that is going to be the quality of water that's going to be discharging as a matter of course.

In fact, there is another table in the submission which -- which gives a -- a prediction of what the actual discharge quality will be. All we're trying to do with the end of pipe numbers is to give ourselves some flexibility for discharge in the event that we have significantly high flows in the system, whether it be a big freshet or, you know, a strong rainfall event. And if we have the opportunity to -- to discharge more water, whether it be a higher concentration or a higher load,

and still meet the in-stream criteria, then that's an opportunity to do that without being constrained by the first set.

MS. ANNE WILSON: All right. I acknowledge that -- it's Anne Wilson -- that that would be your approach. I'm just not that comfortable with those high of limits being used for regulated limits.

THE FACILITATOR: Okay. Thank you, Anne. Do you have a follow-up question?

MS. ANNE WILSON: It's Anne Wilson. Is the company willing to do more work on a risk assessment for the reach of the stream that would be between end of pipe and background levels?

MR. DAVE HARPLEY: Dave Harpley. I don't think we can make that call right now until we've actually seen the -- the plume model and considered basically as a first step for what kind of an impact we're -- we're looking at.

MS. ANNE WILSON: Sorry. It's Anne Wilson. David, I missed the middle part. You can't make that call until you see what?

MR. DAVE HARPLEY: Until we see the -- the plume model and what the predictions are as far as the mixing zone and then also considered what kind of habitat utilization we're talking about in that mixing

zone.

MS. ANNE WILSON: Anne Wilson. What's your time frame for that to happen?

MR. DAVE HARPLEY: You mean the time frame for a decision?

MS. ANNE WILSON: Anne Wilson. I -- I'm going to just leave my question for now. I'm really not understanding what's being said, it's very hard to make out and I think I'm confusing things. So just -- we'll leave that for now.

THE FACILITATOR: Okay. It's Chuck Hubert with the Review Board. Earlier, Anne, David had mentioned that a mixing zone analysis would be forthcoming, possibly tomorrow, and I believe that's what he was referring to when he said an up and coming report. If you can elaborate on that, David, for Anne's benefit.

MR. DAVE HARPLEY: Yeah. Anne, can you hear me clearly now?

MS. ANNE WILSON: It's Anne Wilson. Yeah. It's just a matter of reverberation on the line that makes it difficult to make out some of the words if you speak quickly.

MR. DAVE HARPLEY: Okay. I just -- we -- we can't actually begin to consider a decision on if we have enough information or we believe we have enough

information or we want some additional information until we've actually seen the results of the -- the plume assessment. So I can't -- I can't give you an answer on the need or otherwise for a risk assessment at this point.

MS. ANNE WILSON: It's Anne Wilson. And you were expecting that technical analysis in the next short while? Is that what Chuck was saying?

MR. DAVE HARPLEY: We're expecting the results of the plume modelling shortly, yes.

MS. ANNE WILSON: Okay. It's Anne Wilson. Okay. I guess we'll leave it at that for that one.

I was going to also reiterate Nathen's concern that we talk more about the aquatic effects monitoring program. Did I hear correctly earlier that Monique Dube will be available tomorrow morning?

MR. DAVE HARPLEY: Monique will be available from 11:00 to 12:00, yes, tomorrow.

MS. ANNE WILSON: It's Anne Wilson. So we'll hold questions until she's online to discuss that?

THE FACILITATOR: That's our intent since the person who can -- is best available to answer those questions will be available at that time. So, yes, we'll, if we can, restrict our comments on that

particular subject for that time window.

Would you like to proceed with further questions, Anne?

MS. ANNE WILSON: It's Anne Wilson. The other aspect of the water quality where I would like to have more information, and I'm not confident it's going to be available, is around the TDS.

I expect the major ions will be a factor in the effluent quality that we will need to be concerned about. David had pointed me at one (1) of the tables with some sodium values, and they're looking to be around 1,000 milligrams per litre in the treated discharge waters.

We don't have information, however, about chloride and the other major ions that make up the TDS. Is that information available anywhere within test work that's been done?

MR. DAVE HARPLEY: I don't believe we have that data -- data for the treated process water. We can always generate it for the treated mine water, but not on the treat -- on the treated process water.

MS. ANNE WILSON: Is -- it's Anne Wilson. Is there any way to get at the effluent TDS as an estimate?

MR. DAVE HARPLEY: Well, that was what I

was trying to do with the use of connectivity as a surrogate in the absence of an actual physical TDS test. That was why I used connectivity in that analysis.

MS. ANNE WILSON: Yeah, it's Anne Wilson. I -- I did note that. It just doesn't give us the information of the effect of the constituents of the TDS, and it really doesn't give us a sense of how high that might be in milligrams per litre. So I was hoping to get a little further on that, but it doesn't sound like it will be available for the process water?

MR. DAVE HARTLEY: Yeah, the only other possibility is that if the lab has retained the sample and we can do some further testing on it. But I can't say at this point.

MS. ANNE WILSON: Okay, it's Anne Wilson. That's it for me for the moment. I expect you guys are looking at your lunch coming in.

MR. ALAN EHRLICH: Hi, it's Alan from the Review Board. It sounds like this plume model is quite important for parties to be able to evaluate the significance of the potential impacts.

It makes me wonder about the timing of the plume model. If it's not available before this technical meeting, how soon can you have the plume model on the table so that parties can go over it and discuss it with

you so they can understand this in time for them to get their positions right for the Hearing?

MR. DAVE HARPLEY: Dave Harpley. I don't know the answer to that. I was promised it today, but give me a little bit of time on the break and maybe I'll have an answer.

MR. ALAN EHRLICH: Thank you.

THE FACILITATOR: It is nearing lunchtime, and it appears to be almost ready. So with that, thanks everybody for your questions and answers and patience with our odd technical glitch. Let's have lunch. It's scheduled for an hour. See you then.

--- Upon recessing

--- Upon resuming

THE FACILITATOR: I'll start off with asking if anybody's on our teleconference at the moment. Can you hear me? Anybody on the teleconference?

(BRIEF PAUSE)

UNIDENTIFIED SPEAKER: Yeah, I can hear you just fine.

THE FACILITATOR: Can you please state

your name?

UNIDENTIFIED SPEAKER: Jim Lee, acting Water Resource officer on the file.

THE FACILITATOR: Thank you. Okay. We'd like to continue where we left off prior to lunch. We were discussing water quality and quantity, and specifically tox -- effluent toxicity issues, and if there are any further questions the parties have for the developer on that. Let's start out with that.

(BRIEF PAUSE)

MR. PETER REDVERS: That woke me up. We're a little -- maybe we can crank down my microphone a little bit. Thank you. Peter Redvers, representing the Naha Dehe Dene Band.

Just to back up a little bit, going back to a couple of issues that Nathan was speaking to, the first one (1) being a bit of clarity on the water flow as a part of the whole treatment process. There was something that came up that I wasn't quite clear on. It didn't quite sync with my understanding, which is perhaps a little less technical than Nathen's or some others, but I think it's important that, you know, there is some clarity on this one.

It relates to sort of the flow of water in -- in the mine site prior to discharge. We know that there is water being pumped out of the mine. My understanding is, water coming out of the mine, that a portion of that will go directly to the water treatment facility, a portion of that will go into the water storage pond, and that's a ratio that you can control to some degree, depending on how much water you actually want to discharge.

There will then be water pumped from the water storage pond to the processing facility, and that water will be used as a part of the -- of the -- of the processing of the concentrate. Some of the residual water will end up in the paste backfill, and the remainder of it, my understanding, would receive some initial treatment when it comes out of the processing plant, and then would generally go back into the water storage pond, because then it would be allowed to settle.

And that's where I -- you're shaking your head. I need some clarity. What I heard, and that's why I raise this point, was that once it had been treated coming out of the processing plant, it would then go -- in fact, coming out of the processing plant it would go directly to a water treatment facility and then discharge through the catchment pond and the other associated

facilities, correct?

And I'm just wondering where the settling would occur. We'll start with that and then I have some followup.

MR. DAVE HARPLEY: Dave Harpley. The -- the process water is not treated in the mill. It's -- it -- it's treated in the sense that it's after filtration to separate the tailings from the -- the processed water itself. And it'll be -- just in the neutralization of the tailings, the ph will be elevated somewhere in the order of about nine (9).

But at that point the process water stream is split much the same way as the mine water stream is. A portion goes to the storage pond and a portion goes straight to treatment.

MR. PETER REDVERS: And again, that portion is something that you will be able to control, depending on your discharge, your desire to have some further dilution or settling, correct?

MR. DAVE HARPLEY: Correct.

MR. PETER REDVERS: So as you mentioned then in the treat -- water treatment facility there are actually two (2) treatment processes, one (1) simply for the mine water, one (1) for the process water, and then the mixing would occur on the output, basically, of the -

- or would occur inside, or as a part of that treatment process?

MR. DAVE HARPLEY: Correct.

MR. PETER REDVERS: And then would flow into your -- and the catchment pond is still -- now that you've moved away from the diffuser and back to somewhat modified direct discharge, the catchment pond would still play a role in some settling to -- to occur prior to active discharge?

MR. DAVE HARPLEY: The catchment pond's primarily for collection and settling of runoff. It's not necessary for settling of the treated water, because the treated water goes through a clarifier, which effectively takes the place of a settling pond.

MR. PETER REDVERS: Okay. With that then, and then just the third area of water, which is the ditch water, or area that's been gathered from the surface, and that goes -- also is gathered and goes through some water treatment process?

MR. DAVE HARPLEY: No, we don't expect the ditch water is going require treatment.

MR. PETER REDVERS: Okay. Well, just the question I have on that, I guess, relates to the data that was presented on air emissions, and the fact that it looks like, anyway, from some of the data, that there

will be concentrations of some minerals deposited through the air on the site. I'm assuming those would be collected through surface runoff and flow into the ditches.

Is there any possibility that -- that that combination of contaminants coming in through the air and being picked up through surface water would create some toxicity?

MR. DAVE HARPLEY: I believe the -- the air quality guidelines are fairly strict. I don't think that we're going to get any sificant -- significant fallout of particulates that would generate a water quality issue. It's more of a particulates type of issue, not -- not metal bearing.

I was somewhat surprised that the main source of particulates apparently is going to be, or at least the predictions are, from the exhaust from the underground ventilation. We somewhat question that conclusion anyway, because it's a fairly wet mine, and we just don't see a lot of particulates being generated. But that's the predictions at this point.

MR. PETER REDVERS: Going back to the chart that you had on in the ratio of the -- sort of the mix of the mine water versus the mill water, or the process water, if you have that chart.

(BRIEF PAUSE)

MR. PETER REDVERS: That's fine. I -- I mean, I can speak to it. We're not -- I'm not really speaking to exact numbers, I guess. I guess the question just relates to when we look at that dilution, the -- and from the September 6th, 2010 report from Robertson GeoConsultants, there is some -- some recognition that there would be, in the groundwater interaction, some leaching from paste backfill, that -- that that would not be an issue, according to this report, in terms of groundwater flow or -- or particular problems in terms of groundwater.

However, that water, if there is some leaching, will be pumped out and go through the processing facility. So I'm assuming that the water processing or water treatment facility would be able to take into account that there would be some contaminants that would have entered that through leaching. Because I guess I'm just wondering how that effects -- if we're assuming that the mine water in that ratio is -- is reasonably clean, or relatively clean, and that the -- if there was some contaminants, that they would be in the process water as such.

But is there the possibility that there

would be some increased contamination of the mine water, such that those -- you're -- you're already working, in a sense, with mine water that has some degree of -- of material or contaminated or toxic materials in it, and whether that would change in any way the -- the ratio or the im -- the potential impacts from a discharge?

MR. DAVE HARPLEY: Dave Harpley. I'm not sure I understand the question. What additional source are you talking about, groundwater and where from?

MR. PETER REDVERS: Well, I think in your look at the mine water, and assessment of toxins or contamination in the mine water, that's pre -- paste backfill. So there will be, with the paste backfill, some leaching and there will be some change in the chemistry of the water that's being pumped out.

I'm just asking the degree to which that's being taken into account in the water processing so that it is, in fact, a true dilation -- dilution that's incurred and you're not really treating toxic water with water that itself has some toxicity in it.

MR. DAVE HARPLEY: Dave Harpley.

MR. PETER REDVERS: Is that a little clearer?

MR. DAVE HARPLEY: Yeah. I believe this was the subject of a particular IR. So it's explained in

that IR response. But essentially -- essentially we don't expect the paste itself to generate much, if any, seepage, bleed water they call it, because the -- the water content is fairly low in the first place. And then it's like a concrete. As you know, concrete loves to absorb water as it's curing. And the -- the backfill will be much the same. So we really don't expect a lot of water generated from the backfill.

As far as leaching of the backfill from groundwater, studies indicate at this point that contact with groundwater is not expected to be significant at all, because you'll have a draw down situation occurring with depression. And the water also flows preferentially within the fracture zone rather than through the -- the vein area.

However, if we supposedly do get significant bleed and there is leaching, and we do get other metals than we're expecting in normal mine water, then we could look at approaches such as a separate collection of that bleed water, and treating it essentially as mill water. Then it would go through a different part of the circuit in the treatment plant.

UNIDENTIFIED SPEAKER: Mr. Redvers, do you have any other questions?

Alan Taylor from Can Zinc is indicating he

has something.

MR. ALAN TAYLOR: Yeah, just for the benefits of whoever's on the phone and those in the room who don't know, two (2) of our consultants have joined us for this session: Christoph Wels with Robertson GeoConsulting, he's done a lot of our groundwater studies; and Shannon Shaw with Phase Geochemistry, she's done a lot of the geo -- geochem characterization for the site. So if you have any questions for them, they would be more than willing to entertain those.

MR. ALAN EHRLICH: Thanks. Welcome, Christoph and Shannon. I'm Alan Ehrlich, I'm with the Review Board. I'm -- Chuck is leading this Environmental Assessment, but I'm helping out a bit with the sessions here today.

Can I ask who we've got on the telephone? I -- I hear a voice say someone has entered the call, but I -- I didn't catch the name. Anyone out there on the telephone?

MS. ANNE WILSON: It's Anne Wilson of Environment Canada here on the phone.

MR. ALAN EHRLICH: Welcome back, Anne. Can you hear what's going on in here okay?

MS. ANNE WILSON: Pretty much right now, thanks.

MR. ALAN EHRLICH: Please feel free to indicate when you're having a hard time hearing it. Anne, one (1) of your colleagues from Environment Canada, a gentleman whose name eludes me, in the back row there, has a comment. And can you please start with your --

MS. ANNE WILSON: Devin?

MR. ALAN EHRLICH: -- name and organization for the benefit of the people who are doing transcription later. Thank you.

(BRIEF PAUSE)

MR. DEVIN PENNY: Devin Penny with Environment Canada, IN. Just to reiterate, and forgive me if maybe it's not clear to me, but I just wanted to ask Canadian Zinc, with regards to -- talking about the di -- diffuser or the pipe, or effluent discharge, and I just want to ask, are you aware of the -- the actual compliance point under the Fisheries Act and the MMER is actually at the end of pipe basically where you lose control of the substance or the effluent?

I know you talked about dilution and you talked about maybe downstream, but just curious if you're -- understand the parameters under the MMER or the metal mine effluent regulation, and the concentrations of those

chemicals in the effluent?

MR. DAVE HARPLEY: Dave Harpley, yes, we're aware of that.

MR. ALAN EHRLICH: Any followup?

MR. DEVIN PENNY: No, my -- just my concern was, I know, with regards to the water licence, and -- and sometimes you can get into a compliance point, but there's a different compliance point for -- usually under the water licence versus the Fisheries Act, and I just wanted to make sure that they're aware of the Fisheries Act compliance point.

MR. ALAN EHRLICH: Thank you. And we've got a question from Parks Canada over here.

MR. JAMIE VANGULCK: Jamie VanGulck, technical consultant with Parks Canada. I have a few questions about water balance on the site. And I'd first like to start off with something that Anne brought up in her response this morning from the developer.

It was said that toxicity testings are going to need to be done on the process water after the mine starts operation because that water is not available now. Could you provide a little bit more information about what sort of water balance has been considered to see if you have storage room for that water, and the duration of time it would take to actually complete the

test to get the toxicity results you need?

MR. DAVE HARPLEY: Dave Harpley. On the screen there you can see the water balance, which is based on mine water inflow of 50 litres a second. This is the same balance that's in the appendix to the DAR.

UNIDENTIFIED SPEAKER: Okay. Can I just -- hold on for one second. Can people in the room clearly see what's on the screen? I'm seeing a no. Anne, you can probably see this as well as many people in the room. It's a spread -- a rather large spread sheet with a lot of small digits. You may have to characterize what's on that because I don't think people in the room can see that for themselves.

MR. DAVE HARPLEY: Do people in the room have access to the -- the DAR?

MS. ANNE WILSON: It's Anne Wilson. Can you provide the DAR reference for me?

MR. DAVE HARPLEY: I think it's Appendix 9, if I'm not mistaken. Yeah, Appendix 9. Well, let me try and explain this in simple terms without that using this complicated spreadsheet.

The water storage pond is approximately -- has a base elevation of about 873 metres elevation and the top elevation would be 880 metres. At this point in time, our geotechnical consultant feels that we need to

maintain a minimum water level of 877 metres elevation. This is because the water acts as a subsidiary buttress for the north slope for stability purposes.

So this means that we have the interval between eight seven seven (877) and eight eighty (880) for operating fluctuation. And that range gives us a -- currently gives us a pump capacity of approximately 220,000 metre cubed. Yeah.

That water balance that you can't see indicates that on a seasonal basis we would anticipate a fluctuation in quantity in the pond up to a maximum of approximately 90,000 cubic metres. That's because in the wintertime we are storing more water than we're treating because we're retaining the process water in the pond rather than treating and discharge. So that's -- that's the main fluctuation.

So you can compare the two twenty (220) to the ninety thousand (90,000) and you can see that we can manage that fluctuation well within that operating range. In fact, we could have greater variation if -- if we wished. So that gives you a sense for how much time we have as far as the storage goes.

And if I go back to that previous picture I had, on the top part of this table, can you see that one? The -- what -- what you're looking at there is the

total treatment rate in litres a second as the top line, and below that the treatment quantity in metres cubed per month.

And so you can see mine water at maximum inflow -- well, not maximum -- maximum expected inflow, let's say it that way, best estimate, 50 litres a second gives us a treatment flow of 41 litres a second, which means approximately 110,000 metre cubed in January. So there's about a month, two (2) months that it -- that shows you that you've got about a two (2) month storage even if we're at the minimum operating level in the pond at eight seven seven (877).

Bear in mind, from startup, starting at eight seven three (873), we've got considerably more than that. We're -- we have in the pond approximately 450 to 500,000 metre cubed of storage. So you can see we've got -- we could -- we could put mine water in the -- at the -- the 50 litres a second into the water storage pond at startup for five (5) months before we'd have to start treating the discharge.

Now during startup we'll still be treating mine water as we are now. So we will not be putting all the mine water stream into the pond on startup. It will be -- only be possibly a fraction of that, as soon as we have the -- the treatment plant up and running.

So this really only becomes an issue when we start looking at the treated process water flow and that's fairly steadily through the high point of the -- the summer discharge season, 20 litres a second. So that would mean, if we only put treated process water in the pond we're looking at about a year of storage before we have to start discharging. There's also a simple fix if we run into a problem with treated process water and that is just stop the process.

UNIDENTIFIED SPEAKER: Can I -- can I just get a clarification of that, Mr. Harpley.

So you're saying if you no longer have the capacity to add treated process -- there's no longer the space in -- in what used to be the tailings pond -- what's it called now, the water storage pond?

In the water storage pond, if you no longer have the space to add process water, you said you have the option of start -- stopping the process. Is that the same as committing to stop the process in the event that your water storage pond is -- is -- doesn't have the capacity to take the extra water?

MR. DAVE HARPLEY: Ultimately, I guess so, yes. But, you know, we would expect obviously that we've addressed the issues with acute toxicity and testing and modifications of the treatment process to

resolve the issues long before we ever got to that sort of consideration.

UNIDENTIFIED SPEAKER: And I agree, it would be good if those issues were resolved, but it doesn't sound like all the acute toxicity issues have been resolved to date yet for the reasons you've described this morning, is that true?

MR. DAVE HARPLEY: Yes. The limitations, as I mentioned, are -- I don't know that I have to repeat those again, but --

UNIDENTIFIED SPEAKER: No, fair enough. And you also point out, if I understand it correctly, that that year of capacity is for if it's only process water.

If it's process water in combination with mine water, how -- how long does the -- the capacity, assuming that you are between 877 and 880 litres in the storage pond?

MR. DAVE HARPLEY: Well, it depends how much mine water you put into the pond at the same time. But as I've indicated it -- it should not be anything like the full flow of the mine water because we still have the existing treatment system. And we will have online the new mine water treatment system.

We know there's not a toxicity issue,

acute wise, with the -- the mine water, so we're able to treat and discharge that. So there's no reason why we couldn't use the majority of the storage in the pond for the process water until such time as we have demonstrated that it was acceptable.

UNIDENTIFIED SPEAKER: But I -- I understand the part about, for -- for just the process water how -- how much time you've got in terms of the water balance for the combined process water/mine water, assuming, I don't know, a reasonable yet cautious estimate in terms of the amount of mine water, roughly how long you're looking at.

MR. DAVE HARPLEY: Well, as I've indicated, if we wished to, we -- we don't need to put any mine water in the pond, in which case we're looking at only process water at 20 litres a second which means we're looking at about a -- a year's storage, I would say.

UNIDENTIFIED SPEAKER: Okay. That helps, thank you.

UNIDENTIFIED SPEAKER: Any other questions from the parties on surface water, ground water, water balance, water treatment, the Water Management Plan, or the Water Discharge Strategy?

It's Jamie VanGulck from -- speaking for

Parks Canada.

MR. JAMIE VANGULCK: Thank you, Alan. Just a follow-up question, actually, on the response. How long will it take for you to get confirmation of the toxicity test results?

MR. DAVE HARPLEY: I believe those result -- those tests need about three (3) weeks to actually run and get the analysis, so let's say approximately a month.

MR. JAMIE VANGULCK: Jamie VanGulck with Parks Canada. Just a couple comments, I guess, to -- to the Review Board. These options that were discussed with regards to the water storage and the impacts on toxicity to -- to my understanding have not been put in the DAR. This is the first we heard of it during this technical meeting. So there's some additional information that we just received here that discusses operations of the mine that has implications on the water quality management and water site management.

And thanks very much for your response. It's just that there is considerations that we weren't aware of beforehand, so I just wanted to point that out.

I do have a few more questions with regards to water site management. If you just give me a second I'll pull that up.

MR. ALAN EHRLICH: When you're ready.

MR. JAMIE VANGULCK: My questions are specifically related to Appendix J, where you provided some water quality predictions for the mine water released to Prairie Creek.

Just as a little preamble, the predictions that you did provide in some cases show that the site specific objectives that are proposed are exceeded. And I see a caveat that's provided saying that there will be a reliance on adjusting the discharge flow rate from the mine in order to achieve the site specific objectives.

Is there an understanding of what flow rate is needed for discharge in order to achieve -- achieve those site specific objectives?

MR. DAVE HARPLEY: Dave Harpley. The predictions are based on flow rates that have been measured in the basin over a sixteen (16) year period, so we Are fairly confident that those flows exist. And the occasions where there are exceedances are mostly related to low flow situations and that's why we developed the Water Management Plan to be able to cut back treatment during those periods.

MR. JAMIE VANGULCK: Jamie VanGulck with Parks Canada. So the predictions here show exceedances based on whatever your discharge flow rates are.

What discharge rate should be put into the

creek so that you don't have exceedances?

MR. DAVE HARPLEY: I'll refer you to the other appendix which talks about the regulatory strategy we've proposed. And that describes a mechanism whereby, based on an assumed background concentration and real time data on flows in the creek, we are able then to compute the load that could be discharged to not exceed the site specific criteria downstream.

Now that will obviously vary on a daily, maybe even hourly basis and that's why we're planning for continuous real time monitoring of flows, and at the same time monitoring the treatment rate and treatment quality so we're able to maintain the discharge below the load. So, in other words, we're -- we're only discharging so that we don't get the exceedances. The -- the tables are merely indicating what would happen if we didn't do that.

MR. JAMIE VANGULCK: Jamie VanGulck. A follow-up question: Is there an understanding that there is sufficient site water storage for all those cases? For instance, you may reduce your discharge flow rate to meet whatever loading rate you need to, to set and have your effluent standards okay, but do you have enough room to store all that water? Has there been a calculation provided in the DAR or in the responses to demonstrate that?

MR. DAVE HARPLEY: I'll refer you to that complicated table that you couldn't see in Appendix 9 of the DAR which shows you the -- the water balance and the quantities of water produced on a monthly basis. And, as I just explained, it was in the DAR addendum. There was a graph of water storage pond capacity and that's where the numbers of the -- the two, twenty thousand (220,000) operating quantity metre-cubed between eight, seven, seven, (877) and eight-eighty (880) comes from. And that water balance indicates a fluctuation of ninety thousand (90,000). So that's the basis for me to say, yes, we do have the capacity.

UNIDENTIFIED SPEAKER: Mr. Harpley, I'm going to jump in with a question. Do you have more, Jamie? You mentioned that your -- your water balance is -- is based on sixteen (16) years of information from the site, right?

MR. DAVE HARPLEY: Correct.

UNIDENTIFIED SPEAKER: I'm just -- I'm thinking back to that -- that's a relatively short period of time by some mine design standards. I think about the Faro Mine that was designed to a twenty (20) year flood event and -- and had a serious emergency because of -- of flood issues. I know that many mines are based on hundred year flood events.

When I think about the aboriginal knowledge of the area and the traditional knowledge, I know that Can Zinc has certainly expressed its -- its interest and willingness in exploring traditional knowledge as a source of -- of baseline information.

Have you talked to the -- the First Nations that use the area to try to get a sense of what the hundred year flood event is, the frequency of flooding in that valley? I -- I -- I just -- I ask because now that you -- you mentioned that the former tailings pond is now playing a slightly more active role in this; it's -- it's pretty close to the river. I -- so I guess my question is: Have you -- have you had the opportunity to -- to talk with traditional knowledge holders about the frequency of flooding and the hundred year flood events in that area so that you could incorporate that into mine design?

MR. DAVE HARPLEY: Dave Harpley. The question we're discussing here with discharge has more to do with average and low flows in the creek, not peak flows, flood flows. So the sixteen (16) year local data base is more applicable to a consideration of actual flows we see normally in the creek.

When it comes to a flood situation, then obviously we don't rely on local flows only. In fact, we

more readily ari -- rely on regional stations with -- with a much longer data base, in the immediate catchment and neighbouring catchments and in the -- in the whole basin. So the data base for flood flows is considerably greater than the sixteen (16) year period.

And that's possibly more -- you know, considering return periods for major floods, your question was: Have we considered traditional knowledge? The simple answer is: No, we haven't. But that's not to say that it isn't relevant, if there was a record going back longer than perhaps our lifetime in terms of the magnitude of past flood events.

UNIDENTIFIED SPEAKER: And -- okay, I -- I thank you for that. So to -- to what -- to what period flood event is your design based on?

MR. DAVE HARPLEY: We're talking water quality and blending with normal flows at this point, we're not talking floods here.

UNIDENTIFIED SPEAKER: Yeah. No, I'm asking about flooding though. The question that I have is: When you design this -- this system, in -- incorporating the new role of the -- the water -- water storage pond, to -- to what -- what frequency flood event is it -- is it designed to?

MR. DAVE HARPLEY: It was designed to the

M -- well, I think they call it the MPF of the time, Maximum Probable Flood. And this is an issue that we're probably going to get into on Friday when we consider floods and the pond structure.

UNIDENTIFIED SPEAKER: Okay. Yeah, we're -- we're comfortable with sort of shelving that subject until Friday. I mean, as you've pointed out, a number of these issues overlap. And the -- the water quality, the water balance, and precipitation and -- and flooding in -- in my mind aren't quite separate, but then again, I -- I don't have a profound understanding of -- of the system as my colleague here does.

Any other questions? Jamie, you have another question from Parks Canada.

MR. JAMIE VANGULCK: Thank you. Just one last follow up on this -- this line of questioning. Could you please reference to me where in the documents that you've submitted that show what your mean monthly discharge rates will be into the Prairie Creek such that your water quality objectives are achieved?

MR. DAVE HARPLEY: Dave Harpley. I'm not sure there is anything -- that mean monthly actually exists because it's varied, depending on the conditions at the time. And it also depends on how much mine water we get. That's why we've developed the flexible water

management system. We basically have set it up to treat and discharge mine water as it arrives. We have the opportunity to seasonally adjust treated discharge, but that's mainly for processed water. So there -- there really -- it's more sophisticated than that. I think it's too simplistic to say that there's one (1) single number.

MR. JAMIE VANGULCK: Jamie VanGulck with Parks Canada. I appreciate that. And there's a bunch of scenarios based on what expected mine flows you might get and discharge water quality you might actually have. But in order to understand the -- whether or not operations that are proposed are achievable, I think that it would be useful to understand the expected amount of flow that's being discharged into Prairie Creek under a variety of scenarios and then compare that to conditions such as whether or not your mine site components can treat it and what they need to be designed to, such as the treatment plant, and then also carried over to the dilution modelling that is a different topic of discussion.

So I'd just like to -- to highlight that there's not a clear understanding from my perspective as to what exactly the discharge flow rates will be for different possible conditions at the mine site and how

that interacts with the water storage, water quality predictions.

MR. DAVE HARPLEY: Dave Harpley. I don't believe I can walk you through, or should try and walk you through the -- the whole content of the material in this exercise, it's -- it's fairly involved. I can only point you to the water balance and the derivation of the various numbers and the water management strategy.

What I can add, though, is that the water treatment plant has the capacity to treat, currently, with the current design, up to 100 litres a second, even though our best guess at this point is that we're going to get an average of 50 litres a second.

In addition to that, the plant is expandable. It can be expanded up to approximately 200 litres a second of mine water flow. So we feel that we're ready to -- to address and manage whatever nature throws at us in the mine.

UNIDENTIFIED SPEAKER: Any more questions from Parks Canada on this subject? If you do have more you're welcome to -- to -- okay, go ahead, please.

MR. JAMIE VANGULCK: Jamie VanGulck, Parks Canada. Your in-stream concentrations for predicted values related to ammonia and nitrate -- nitrate, phosphorus, sulfate, at different conditions

sometimes exceed your water quality objectives. I don't see in the DAR any treatment for those specific parameters in your Water Treatment Plan.

Could you address how to -- how -- how those parameters, I guess, will be reduced in concentrations. Is it strictly going to be relying on dilution in Prairie Creek?

MR. DAVE HARPLEY: Dave Harpley. Those parameters weren't described in the DAR because they weren't perceived to be an issue in the DAR. We subsequently were asked to develop site specific guidelines for an additional number of parameters. Frankly, we didn't see the need for most of them, but, nevertheless, we went ahead and did that to satisfy the request.

The simple answer is: No, we're not proposing treatment for those list of parameters. We are planning to manage them, firstly, by source control, obviously, to -- to minimize the discharge, and then, secondly, with our water management discharge strategy, and that's the basis for the numbers that are in the IR responses and appendices.

MR. JAMIE VANGULCK: Jamie VanGulck, Parks Canada. I just wanted to point out that that's also new information that has not been provided before

this time, in terms of understanding the management of those types of parameters onto the receiving environment.

MR. DAVE HARPLEY: Dave Harpley. I don't believe it is new information. It's information that was contained in the IR response. There was no specific question in -- in the IRs as to whether we were treating for those parameters, so obviously there was no answer to say whether we were or were not. So I don't believe it is a deficiency.

UNIDENTIFIED SPEAKER: I think Can Zinc has been pretty clear in its response to your question. Do you have any other questions? Okay. I -- I'm going to -- to hand it over to -- or ask my colleague back there to hand it over to a consultant working on behalf of INAC.

MS. ROCHELLE DRUMM: Hi. Rochelle Drumm from WESA, working for INAC. My concern or question has to do with the predictions for mine in-flows. I have several questions.

The first one has to do with, in the reports that Robertson GeoConsultants produced you mentioned that if the vein fault, which is highly conductive, extended further north and also extended further south into the Prairie Creek valley, that there would be significantly more mine in-flow. The predictions

that were made didn't include that fault extending further north or further south. So my question is: Was it considered? And if so, what would be the additional mine flows that would occur as a result of this?

MR. CHRISTOPH WELS: Christoph Wels from Robertson Geo -- Christoph Wels from Robertson GeoConsultants.

We -- we did consider it, at least conceptually, whether in particularly as an extension to the south. We did not model the scenario. I remember -- let's first talk about the northern section. We -- we found one (1) exploration hole that intersected the MQV (phonetic) to the north of the mine and the ground water level there does not indicate a very depressed watertable, which you would expect if it's connected to the mine. So I don't believe that the fault extends to the north because of this piece of information. So, therefore, we did not include it in the groundwater model.

To the south, we -- we don't have direct information whether it does or does not extend into Prairie Creek. I don't think it would make a big difference in the flows if -- because we're talking not about the groundwater conc -- concentrating into the fault but we're talking about where this groundwater

discharges. So I don't think it would make a big difference whether it discharges -- like we have assumed now, that it discharges into Harrison Creek or it extends a little bit further and then discharges into Prairie Creek. It's just the point of discharge would change, but not the entire flow through the fault.

So in response to your question, I -- I -- we thought about it conceptually, and I do not believe that this -- that this fault extends as a hydraulically active and highly permeable zone further to the north.

And it may extend into Prairie Creek. We -- we don't have information one (1) way or the other whether it does or it does not. But I don't believe it would significantly change the flow rates discharging. It would only change the location of the groundwater discharge.

MS. ROCHELLE DRUMM: Rochelle Drumm, WESA. That's -- when the mine is being dewatered, you had mentioned in your report that the cone of depression would extend as far as the Prairie Creek valley. So wouldn't it possibly be drawing water through possibly Prairie Creek, through the Prairie Creek alluvium aquifer down into this main quartz vein fault if it extends that far, and then towards the open mine workings?

MR. CHRISTOPH WELS: That -- that's

correct in -- in a sense. But the question is: Would it actually -- would it actually increase the total flow? The way the model is set up, we actually put a very conservative assumption on the model and that is assuming that the area where the fault crops out or intercepts the Harrison Creek area, that there is an infinite supply of water via the creek that will provide water into the mine.

So we already have a very conservative assumption in -- in terms of there's an infinite supply of water which we later realized there's actually too much water even assumed in the model. So if we extend the fault out further into Prairie Creek, we already have a very large amount of water available to rush into the mine.

I'm -- I would have to assimilate it exactly to see what -- how much of a difference it makes if we were to extend that fault into Prairie Creek. And I could see that there's some increase in -- in flow. This is entirely through the period of active mining, not post closure, obviously.

So during active mining I think there's a possibility that there's some increase in flow, and we would have to test that scenario. But I doubt that it makes a very big difference, because of this very

conservative assumption that the fault is already receiving infinite supply of water along the Harrison Creek area.

MS. ROCHELLE DRUMM: Rochelle Drumm, WESA. In your assessment of the maximum upper limit of 200 litres per second in your steady state flow, you'd mentioned that there wasn't an infinite amount of water to recharge that quantity in the Harrison Creek and Harrison Creek aquifer.

So is that contrary to what you've just said?

MR. CHRISTOPH WELS: No, it's not -- it's not contrary. The -- the -- there's a model simulation and then there's the reality. The model simulation assumed that Harrison Creek has an infinite amount of water available to supply into the vein and then into the mine. And that is at 200 litres a second.

If you look at the stream flow from Harrison Creek, the highest flow -- this 200 litres a second, or it's actually 180 litres a second that would come from Harrison Creek, can only be supplied by that creek for, I think, one (1) month if we believe our scaling of stream flows from Prairie Creek onto Harrison Creek. So there's a very short period of time when that kind of flow could actually be sustained.

Now following up on your question, if you -- if the -- the MQVs are highly permeable, if it -- it may be highly permeable in this area, extend all the way into Prairie Creek, there'll be a larger supply of water in those 180 litres a second, or 200 litres a second, could potentially be supplied for a longer period of time. This is the scenario that we -- we did not simulate.

We -- we don't have a clear evidence of this MQV extending to Prairie Creek. We have evidence of it, obviously being present along the mineralization in the immediate vicinity of the mine. We have also found it and intersected it in bore holes along Harrison Creek. But right now it's -- it's not clear whether this fault, or this MQV area -- linear structural element extends into Prairie Creek and is hydraulically active in the same permeability. So it is a little bit of a -- we can simulate this and put a highly permeable fracture into Prairie Creek valley, but it's a bit hypothetical, because there's no clear testing that supports that there is a hydraulically active fault extending that far from the mine all the way to Prairie Creek.

MS. ROCHELLE DRUMM: Rochelle from WESA, Rochelle Drumm. Yes, well, there -- right now there isn't any proof hydraulically, but once there's deeper

mining that occurs, and your cone of depression will have to widen to support the recharge into the mine, then that may occur.

And given the fact that mine inflows are one (1) parameter that is used throughout to design your water balance, to predict your stream effluent and how much you're going to have to dilute it, and then your post closure stream concentrations, is it not an important thing to possibly model and/or to investigate further through geophysics or -- or exploration drilling to find out about that highly conductive fault?

(BRIEF PAUSE)

MR. CHRISTOPH WELS: I'm going to pass it to Alan.

MR. ALAN TAYLOR: Yeah, it's Alan Taylor here. We've been exploration drilling in that -- in that area for many years and we don't have a lot of holes in there, in that particular area that you refer to. However, we do have a few. And what they've indicated -- what we've been looking for is exactly what you are referring to, is a vein type target, and we have not been successful at locating one. And those bore holes go underneath Prairie Creek.

MS. ROCHELLE DRUMM: Thanks. Rochelle Drumm, WESA. I have one (1) more question with respect to the prediction of mine enclose. For the steady state upper limit, 205 litres per second, that was predicted, and then consequently reduced to 100 litres per second with the rationale that there wasn't sufficient recharge from the Harrison Creek aquifer or Harrison Creek.

There was no indication how that was reduced to 100 litres per second, at least in the documentation that I received. Are you able to explain how you came to 100 litres per second?

MR. CHRISTOPH WELS: Okay. Well, at the time of the DAR, when we submitted a steady state simulation, we had not done the transient simulations. They were actually in progress at the time. So we submitted the high and the low flow steady state estimate.

It -- it -- after we had submitted the DAR, we completed this transient modelling. And -- and I will not say that this a fully calibrated model, because we could not calibrate against water levels because we didn't have seasonal water levels.

However, we have -- we had outflows from the mine, which intersects the MQV, which is what we're really mainly interested here. So we have a very good

idea about the flow coming out of the cut into the MQV. And we used that as our calibration target for the transient model.

So using this, and -- and using the permeability of that high flow estimate, which is -- if you remember, the permeability was assumed to be one (1) times ten (10) to the minus four (4). If we assumed that, we would get flows out of the tunnel in a -- in a -- in a transient simulation would be way too high compared to what we see today.

So we had to reduce the permeability to about five (5) times ten (10) to the minus five (5), which is happen to be the average of the high flow and the low flow steady state simulations. Using this parameter for the MQV, we more or less matched the outflow over the entire year, seasonal outflows from the tunnel.

In fact, we're still a little bit on the high end, but we -- we left it at that for this initial calibration, or very early calibration of a transient model. So I would really suggest that we use -- and I -- I certainly as a professional judgment would prefer to use the transient model results to -- when we're talking about mine inflows to the mine and also post-closure flows from the mine towards Prairie Creek, I find those

results more reliable than the initial steady state simulation, which are -- you know, steady state is certainly a -- a strong simplification of the -- of the situation.

So I -- I don't really want to use the two hundred (200) anymore. I would like to talk sp -- to talk of the range of seasonal flows that we observed, that we simulated, which is, I believe, from about, I think, 30 to 90 litres a second, which includes that -- that 100 litres a second as a maximum. Do -- do you understand me?

MS. ROCHELLE DRUMM: Rochelle --

MR. CHRISTOPH WELS: Use it as an upper limit, I use it as the most realistic scenario for -- for seasonal flows. We're talking about an upper limit for seasonal flow, or are we talking about an upper limit for a mean annual flow?

MS. ROCHELLE DRUMM: Rochelle Drumm. An upper limit for a mean annual flow that the 100 litres per second, which was then used in the calculations for predictions of parameters of concern in -- in the stream?

MR. CHRISTOPH WELS: Well, if we -- if we scale the transient results, which give you an average of fifty-six (56) mean -- annual average of 56 litres a second, if we use 100 litres a second that's twice of the

results from a calibrated model against steam discharges from the -- from the tunnel.

I think that's a reasonable upper limit for our flow calculations, using two (2) times my best estimate of mean annual flows. Yes.

MS. ROCHELLE DRUMM: No further questions with respect to that. I'd like to see the calculations if you're able to send through more information about it so we can review it more. That would be really helpful.

MR. CHRISTOPH WELS: Christoph Wels. If you could please specify which calculations you would like to see.

MS. ROCHELLE DRUMM: Rochelle Drumm. Just a summary of how you got the 100 litres per second as your upper limit.

(BRIEF PAUSE)

UNIDENTIFIED SPEAKER: It's -- Christoph, are you able to provide that? It doesn't have to be now, but sometime over the next couple days to INAC?

MR. CHRISTOPH WELS: Yeah, no problem.

--- UNDERTAKING NO. 1: Robertson GeoConsultants to provide a summary of the

calculations of how they got the 100 litres per second as the upper limit

UNIDENTIFIED SPEAKER: Thank you. Another question from INAC from Nathen Ritchie (phonetic) -- Nathan Richea.

MR. NATHEN RICHEA: Hi, it's Nathen Richea with INAC Water Resources. I just wanted to follow up with some of the conversation that was back and forth, and I'm not an expert, so I'm just trying to -- to grasp kind of what the discussion was about.

And basically what I'm trying to understand is if the potential exists for the vein to occur and have connectivity to the Prairie Creek aquifer, or Prairie Creek itself, but there is no demonstratable evidence to support whether there is or isn't. As someone who is responsible to conduct an assessment of the project, we need to be careful that we understand the conditions that may exist as part of the operation.

And if that potential is existing, or it could exist, then that has to be factored in as a potential for worst case scenario. And I believe that it could have implications for water management on the site. So I just wanted to caution that. It's more of a

comment. It's not really a question.

I think the only way to understand whether there is conductivity or not is to do further work. And I -- we can't rely on the mining operations to determine whether there's conductivity or not, because the water storage pond and the water balance and all that will be approved based on sort of what we see in the developer's assessment or -- or any additional work that may come as part of this process.

But if that tends not to be the case during operations, we -- we'll find ourselves in a very difficult situation. So we -- we kind of need that information as part of the assessment, whether there is or isn't conductivity. And if there's evidence that exists to support that potentially there is conductivity, then we'll need to know for sure, or at least the worst case scenario if there was, what we might see.

UNIDENTIFIED SPEAKER: Thanks for the comment, Nathen. Are there any other comments from -- there's a response from Canadian Zinc?

MR. ALAN TAYLOR: Yes, it's Alan Taylor. I just want to reiterate that there is evidence of the non-existence of this MQV aquifer, and that's through our exploration diamond drill core holes.

MR. NATHEN RICHEA: Nathen Richea, INAC

Water Resources. I believe I heard you say that you tried to find it, but you -- in your attempts you couldn't find it. It's not to say it's not existent.

MR. ALAN TAYLOR: It's Alan Taylor. We crossed the prime target stratigraphy and we're confident that it's not there.

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. I stress my comment again. If -- if you can't find it through some preliminary assessment, it doesn't mean that it doesn't exist. We need it, an assessment of the worst case scenario. Even if it does come in or it doesn't come in, there needs to be some kind of confidence in -- of the assessment that's before us. There is some evidence in the documents that suggests that there may be conductivity. You know, a number of sample, you know, targeted bore holes to try to find it coming un -- coming up unsuccessful doesn't mean that it exists or doesn't exist.

MR. ALAN EHRLICH: It's Alan from the Review Board. I'm -- just to remind parties that the Review Board always encourages parties to describe, when providing their impact predictions to the Review Board, not just the breadth, magnitude, duration, but also the likelihood of the impact occurring and the uncertainties that are implicit in the prediction to help the Board

take an appropriate approach to its duties.

Mr. Taylor, I believe you had a response to this last comment from INAC.

MR. ALAN TAYLOR: Yes, It's Alan Taylor. I still take an issue that you're saying that it's preliminary data. It's hard data and it's been -- this exploration has been carried out for thirty (30) years and the prime target has been this vein bearing structure. And that accumulated amount of data we have I think is sufficient to say with confidence that it is not there.

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. I believe I heard your consultant say that there was a potential for that vein to exist. It doesn't -- I'm not saying that it does exist or it doesn't exist and I'm not questioning your attempt to try to find it. I'm just saying, if -- if the potential is for that conductivity to be there we need to know that as part of the assessment.

In the absence of knowing, through whatever undertakings have been conducted to know exactly whether it's there or not, the only recourse we'd have would be to model, assuming that there is connection, and then provide sort of a probability of whether that is actually going to occur or not.

MR. ALAN EHRLICH: Thank you. Any -- any other comments on that from Canadian Zinc? Okay.

Another question from -- is it a question or a comment from -- from INAC?

MS. ROCHELLE DRUMM: Rochelle Drumm, WESA. The -- the reason we thought that the Prairie Creek -- or the main quartz vein fault possibly extends into the Prairie Creek valley is that it was mentioned in the DAR Appendix 1-A, page 35, that:

> "Early exploration drilling suggests that the vein fault may intersect Prairie Creek."

This was written in -- in your doc -- a document, so that's what all this is drawn on.

MR. ALAN TAYLOR: Yes. It's Alan Taylor here. It's un -- it's unfortunate. It's -- it's a geological understanding of the area that is somewhat complex when we talk about veins. It -- it's not necessarily a continuous single vein, there's a lot of veins down the entire 16 kilometres of -- of the stratigraphy there. So they're not necessarily connected, but they're very similar looking.

MR. ALAN EHRLICH: Paul Green with INAC Water Resources, please go ahead.

MR. PAUL GREEN: Yes. Paul Green with

INAC Water Resources. Just going back to the water balance, the information that -- that you've provided is based upon a 50 litres per second mine discharge. Robertson GeoConsultants has provided an update of 56 litres a second which basically means that the balance as presented isn't going to work, you're going to have a lot more water building up over the course of a year.

And so I'm just wondering, like, what -- what are the contingencies for that event, you know, if you do get this 56 litres a second, and how that's going to impact the overall water management strategy for the site?

MR. DAVE HARPLEY: Dave Harpley. I think you really need to understand the water management scheme and how the water storage pond operates. The 50 litres a second was an assumed number for the water balance of the pond for, one can say, illustrative purposes.

However, the Water Management Plan is based on treating and discharging mine water essentially as it arises. If it's thirty (30) we treat twenty (20) because ten (10) is lost elsewhere; if it's a hundred (100), we treat ninety (90) because ten (10) is lost elsewhere. The mine inflow rate does not affect how the water storage pond operates in terms of treatment of discharge.

(BRIEF PAUSE)

MR. PAUL GREEN: Yeah, it's Paul Green. If you want to move on to other questions we'll maybe come back to this in a few minutes. We have to discuss this.

MR. ALAN EHRLICH: Yeah, that will be fine. Thanks, Paul. I see either a stretch or a question from DFO. Lorraine's back there.

(BRIEF PAUSE)

MS. LORRAINE SAWDON: Lorraine Sawdon, Fisheries and Oceans. I've got a couple of questions about the -- the effluent discharge, and I guess my first one is having to do with nutrient enrichment.

In the DAR it was identified that nutrient enrichment has been seen downstream. And we asked where it had been seen downstream and we were provided with a map of sampling sites, both upstream and downstream from the mine site.

And I'm just -- could Canadian Zinc clarify where, or to the extent downstream that this nutrient enrichment has been observed?

MR. ALAN EHRLICH: Can Zinc, I -- would

you like to respond to that?

(BRIEF PAUSE)

MR. DAVE HARPLEY: Dave Harpley. I believe the mild nutrient enrichment that was noted in the Saskatchewan INAC park study was at the high exposure site downstream, and there it is on the figure and that's in the -- what's it in? I think that's in the IR response.

MS. LORRAINE SAWDON: Lorraine Sawdon, Fisheries and Oceans. The map was certainly in the IR response. I'm not sure that it was clear which of the sites identified on the map the effects of nutrient enrichment were observed. So I guess, follow-up questions: Are you aware of those nutrient enrichment observations being made farther down such -- at, like, the low exposure site, for example?

MR. DAVE HARPLEY: I'll have to check, I'm not -- off the top of my head I couldn't -- couldn't tell you. I'm just going by the reference that was in the document.

MS. LORRAINE SAWDON: So we could agree that you'll provide me with that information?

MR. DAVE HARPLEY: Yes.

MS. LORRAINE SAWDON: Thank you.

--- UNDERTAKING NO. 2: Canadian Zinc to advise if they are aware of nutrient enrichment observations being made farther downstream

MS. LORRAINE SAWDON: My next question then is: Once the mine starts to operate and there's people on site, what are the predictions for how far downstream nutrient enrichment will be seen?

MR. DAVE HARPLEY: We've predicted the concentrations of the N species and the phosphorus in the -- in the IR response. The results of this plume modelling should give us an indication what sort of distance we're talking about for some parameters. As far as mixing goes I think that will give us an indication for all parameters, not -- I don't think at this work we've done -- done right now has covered every single one, but I think it will be an indication, at least for all.

I think you also have to be careful how you view the existing data because that nutrient enrichment, nobody knows what the source of that is at this point. We don't know if it's natural, we don't know

if it's historical related to the mine. If it is the latter, it could be related to sewage discharge with phosphate based detergents. Who knows what the source is. So I wouldn't necessarily draw a direct comparison between nutrient enrichment already there for more nutrient enrichment during operations.

MS. LORRAINE SAWDON: Lorraine, DFO. I -- I understand that. Thank you. We're looking at this from specifically impacts to fish and fish habitat. Having predictions to base what the impacts could be are -- are necessary for us to make recommendations to the Board.

And so actually what you were speaking to leads into my next question, and that was: How -- how did Canadian Zinc come up with the nitrogen and the phosphorus content that will be included in the effluent?

MR. DAVE HARPLEY: Dave Harpley. The numbers for the -- the phosphate came out of the treatment testing. That's in the SGSME (phonetic) report, which I believe is Annex J-2, in Appendix J of the IR response.

In fact, I think those numbers are conservative because, as noted in that text, the mine water phosphorus in the treated water seems to be an analytical artifact because there was no phosphorus, or

least it was non-detect in the raw water stream, and I certainly don't think we generate phosphorus just by adding lime. So that's where the phosphorus numbers come from.

The -- the N species numbers was a little more complex in terms of derivation, it is explained in that appendix. It's largely based on some modelling that Golder Associates did for Snap Lake. And we've kind of extrapolated from that. That in itself was something of a challenge because the -- the model was based on Snap's intended use of three-quarters (3/4) emulsion, one-quarter (1/4) ANFO so it may be that the -- that the numbers predicted were skewed because of the ANFO use, whereas we're proposing to use 100 percent emulsion.

MS. LORRAINE SAWDON: Lorraine Sawdon, Fisheries. Are you or is Canadian Zinc going to be doing an assessment or a quantitative estimate of nitrogen from their emulsion use or, I guess, when is Canadian Zinc planning to look at that portion?

MR. DAVE HARPLEY: Dave Harpley. I guess we feel now we've looked at it and that's in the IR response. The next step we believe is considering the predicted impacts.

And you also have to bear in mind that we feel that those estimates are fairly conservative. The

Golder modelling that I spoke about, they assumed an explosive waste rate of 5 percent in their model, which we understand from the emulsion contractor that we've been talking to is -- is quite high. He suggests that a typical waste rate is more like 1 or 2 percent. So that's a pretty heft conservative estimate there in the numbers.

I would suggest that if we're going to look at the predicted numbers and imply that the impacts are unacceptable or too great, then the next step would be to look at explosives management because that seems to have the primary control generation of nitrogen.

MS. ANNE WILSON: David, it's Anne Wilson with Environment Canada. Just to follow on the nutrients question, if I may.

I couldn't find anywhere the predictions for the sewage contributions. And given a cap of two (2) to several hundred people that won't be insignificant necessarily. Can you point me to that somewhere?

MR. DAVE HARPLEY: Anne, we -- we don't have an effluent concentration from the sewage plant because it's never operated. I guess we could look at typical sewage plants and see what type of effluent they get. But what we've indicated in the information is that we find it hard to believe that sewage stream is going to

be a significant source of anything because it's such a small flow compared to the flows that we're going to be managing.

By way of comparison, if you look at the total inflows expected to the water storage pond, the effluent from the sewage treatment plant would make up less than 2 percent. So it would have to be a substantial concentration of nutrient in that series to make any effect on that -- that water.

MS. ANNE WILSON: It's Anne Wilson. In these oligotrophic waters, we really are looking at ospherous concentrations in, you know, the .004 micrograms per litre. It doesn't take much to bump that up.

So, one of the frustrations I felt with trying to assess the effluent quality is that there is not an integrated characterization of it that gives me a single column best estimate of all sources which are going to be combined and be the end-of-pipe outflow for the whole range of parameters.

Is that something that you could put together for us.

MR. DAVE HARPLEY: Just say again what you mean.

MS. ANNE WILSON: Sorry. Anne Wilson,

Environment Canada. The numbers that were given for effluent quality are generally split into two (2) columns reflecting the mill -- sorry, the process water contributions and the mine water contributions.

It would really be helpful to me to have an integrated number that includes the managed water plus the site run-off, plus the sewage contribution and gives an end-of-pipe characterization that includes more than just the MMER parameters, and that would be including the nutrients, the major ions, and the metals.

MR. DAVE HARPLEY: So, in other words, you're looking for some correlation of our sewage treatment plant with similar such plants and an estimate of what kind of nutrient you would get out of it.

MS. ANNE WILSON: Anne Wilson. That would be one (1) component of it, yes. And I think that's very doable, to look at the loading per person and the expected treatment that you can achieve, but it goes beyond just having the number for the sewage. It's having a prediction that includes all components contributing to the effluent quality.

And I appreciate that you don't know for sure what the ratio of mine water and process water would be over the course of time. But if there's some estimate that could be done that in -- puts everything into one

(1) column instead of several columns of different quality, where we don't really know an overall average for an annual effluent quality.

MR. DAVE HARPLEY: So, in effect, you want an expanded table, which I believe was also part of the IR response, that is a prediction of the end-of-pipe concentration?

MS. ANNE WILSON: Anne Wilson. That was Table PC-39, and when I saw that I got excited because I thought, oh, this will have what we need. And then it turned out it's got the two (2) columns and doesn't have a single end-of-pipe number, and didn't have all the parameters I'd be interested in nor the sewage contributions and the run-offs. So --

MR. DAVE HARPLEY: Yeah.

MS. ANNE WILSON: -- I know I'm asking a lot there but that would make it --

MR. DAVE HARPLEY: Okay.

MS. ANNE WILSON: -- much more helpful. Even if it has to be done, if not on a monthly average, then on an open water season average plus an ice-covered season average.

MR. DAVE HARPLEY: Yeah.

MS. ANNE WILSON: That make sense?

MR. DAVE HARPLEY: Yeah. No, I

understand what you're looking for. I don't think that would be too difficult.

MS. ANNE WILSON: Good.

MR. ALAN EHRLICH: I'm going to jump in for a second just to get a clarification. By when do you think you can provide that?

MR. DAVE HARPLEY: I don't know. We'll have to get back to you. But I don't think it will take us too long to do that.

MR. ALAN EHRLICH: The reason I'm asking is we just need to make sure parties have the information they need so that we can keep the EA going in a -- in a timely manner. A week?

MR. DAVE HARPLEY: That's probably about right.

MR. ALAN EHRLICH: Okay. And the same question applies to the information that Lorraine from DFO --

MR. DAVE HARPLEY: Oh, yeah.

MR. ALAN EHRLICH: -- asked for before that. Yeah. Can you -- can you provide that within a week?

MR. DAVE HARPLEY: Yeah, no problem.

MR. ALAN EHRLICH: Thanks. Sorry to interject there, Anne. Please go on.

--- UNDERTAKING NO. 3: For CZN to have an integrated number that includes the managed water plus the site run-off, plus the sewage contribution and gives an end-of-pipe characterization that includes more than just the MMER parameters, and that would be including the nutrients, the major ions, and the metals in the tables and to complete within one week.

MS. ANNE WILSON: Yeah, it's Anne Wilson. Did I -- I didn't really follow much of what was said there. Is that David undertaking to do that in the near future?

MR. DAVE HARPLEY: It was.

MR. ALAN EHRLICH: Within a week.

MS. ANNE WILSON: Anne Wilson. Okay. That's excellent. I can turn it back to Lorraine, I kind of hijacked her discussion of nutrients there, if she wants to carry on with her train of thought. Sorry.

THE FACILITATOR: Lorraine...?

MS. LORRAINE SAWDON: Thank you. Lorraine, DFO. I still have more questions. You mentioned a bit earlier that you're going to have a look at the impacts. And I'm curious: 1) when we can see that, 2) if that will include what the potential impacts may be from the discharge of TDS within the -- the effluent, understanding that right now you don't have concrete numbers for that.

And if the plume model that you're expecting the results from will include both TDS and some of these nutrients, and their quantities and concentrations.

MR. DAVE HARPLEY: Dave Harpley. I think this first stab at the plume model will be essentially focussed on the main metals. I don't believe it will consider anything else at this point.

I'm making some inquiries regarding additional data on the -- the treated waters to try and get more definition of -- on the TDS question. So I -- I need to find out what the answer to that inquiry is before I could suggest that we could do something more sophisticated.

THE FACILITATOR: Lorraine...?

MS. LORRAINE SAWDON: Thank you. Still a few more questions.

Turning to the -- the effluent pipe, a couple of things. I guess the first one (1) would be looking at the downstream impacts to fish and fish habitat from the -- the plume and when that information will be provided.

Also looking at what the potential impacts to over-wintering habitat may be. Maybe I'll leave it with that and then I'll -- I'll ask a few more questions.

THE FACILITATOR: Thanks. Anything else from Canadian Zinc on that subject?

MR. DAVE HARPLEY: (NO AUDIBLE RESPONSE).

THE FACILITATOR: Okay. Are there any other parties that would like to raise this? What we'll be doing soon is taking a short break and then the rest of the afternoon will still be focussed on surface water and groundwater, water balance, water treatment, water management plan, and the water discharge strategy.

So if -- does anyone else have questions right now, because if not we'll take a fifteen (15) minute break and start again at twenty (20) to three (3).

Okay. Let's break.

--- Upon recessing 2:25 p.m.

--- Upon resuming 2:40 p.m.

THE FACILITATOR: ... raising their hand in the back. Go ahead.

MS. LORRAINE SAWDON: Thanks. Lorraine Sawdon, DFO. Just going back to the last question before the break. It's already been identified that there is a mild enrichment being seen downstream. In order to determine what potential impacts may be from an operating mine where there may be a potential to increase this, we're asking that Canadian Zinc provide us with -- with at least an estimate, preferably modelled information, that indicates what the predicted nutrient enrichment will be, how far downstream, and what those impacts will be.

And I guess my question to Canadian Zinc is: Can we expect this from you?

(BRIEF PAUSE)

THE FACILITATOR: Thanks for the question. Answer, please.

MR. DAVE HARPLEY: Dave Harpley. We'll take a look at it. Give you an answer tomorrow.

--- UNDERTAKING NO. 4: Canadian Zinc provide with an estimate, preferably

modelled information, that indicates what the predicted nutrient enrichment will be, how far downstream, and what those impacts will be. (To be provided October 7th)

MS. LORRAINE SAWDON: Thank you. Lorraine Sawdon, DFO. Yes. One (1) other question then is with the plume model and with -- with the data that's going to be presented with that, could that please include TSS and TDS. Both of these may have a potential to impact fish and fish habitat, and these will be things that we will be looking at in order to make any kind of determination and recommendations to the Board.

MR. DAVE HARPLEY: Dave Harpley. TDS we're looking at in terms of additional data.

TSS, I am not convinced that we need to consider a plume. I don't think TSS is an issue. I'm going to, in a minute, ask Byrod to go through the treatment use, and, in particular, sediment. As I mentioned before, we've never had an issue of sediment discharge from the site to -- to this point, and I don't expect that's going to change during operations.

I don't see how we would credibly do a

model of sediment discharge when we don't expect any. So, as I say, I'll -- I'll turn it over to Byrod in a minute when you're done with questions.

MS. LORRAINE SAWDON: Lorraine Sawdon, Fisheries and Oceans. I guess just as a heads up then, under Schedule 4 of MMER, a TSS, and I believe it's TDS, is required for reporting. So something for you to consider.

MR. BYARD MACLEAN: Byard MacLean, SNC-Lavalin. The water treatment process was developed with SGS -- semi-SGS Vancouver in Vancouver who did the treatment work. And at SNC-Lavalin we did the plant design. There's basically two (2) components to the treatment system.

The water treatment of the mine water is a very simple raising the -- the mine water to above pH 9, and then clarifying it, and that reduces the metal contents down to the target levels.

The flexibility in the process is that if you're running into some issues, you can raise the pH to 9.5, so that is how the project is -- has been designed. And what we have designed in the original process is a hundred litres per second treatment system with a standby of another hundred litres per second.

And with reference to the drawing on the

wall, this system here is the initial lime treatment system where the lime is added in a fixed in-stream mixer and it's given the de -- the work -- the test record was a thirty (30) minute retention time, so we've designed in an hour. And then there's a clarifier but the clarifier takes two (2) flows, and I'll talk about that in a minute.

The -- the process water treatment system is a little more difficult. What we have to do is first we have to drop the pH to about five (5), and then we add sodium sulfide for thirty (30) minutes or so. The reaction's actually almost instantaneous, but we leave it there for a while. And then we bring it back up to pH 9 and add ferric sulfate. That makes a reasonably fine precipitate. And we mix the two (2) flows, the one from the lime treatment plant together with the one from the sulfide treatment plant, before we go into the clarifier. And the reason we do that is, based upon the testing we've done, we get much better clarification, and so that is the overflow that ends up in the -- in the pond, the -- the catchment pond.

So in this layout, here is the expe -- we never need to expand the -- the mill process water because the -- the production rate is not going up, so whatever the flow rate from underground is, it really has

no affect on this plan.

So we have our expansion capability here. These tanks are only about 4 or 5 metres in diameter. So if we had to go to a thousand litres per second, we would just add subsequent lines here and it would cause us to consume more lime. Now, these tanks here are simply the reagent mixing tanks.

Any questions...?

THE FACILITATOR: Yes. Chuck Hubert, with the Review Board. Is there room onsite physically to expand the water treatment plant in the manner that you've just described?

MR. BYARD MACLEAN: It's Byard MacLean. Yes, there certainly is. Yeah, that building -- I have an overall site layout plan that I can put over on the table and you can look at it. But you can see where the water treatment plant sits in respect of the -- the mill building. Well, I guess it's on the maps that you have anyway.

But really all we're ask -- all we need to expand is -- is a couple of agitated tanks, a lime addition system, and an initial clarifier. So expansion is quite simple.

THE FACILITATOR: Thank you. And did you state that the treatment plant would be constructed with

a design capacity initially at a hundred (100) litres per second? Can you confirm that?

MR. BYARD MACLEAN: Yes. The hundred (100) litres per second is the -- is the row on the right-hand side of the drawing, the two (2) tanks with the dashed line around them in the clarifier is the expansion to 200 litres per second.

THE FACILITATOR: Okay. Mr. Redvers, a question?

MR. PETER REDVERS: Thank you. Just for clarification then. The two (2) tanks are the expansion tanks.

Are they going to actually be installed, waiting but just not operable, or they items that you would bring in if required?

MR. BYARD MACLEAN: The plan would be to just leave the space available.

MR. PETER REDVERS: And what is the turnaround time? I -- you're suggesting it's a fairly simple process, but at the point one would assume that you're going to realize that, you know, that a hundred (100) litres per second is too low, but you're going to realize that once the flows start to increase.

So what is the turnaround time, having made that decision or recognizing that you might want

that added capacity, to actually have it operable? And particularly the time of year when there may not be truck access.

MR. BYARD MACLEAN: Well, you have to assume that -- that based upon what Canadian Zinc wants to do, we could have the -- the equipment onsite and it could be erected in a month or it would come in over the ice road. My sense is, although I have no evidence of this, is that if the rate went up it would go up slowly and we would have some notice that we were running into troubles.

MR. PETER REDVERS: So they could be flown in?

MR. BYARD MACLEAN: No, they'd come in by road. Those are -- anything is possible in an emergency. You would -- you could take them to a near road and sling them in because they're not -- not that heavy, but -- they come in in parts.

MR. PETER REDVERS: Okay. No, that's just what I was wondering because if -- if they can't come in -- if they only have to come in by road then you've -- you may have a long lead time. And that's one (1) of the questions I think, David, I know I have raised that before, is just really trying to get a handle on the timing of that realistically, operationally, to increase

that -- that capacity.

MR. DAVE HARPLEY: Dave Harpley. You know, the flow is not going to go from fifty (50) to two hundred (200) overnight obviously. And I think we all know fairly on in the development, once we start drawing down the water and we're monitoring water levels in the ground -- in the wells, how this is going to behave longer term. We'll be updating our predictions pretty much straight away. We start getting that sort of credible data and we'll know fairly soon where we think that number is going to be and we'll be ready for it. It's not something that's going to happen and surprise us.

MR. ALAN TAYLOR: Alan Taylor. Maybe just to add to that is we do have the buffering capacity of the water storage pond to direct those excess flows to, temporarily.

MR. PETER REDVERS: No, I appreciate that. Peter Redvers. I'm just trying to get a sense of timing. That really was the issue.

And I hear, in best case scenario, a month to -- to get things in and turn them around. Worst case would be longer, but sounds like there would be, from what you're saying, David, a fair lead time and the ability to predict fairly early whether or not you're

going to need to do that.

THE FACILITATOR: Thank you. Any further or follow-up questions?

MR. DEVIN PENNY: Just, I guess, going back to sort of this whole balance and flow kind of situation, it's our understanding there really are two (2) options and I'm still not entirely clear on -- on why the one (1) of them isn't acceptable.

The first one (1) is simply to abide by the existing load limits or guidelines and ensuring at the -- the end of the pipe that -- that the contaminants are well within acceptable limits according to standards.

Now, my understanding is by the fact that, again, because of this fine particular (sic) matter and what you've mentioned about them actually carrying some contaminants and metals, being able to maintain those guidelines is -- is difficult or may be difficult under certain circumstances. And, therefore, there's this need for what I -- I see is a rather complex and technologically driven process of monitoring and flow management at -- at a number of levels, and perhaps with some degree of, you know, heavy reliance on, as you mentioned, realtime monitoring and -- and fairly quick adaptive kind of management procedures that are both technologically driven but also going to be driven by

operators, et cetera.

And I would suggest that that raises the -- the possibility for error, whether it be technological error or -- or operator error. And it -- it's very complex, obviously, based on some of the queries and questions that have been raised about being able to adequately predict and monitor flow of not only the mine water flow but creek water flow and creek water flow at different times of the year. It may be more problematic if, in fact, there are some relationships or connectivity between the aquifers and sort of drawing up and drawing down.

And the question really then is, and I go back to it, and I'm -- and maybe if you could make it as simple as possible for me because I need to obviously relate this to the community at some point prior to the community hearing, why is not possible to -- through the water treatment process, to add some form of treatment that would allow you to stay within the current guidelines such that, at any time of the year, regardless of the amount of water that you're discharging into the creek, it is within acceptable limits, and the need for dilution is minimized or eliminated?

And, therefore, the need for looking at plumes and all these kinds of things become a little less

relevant in some of the highly technical monitoring and -- - and flow control procedures become a little less -- you know, less required. And so, if you, again, maybe say that as simply as possible as why -- why that isn't the option.

MR. DAVE HARPLEY: Dave Harpley. I think it depends on your definition of current guidelines. The -- we feel that we're moving with the times with our proposal for a double set of guidelines, one (1) for in the pipe and one (1) for receiving water.

What you're implying, I think, is that why can't we just treat so the effluent's better quality. Well, if we were to do that, then we would have more complex treatment, which seems to be counter to what you've just said in terms of making things simple.

We don't believe that the monitoring will in fact be too difficult. It will be essentially automated and will be synthetize -- synthesized into really just managing a couple of numbers, which treatment plant operators, mill operators, do all the time on a -- on a daily basis. So I don't believe we're talking about something that is so complicated that it can't be done. This is largely going to be done by instrumentation.

The fact of the matter is we believe the -- - the water management strategy that we've selected is

the best we can do to minimize impacts in the receiving environment. If somebody can tell me a better system, I'm all ears, but I can't see how it can be better than by storing and adjusting your discharge to maintain concentrations throughout the seasonal range of flows. To me, that has to be the best way to minimize impacts.

MR. DEVIN PENNY: Would it be possible for you to maybe then just speak to, or explain the complexity involved in -- in essence, scrubbing or treating the water such that you do, you know, eliminate more of the -- the concentrates.

What -- what would be the added step or the complexity that would be required to do that, for clarification? I'm -- I'm not sure.

MR. BYARD MACLEAN: Byard MacLean speaking. The system that we've designed has two (2) components in it that maybe I should talk about a little more. In order to keep the metals -- with respect to the water coming out from underground, the relationship between water quality and -- and pH is quite evident, and so we've, based upon the work we've done to date, raised the pH up to 9.

If we were to raise it up a little higher, you get a much better result. And so, when you're operating you decide what that number is based upon

what's coming at you and -- and all the rest of it.

With respect to the -- the process water, which is a little more complicated, the driver on that one in terms of increasing the water quality is how low you drive the pH in the first component. We're not absolutely sure why that works, we just know that it does. And so the system is designed to drop it to pH of about 5, and then bring it up to 9 and -- and do the -- all the other bits and pieces.

But once we get in and get operating we'll know whether it's five and a half (5 1/2) or whether it's four (4). And the -- and the acid storage facility is designed to -- to give us enough fire power to -- to drop that pH low enough to get the job done. And, again, we'll learn in the early years what exactly that lower number is. And -- and if we need to add another acid storage tank, we have room to do that as well.

So with the -- those are the two (2) operating variables we have under the current system to get -- to -- if our results are not looking exactly what we've predicted in the lab and in the pilot plant, what we can do about it to -- to clean it up in the short-term, or in the long-term for that matter. It increases the -- the consumables and it increases the -- you know, the material has to come in to do it, but that's --

that's business.

Does that help?

MR. DEVIN PENNY: So is that, to some degree, the miti -- mitigating factor is the amount of reagents and that that you need to bring or utilize to get a better quality coming out of that system?

MR. BYARD MACLEAN: Well, that's -- the -- the consumption of the operating chemicals is -- is a driver. What we've done is we've set the system up on the consumptions as recommended by Semi (phonetic), who did the -- the basic research, but the design has longer retention times by a factor 2, expandability by a factor of 2, and the ability to add more chemicals to whatever it needs to be.

So that's how we mitigate the -- when we go from the pilot plant to the field, whether it's a flotation circuit, or a grinding circuit, or a water treatment circuit, you scale up your items to make sure that whatever can come up and bite you you've got, you know, the best protection in place as possible.

MR. DEVIN PENNY: So, to some degree, that is asking for sort of the two (2) sets of guidelines somewhat of a buffer to -- until that -- things are up and running and that you have a better handle on what you're actually going to be able to do and what's going

to be able, you know, with -- with the system that you have in place?

MR. BYARD MACLEAN: Byard MacLean again. We have a system that we think gives a certain effluent standard. But it's like when the engineers are asked to take a pilot plant study and make it into real life, their conservatism makes the retention times longer, the pumps bigger, the addition systems more robust, all the things you need because you can't predict the exact consumption. You can't predict the exact quality of the material coming in, and so you over design to compensate.

MR. DEVIN PENNY: Okay, I'll -- I'll reflect on that for -- for a moment and leave it at that. And we -- again, we've got some time today and tomorrow still to -- to kind of followup, but thank you. It's very helpful.

THE FACILITATOR: Thank you for those questions and the answers. We'll proceed with Water Resources.

MR. NATHEN RICHEA: Thank you. It's Nathen Richea with INAC Water Resources. I just kind of want to follow along the same lines there. Thank you for the description of the treatment plant and how it all kind of comes together.

I guess my feeling about potentially where

the question was going and -- and some of the discussion was, typically -- I shouldn't say typically but most of the time when there is an operation and processing is required, the treatment plant treats the effluent such that it can be discharged. I'm not saying that's something that needs to be happening at the site, but what from I -- what I gather from the proposed approach to managing the water and discharging is, you'll process the water through the treatment plant but then rely on some dilution prior to actually being sent out the end of the pipe. And that's not traditionally the way that treatment occurs in a -- sort of in a northern environment. I can't speak about other areas.

So I think we're just trying to figure out why we're sort of treating but we're not treating to a condition that you're going to actually just discharge. And I understand that if you have water management, that you need, you know, water that you need to manage onsite and that it's a benefit to add that, but what's the benefit of adding that before treatment versus adding it after treatment. I just -- I just don't understand sort of the framework behind treating but still relying on some of the blending. There was a bit of a table that was put up on -- on the overhead, I guess, discussing that depending on the flow in the creek will blend

effluent such that it meets the effluent quality criteria such that we meet an objective in the receiving environment.

Like it's just a lot -- on paper it makes sense. Theoretically you can put one (1) plus two (2) plus four (4) plus, it works. The problem that we're trying to understand is we see operator error all the time in plants that are relatively simple, add a few flocculents, go through a clarifier and discharge. Sometimes you don't meet your EQCs and they're relatively simple systems, but when you're relying on this, plus sort of treatment, plus blending, plus, you know, a discharge, it -- it gets very complex. And it may not be complex on paper but as a reviewer it's hard to understand and wrap your head around.

So I was wondering if you could maybe speak a bit to that.

MR. BYARD MACLEAN: Byard MacLean. I'll let Dave answer the majority of that question but I want to -- I want to talk about blending.

There is no blending. It's part of the water treatment process. You need to take the treated effluent from the mine water circuit and mix it with the treated effluent from the -- from the mill circuit because you get better clarification when you mix those

two (2) together. And that was -- that arrived out of trial and error, but it does give us a better clarifier operation. So it -- it comes along with the territory. It's not a -- a sort of a part of our strategy, it's part of how we do water treatment.

MR. DAVE HARPLEY: Dave Harpley. In fact, the mine water treatment is fairly straightforward: treated and discharge it. We are not planning to alter the mine water treatment discharge on a seasonal basis simply because studies indicate that the effectiveness of the treatment and the effluent quality we get out of it is acceptable for year-round discharge. So that's fairly simple and straightforward.

It's the process water effluent which has a few more constituents in it that needs to be managed a little differently. And that's why we've developed the strategy to curtail treatment of that for three (3) months of the year and also to decrease the treatment rate in the shorter periods and maximize the treatment rate during the -- the peak flow in the receiving environment.

To me, it's not a case of relying on the receiving environment to meet our targets, it's all about minimizing impacts. And that's really the essence of the discharge strategy. I don't think it's a complex thing

to do. It's certainly not terribly complicated as far as treatment and as far as adjusting valves to either increase treatment rate or decrease treatment rate and commensurately modify the flow of water going to the pond or going to treatment.

It's not rocket science. It's the best way we see of minimizing impacts.

MR. NATHAN RICHEA: Nathan Richea, INAC Water Resources. Thank you for that. And I would agree with you. I guess everyone's on the same page that everyone's trying to protect the receiving environment, and I guess we're just trying to come at it sort of in two (2) different lights.

I think I heard you say that basically the water that's giving you the most trouble is the water that's coming from your processing plant. I just don't understand why we couldn't have a treatment plant, or processing plant, I guess it's the same, why we can't have a treatment plant that will manage the water from your processing plant such that we are able to just directly discharge that to the receiving environment and meet our objectives.

So, it's kind of the same question that I think we started off with on: Why can't we design the treatment plant for this operation?

MR. DAVE HARPLEY: Dave Harpley. I -- I think the answer to that is, if you were to try to do that, you would end up with an infinitely more complex treatment process which would be more difficult to manage and you would have a situation where you had more variability, so it's -- I -- I think it's counterproductive.

You know, you can't -- you can't both want lower effluent numbers and a simple manageable operation at the same time. It's one or the other or -- or, you know, a balance of the two (2). We think we have the balance. We -- we have the big pond. We have the ability to adjust the -- the treatment rate on a seasonable basis, so, to us, that is the appropriate balance and still have a manageable, still relatively simple treatment process.

MR. NATHAN RICHEA: Nathan Richea, INAC Water Resources. Thank you for that again.

I guess we're sort of -- I think when you -- you -- when you talk about the complexity of the system, I think you're referring to the complexity of the treatment plant, not to complex -- complexity of the framework for discharging.

I think we're coming from sort of the complexity of the framework to discharging. You're

coming more from a technical complexity of the treatment plant itself. So thank you. It does answer my question but still leaves the unresolved issue of us trying to understand how the system -- how the mine will operate such that we will have confidence during high flows, during medium flows, during increase inflows from underground, during, you know, low flows, which I think are probably most important.

And, also, we're also waiting for the new information on the diffuser, so, I guess we're probably not going to resolve it today. It's something that will probably come up again and again until -- and we kind of get the more information on the mixing and how this is all kind of going to work out. But, yeah, it's just hard for us to kind of understand sort of how the process will work.

And from -- from INAC's perspective, it's not just from an -- an assessment point of view, it's also from a compliance point of view. Our inspectors are responsible to ensure compliance during the operation. Typically, we require sort of a maximum average concentration, a maximum grab concentration.

And I think it's been proposed that potentially a load be also included, which I agree with. Those are all very good mechanisms for managing

compliance and enforcement. The challenges that INAC will have as part of, you know, licensing and beyond is how we'll be -- be assured that we are operating in compliance and we're -- we're operating in -- you know, what enforcement actions do we need to take when flows -- or discharge is changing depending on the volume of water coming down the creek and how do we look at a running average concentration when you have to consider those factors.

It gets very -- very complicated for us from a traditional sort of enforcement and compliance, and we're trying to wrap our head around how we can sort of achieve that, so.

MR. DAVE HARPLEY: Yeah, I can appreciate that the enforcement side is going to be more complex from what we're proposing.

What I can say is, as a company, if we could simply just treat the discharge and not worry about it, we would do that. It's less complicated for us. But I believe the net result would be greater impacts in the receiving environment. I don't think that's very responsible corporately and I don't think it's the trend for environmental management. And given where we are, basically an island inside the Nahanni National Park, I think we can do better. I think we should do better, and

that's largely behind this philosophy.

This is not -- we're not breaking new ground here we don't believe. We feel that we're following the spirit that's implied in the -- the draft proposal for -- that was issued, the report that was issued by the Land and Water Boards of the Fraser -- Mackenzie Valley, which seem to be talking about not volume and concentrations being discharged but load and -- and, ultimately, concentrations in the receiving environment.

So the way I envisage this working from a compliance point of view and from an oversight point of view, is, as I've explained in one (1) of the appendices to the IR response and I'll summarize. How I see this working is in the licence there'll be written specified background concentrations in Prairie Creek and we will be monitoring the flow rate in Prairie Creek. And based on the data that we have for treated water quality and -- and discharge water -- water quality, it's a simple arithmetic calculation of how much load can we discharge. And then based on treatment flow rate, what the maximum concentration can be in that treated water discharge.

The first test will be, it has to be below our end-of-pipe numbers, which, as I've indicated, I see as the first set of EQC. The second set -- the second

hurdle, if you like, is whatever that concentra -- that concentration is to get that load, it has to be less than the computed load that we're allowed to discharge based on background, the target, which is the size-specific number, and the flow rate.

So it's a calculation. It's basically -- for an operator it's going to be two (2) numbers: What is the load that I can -- that the receiving environment can accept at this point in time, and what is the load that I can discharge to be below that number. So it's condensed.

Now, from a -- from a regulatory standpoint the -- the flow monitoring device is an automated thing. It records the data. We can provide hourly flow rates in our SNP reports. The background concentration is specified. The data on treated water flow rate and quality can also be logged and provided with reports.

So, I don't see in that mechanism why there can't be sufficient oversight to demonstrate that we're not only meeting the end-of-pipe numbers but we're also meeting the end-of-stream numbers. And then our -- in the receiving environment numbers. And at the same time, our AEMP is going to confirm for us that we are, indeed, getting the environmental protection that we

intend with this approach, and, if not, then obviously we're going to have to review why we're not. Is it analytical variability in the receiving environment or just what is it, and then we can consider some adaptation at this point.

But, I don't see why we have to consider backing off doing something that we feel is the best approach for environmental management just because it's complicated.

MR. NATHEN RICHEA: Thank you. Nathen Richea, INAC Water Resources. I -- I heard you say one (1) thing I think that's probably the -- one (1) of the most important aspects of -- of this assessment process, is the sensitivity of the location that we're dealing with for the development, and I echo that. I think you touched on that.

But one (1) thing I did want to discuss or at least bring up, was, there's another way of sort of determining what may be protective of the environment, or at least determining what your effluent quality criteria could be, and that is looking at what your objectives are. And I think you proposed some objectives in your receiving environment. And determining where -- where, in the downstream environment, where your objectives are to be achieved, then using sort of the mixing stuff that

may be coming tomorrow from the new sort of pipe design in mixing work that you're doing, and back calculating what the appropriate effluent quality criteria should be at the end of pipe.

And you can do that under a high-flow scenario, and you could do that under a low-flow scenario, and that can give you your sensitivity of what's protective in the receiving environment. In a process like this, it's -- it's -- it provides confidence to reviewers that we can expect to see, sort of, under these conditions, volumes or concentrations or whatever from the mine at -- at whatever they happen to be. Maybe it's a range, maybe it's just one (1), what will actually happen, sort of, in the downstream environment.

And I think you proposed sort of a different approach and it's hard for us in -- in this particular environment to -- to sort of understand that and be confident in the way that it's presented. It may not be incorrect, but it's hard for us to assess. And so I -- that's sort of what I would like to bring to the table is -- is it's hard for us to understand and assess this proposed manage -- management scheme or effluent discharge scheme. And, you know, how -- when we get additional information on the mixing and, you know, the new pipe, that design, but we'll be looking at it from a

-- you know, trying to protect a downstream environment in what we may see from different conditions.

I don't know if I have anything else to add, but... So yeah, I -- it is a very sensitive area and for a reviewer to look at it, like I -- like I sort of mentioned before, you can sort of back calculate what the EQC should be under different conditions, high flow or low flow or average flow, if you know what your objective is and where you're trying to meet -- meet it in your receiving environment. So it's something that would be useful for this process.

I don't know if that's something that you'd be willing to do as part of the modelling or not. I leave it as a question I guess for the developer.

(BRIEF PAUSE)

MR. DAVE HARPLEY: Dave Harpley. Well, we've discussed that the additional information on dilution zone will be coming forward, the mixing, the plume. I can say I think pretty confidently that the size of the -- of the dilution zone will vary by flow rate.

I'm not exactly sure yet till I get the results exactly how much of the -- the variation is going

to be. But I don't nec -- again, depending on which EQC you -- you were referring to, but if we're talking about EQC in the receiving environment, which is what I think is the second set, I don't see those varying with -- with flow rate and seasonality. Those will stay fixed.

MR. NATHEN RICHEA: Nathen Richea, INAC Water Resources. Traditionally in water licences in the north, there is only one (1) set of effluent quality criteria and that's the end of pipe. There are objectives that would be established as part of the environmental assessment for what you try to achieve in your receiving environment, but they're not something traditionally right now that's regulated as part of the water licence.

But -- it kind of -- I think it touches on -- an item that Devin may have brought up earlier today, EEM sort of has the same requirement. You need to meet your effluent quality criteria at the end of pipe, that's your last point of control. After you release it from that -- from that pipe, there is no control, and nature is the control. And you can model how that will behave in the environment and you can calibrate that model through operating but there is no control after that. It just kind of -- it -- it kind of goes.

So part of the monitoring, I think -- and

he touched on that. Part of the monitoring that you do will influence how you manage sort of that discharge. And that'll be a component of this in -- I did want to talk some specifics about the monitoring plan, and I don't know if that's better today or whether we wait until Ms. Dube's available tomorrow.

But I guess -- I'm not sure too. I -- I think, to pose the question, and I'm not sure if you said "yes" or "no," but it was about whether you would look at the objectives and that calculating. I think you did say that the mixing zone will change during high flow, I assume. It's probably going to be closer to the point of discharge than during low flow, but it'll probably be further from the discharge.

Alternatively, one way to look at it would be finding a midway zone with a high flow to the low flow for that mixing zone, and then doing a back calculation from there; that would be protective no matter what the flow condition was. Under sort of a moderate flow and moderate to high flow, it may be for flows less than the mixing from that position to the lowest flow possible on record. Maybe there is no discharge.

I don't know. I -- and I'm not throwing that out there as that's what we should do, I'm just saying, you know, the potential exists for under the

lowest flow scenario on the sixteen (16) year whatever record that we have, the average sort of discharge will be more than the actual flow in -- in the river.

And I'm not sure. I don't think you're proposing to do that, but that's a bit of a concern for us and we'd like to work with you on sort of what would be the sort of maximum discharge in a very low flowing type environment.

MR. DAVE HARPLEY: Dave Harpley. There's -- there's a number of things in that commentary. The one think you mentioned was traditional. I think we need to recognize that the traditional way of water licence application isn't always the best. And it seems that the -- the draft report from the Land and Water Boards, Mackenzie Valley, is pretty much saying that, that we need to change, we need to move forward. And that's what we believe we're doing.

As far as the low flow situation goes, we don't think we will have an issue for discharge of mine water in a low-flow situation. The issue is the process water. And the extreme low flows that we see in the record happen for a month, maybe two (2), and typically they occur in late winter. And, at that point, we're not discharging process water.

If it were outside of that period, we

would still be able to curtail treatment and discharge of process water, so we -- we think we have quite adifer -- adequate ability to modify the discharge to prevent possible impacts that would occur if we just carried on doing what we normally did without taking account of what's ha -- happening in the natural environment.

MR. NATHAN RICHEA: Thank you. It's Nathan Richea, with INAC Water Resources. I only have two (2) remaining things for now, and then I can let someone else speak.

But, first off, I think you referenced Mackenzie Valley and Water Board document, or something like that. Did -- did you provide that as part of your package? I -- I'm not sure if I'm aware of that.

MR. DAVE HARPLEY: I -- sorry. I didn't, but that's -- I believe it's freely available and it was referenced. It was -- it has been circulated to all proponents and government institutions. I'm sure you have a copy.

THE FACILITATOR: That document is -- well it's draft, and it's not our public registry for this project at the moment.

MR. NATHAN RICHEA: Oh, Nathan Richea, Water Resources INAC. Oh, okay. I'll have to dig that up. I -- I'm not aware of it, so. Oh, sorry. Nathan

Richea, INAC. One (1) last question. I was just wondering if Anne Wilson is still on the phone.

MS. ANNE WILSON: Yes, I am.

MR. NATHAN RICHEA: Anne, I just had -- I'm trying to understand maybe what your request was and what the response was from Can. Zinc. Or the table. You men -- you mentioned a table that took into consideration sort of -- and correct me if I'm wrong. It would outline basically the end-of-pipe concentration under a scenario where basically adding the various tables that were presented in the appendix.

I think you talked a bit about sew -- adding sewage, the process water, and potentially the surface water. Can you speak to that again? I -- I don't know if I followed that correctly.

MS. ANNE WILSON: Anne Wilson here. The table PC-39, from their Information Request, was the predicted water quality at the point of compliance. And it would be very helpful to have one (1) number for each of the relevant parameters that include contributions from the process water, the mine water, site runoff as appropriate, and the sewage effluent.

To acknowledge that that is going to vary throughout the year, either a seasonal average with estimated maxes and mins be useful, or an annual average.

Does that helps?

MR. NATHAN RICHEA: Nathan Richea, INAC Water Resources. Yeah, I guess so. I'm looking at the PC-39 table now. And what did -- what was the swa -- you -- you said you would have that -- you could make that available in a week.

MR. DAVE HARPLEY: I said, yes, that we would look at doing that. I think what Anne wants is one (1) column of all the numbers for the -- for the pipe, everything mixed.

MR. NATHAN RICHEA: Nathan Richea, INAC Water Resources. Anne, did you say that you wanted additional parameters than the ones that were just listed in the tables that are existing, namely, cadmium, copper, lead, selenium, and zinc?

MS. ANNE WILSON: It's Anne Wilson. Normally in the -- the mining effluent reviews for environmental assessments we are given a full suite of parameters that are going to be going into the receiving environment; that would include major ions, nutrients, and metals.

Some of these parameters act as modifying factors on each other. That's why it's important to have a good sense of what the full effluent characterization is.

MR. NATHAN RICHEA: Nathan Richea, INAC Water Resources. Okay. And, again, I guess that's something that you guys can do for -- in a week's time?

MR. DAVE HARPLEY: That's what we're looking into.

THE FACILITATOR: Thanks for that commitment.

MR. NATHAN RICHEA: All right, thank you. It's Nathan Richea, with INAC Water Resources. We'd be interested in that too, so I was just -- I just wanted to clarify that was what the undertaking was, and we'd be interested in taking a look at that, so thank you.

MS. ANNE WILSON: It's Anne Wilson. Can I go back to the discharge strategy to make just a comment?

THE FACILITATOR: Yes, you may. Please proceed.

MS. ANNE WILSON: Okay. The -- Anne Wilson again. The developer has mentioned that the Water Board should think in different terms as far as doing a more flexible discharge strategy or regulation of -- of effluent. I don't know if you were familiar with or spoke to anyone involved with the Doris North Project, which is a new mi -- mining project. They had been actually permitted to discharge from a given tailings

lake at MMER, and then have a compliance point -- a secondary compliance point downstream.

Now, although this was actually permitted, they have never done so. And I think part of the reason for that is that they're vulnerable to having good realtime data to know what their flows and what their quality of effluent are in order to meet that downstream compliance point number, and the vulnerability for adding human error is another factor.

So I guess that's a comment for you to think about. And a question is: Have you really pondered that -- that other idea, like the -- the other project trying that? Have you talked to them, and did any of that come through on the phone?

MR. DAVE HARPLEY: Anne, it's Dave Harpley here. Byrod, sitting here to my left, is one (1) of the people that's working on the Doris North Project, and he's telling me that the mill hasn't been built yet, so it's kind of premature to, I guess, consider what they are done doing or proposing.

I did want to go back to some further comment on this discussion that I didn't cover and actually forgot about in my reply. But talking about this regulatory approach and the end-of-pipe versus the in-stream concentrations, if we were to consider only

end-of-pipe concentrations and if we wanted to per se back calculate to applicable numbers, if those numbers are based on receiving numbers in the environment, then we would theoretically have a different set of end-of-pipe EQC for every month of the year in order to account for the seasonal changes that occur in the receiving environment.

So, okay, that -- that is probably simpler to oversee from a regulatory perspective, but, again, it's -- it's rigid in the sense that, okay, if you have a particular set of numbers for any given month, well, what if the flow isn't what you expect in that particular month? What if it's lower or what if it's higher?

Then, you know, your -- your EQC go out the window. So -- and -- and we considered that in -- in our analysis of this issue, and -- and came to the conclusion that that's unworkable, and, again, effectively either penalizes the operation or penalizes the receiving environment because of its rigidity, and that's why we opted to go for let's rather have one (1) set of numbers for end of pipe which guarantees that we don't have acutely toxic water discharging, and let's have a second set of EQCs that is based on the receiving environment and is based on realtime data of what's happening in the environment. And that's kind of a

background of how we arrived at this approach.

MS. ANNE WILSON: It's Anne Wilson. No, I understand where you're coming from on that. I guess that's where it would be helpful to have -- for me to have a better sense of this whole effluent characterization.

I think we also have to keep in mind that setting the EQCs is based on not only what the company can meet, but what is protective of the environment. At this stage of the game, we have to look at what those potential impacts may be.

And I would agree that having a moving target with monthly variations based on flows to a regulated number would just be a nightmare for anyone to enforce. We'll have to have some further discussions on -- on appropriate EQC, so.

THE FACILITATOR: Thank you, Anne. Further --

MS. ANNE WILSON: Sorry?

THE FACILITATOR: Do you have a further followup question?

MS. ANNE WILSON: I'm sor -- Anne Wilson. I couldn't understand that.

THE FACILITATOR: My apologies. Do you have a further followup question to that, or are you

through for the time being?

MS. ANNE WILSON: Oh, it's Anne Wilson. No, I don't. That was more of a comment. Thanks.

THE FACILITATOR: Thank you very much. And, Mr. Redvers, I believe has a question?

MR. PETER REDVERS: I had a couple of questions: One was just wondering whether or not there was an example of this kind of a water management system that is already in place and operating?

It sounds like there was a mention of a project in which it was proposed, but that hasn't come to operation. So is there an example of -- you know, an operating example of this approach being applied that could be used for, sort of, analysis or comparative purposes?

Sorry, Peter Redvers, speaking.

MR. DAVE HARPLEY: Dave Harpley,

MS. ANNE WILSON: I don't know of anything directly comparable. The one in Nunavut Doors North (phonetic) as you noted isn't -- it was permitted but it isn't operating yet. The closest thing that we could point at would perhaps be the Cansun (phonetic) mine which is regulated in the groundwater, so that is a little different after it is exfiltrated (phonetic).

MR. DAVE HARPLEY: Yeah, Dave Harpley. I

was going to add that, no, I'm not aware of one in Canada at this point but I kind of think we're breaking new ground here, and just because there isn't one doesn't suggest to me that there shouldn't be one.

One (1) other thing is we're not the only jurisdiction in -- in -- that's in the world that's considering this approach. Shannon, you had mentioned before this TMDL approach, and maybe you want to give some background to that.

MS. SHANNON SHAW: Thanks. Shannon Shaw. I can't really talk specifics about any of the projects, but a number of the watersheds in the states are using what they call a "total maximum daily loads", setting objectives within stream for projects in particular that have more than one (1) point source to that stream. And that -- that might be a comparable model to kind of look at how it's operating and -- and successes of that or otherwise.

I know as an add-on that it's something we're considering at another project in BC, as well, is regulating discharges on a load basis.

MR. PETER REDVERS: Sorry, who -- Peter Redvers. Who -- who are you with? You're with -- a consultant with Canadian Zinc, or you...

MS. SHANNON SHAW: Right. I am Phase

Geochemistry --

MR. PETER REDVERS: Okay.

MS. SHANNON SHAW: -- and I'm consulting to Canadian Zinc.

MR. PETER REDVERS: Thank you. Just for clarification. Peter Redvers again. And the -- the other question I have this -- and to -- it hadn't really been clear before, becoming a little clearer through this discussion and just a point of interest.

The EA that we're currently in is being conducted under a certain set of existing legislation and -- and regulations. And those regulations, I think, have been -- from what I'm hearing from some of the others, are saying, We'll still work with an end-of-pipe compliance point and a single set of numbers on that and the current -- there's a current set of guidelines that are in place.

What you're proposing -- and correct me if I'm wrong -- to some degree is dependant on a shift or a change in regulations, and although that is being proposed, it's in draft stage.

So are we reviewing a proposal that is dependant upon a future set of regulations, or are we reviewing something that is applicable or workable within the existing legislation and regulations?

MR. DAVE HARPLEY: Dave Harpley. I believe what we're doing in this EA process is assessing the impacts. And what the regulators are discussing at this forum in the last hour or so is more to do, well, how do we turn those -- that assessment of impacts into a workable regulatory instrument. And that instrument comes into play at the permitting stage, not at the yay stage. So I don't believe we're talking about changing legislation here.

As far as I understand the Water Boards have within their existing powers and mandate to apply whatever criteria or conditions are necessary to implement whatever recommendations come out of an EA process.

MR. PETER REDVERS: Peter Redvers. Would it be helpful then, I guess, to provide a scenario or speak to a scenario where the water treatment plant did, in fact, scrub or achieve a water quality that could reach -- achieve, you know, the existing guidelines for end-of-pipe compliance and assess the potential impacts of that on the stream and then compare that with the model that is being proposed.

Because if -- if the -- if the whole point is really impact assessment, then would it -- would some comparison, I guess, allow for, in this case Naha Dehe,

the community, to assess whether or not, or to what degree -- the degree of impacts would change or shift with one (1) approach versus the other approach.

I'm -- and I don't know how much work would be required to do that, or whether that's necessary. I'm just -- and certainly in -- in terms of trying to wrap one's head about it, then certainly having a better understanding of this versus that and why this would be chosen in terms of reducing impact versus the -- the model or the approach that's currently used might be -- might be helpful.

If you could comment on that?

MR. DAVE HARPLEY: Dave Harpley. I'm -- I'm not sure about how much work it requires, but I don't really see the point of the work. If we were to simply treat discharge mine and mill water year round at the same rate, there's no question that the impacts to the environment will be greater than what we're proposing now. So what's the point of doing that exercise?

THE FACILITATOR: Thank you. And I believe further questions over here. And sorry for taking that microphone away from you earlier. The reason I do this is to give Paul more exercise.

MS. ROCHELLE DRUMM: Rochelle Drumm, WESA. If the dual effluent quality criteria is adopted,

but then let's say ten (10) years down the road environmental conditions change, we have less stream flow, or more mine inflow, and you just can't meet the dual effluent quality criteria, at that point do you have a contingency plan to increase the treatment plant so that it can meet the end-of-pipe discharge limits?

MR. DAVE HARPLEY: Dave Harpley. I think we mentioned a couple of hours ago that the plant was expandable to two hundred (200) and beyond, so that simple answer is, yes.

MS. ROCHELLE DRUMM: Rochelle Drumm, WESA. I -- I'm considering if the actual stream flows decrease and so then you are unable to discharge large quantities to meet your effluent criteria, as an example of the changing conditions.

I'm just wondering if you have a contingency plan for whatever may be that could change the conditions now to some point where you can't apply this?

MR. DAVE HARPLEY: Dave Harpley. I -- I guess you are kind of thinking towards global warming maybe, or something dramatically different. Indications to us are that if, in fact, we are going to suffer the effects of global warming, in our project area there's more likelihood of flows actually being higher than

lower. So it would be probably easier for us in that respect.

But -- so I guess that's why we haven't really thought too hard about a contingency just in the event that receiving environment flows were actually lower. We'd have to certainly give more detailed thought to what impacts those flows are going to have on the -- not just our operation, but on the environment itself in terms of resident aquatic species.

I don't think it's going to significantly impact on the mine water treatment discharge simply because the effluent quality is good enough that we can pretty much discharge at any time. It may be that we'll have to review the process water treatment and consider if there's a mechanism of raising the complexity of that process to lower the effluent quality.

MS. ROCHELLE DRUMM: Thank you.

MR. JAMIE VANGULCK: Jamie VanGulck with Parks Canada. I'd like to go back to the predictions for water quality in the stream. And specifically looking at arsenic for the different conditions that were modelled, whether it be average flows in the stream, low flows, or high flows.

At the Park's boundary, which is your furthest location that you've considered for the

modelling from the mine, when there is no process water being discharged you're consistently over on the in-stream objectives for arsenic, as well as a few other parameters.

What is going to be done to rectify that, or is that an acceptable concentration?

THE FACILITATOR: Before -- before Mr. Harpley answers, which appendix are we talking about? Appendix J. Thanks.

(BRIEF PAUSE)

MR. DAVE HARPLEY: Dave Harpley. You will remember that in our screening of concentrations in the mine water and mill water. We determined a list of metals that were close to or above prevailing engineering guidelines. And based on that screening, those metals were selected for consideration of site-specific objectives; arsenic was not one of those metals.

If you -- you know, you're referring to the table of the predictions. And the predictions are basically complying with a request to develop additional site-specific guidelines and to make predictions using them. We've done that. We don't agree, though, that that is the appropriate approach for those particular

parameters because they are consid -- significantly below the generic guidelines for the protection of aquatic life, which are based on aquatic toxicity information.

So, if you look at the arsenic concentrations compared to its CCME guideline, those concentrations are well below, even at low creek flows and high mine flows. So the answer is, We're not proposing to do anything different from our current strategy of focussing on those metals which are problematic in terms of generic guidelines.

MR. JAMIE VANGULCK: Jamie VanGulck with Parks Canada. Then I'm -- I'm very confused then with what the in-stream objectives are referring to in these tables with regards to some of these other metals, such as cadmium, copper, lead, selenium, zinc, arsenic, iron, mercury, silver, as well as the ammonium nitrate, nitrate phosphorus.

Are we to consider that these in-stream objectives that you have in the table to be what you accept as a limit for discharge -- or a limit for concentrations in the river, or am -- am I misinterpreting?

MR. DAVE HARPLEY: Dave Harpley. As I mentioned, we decided to comply with the request to provide the information. We didn't, at the same time,

agree that all of those site-specific guidelines would be ones we would propose for regulation.

We have only proposed the site specific guidelines of the screened metals that we developed the site-specific guidelines for, and that's the cadmium, copper, zinc, selenium, and I think there's one other but.... And, at the same time, we are recognizing that there needs to be numbers for other constituents, and including ammonia, but not based on site-specific approaches.

I'm just trying to find the -- the right appendix where we indicate our suggestions for a water licence. And that's more reflective of what we believe is the appropriate approach for regulation.

(BRIEF PAUSE)

MR. JAMIE VANGULCK: Jamie VanGulck, with Parks Canada. Could you refer me, in the DAR or in your Information Request responses, where it may reference what concentrations for these added metals and nutrients are acceptable in terms of protective of aquatic life?

MR. DAVE HARPLEY: Dave Harpley. If the -- in table L1, which is in the appendix L of the IR response, there is a list of end-of-pipe concentrations

that we are proposing be included in a water licence. This is the first set of EQC and is the set that I think Ann has taken issue with earlier in terms of stating that she feels the numbers are too high.

These are the numbers that I said that we selected to give operational flexibility, and -- but, at the same time, assuming that they would also be com -- or guaranteeing that we would not have acutely toxic water being discharged. So that's the first set of EQC, which is obviously subject to further consideration.

The second set of EQC are based on appendix J and, as explained in the text of appendix J, we are proposing to use site specific guidelines for the key problem metals, which is the first group that we modelled, those being cadmium, copper, lead, selenium, and zinc.

In addition to that, we're suggesting that a different approach be taken for other constituents, one (1) of which is ammonia, and that's explained in the text of appendix J.

(BRIEF PAUSE)

THE FACILITATOR: Thank you for that, or do you need a minute before you continue the discussion?

Okay.

(BRIEF PAUSE)

UNIDENTIFIED SPEAKER: I had a quick question for you, Dave. Just a question that's come up is, in your water balance, have you accounted for the loss of water that may happen, or will happen, actually, with water freezing in -- in your -- your tailings pond area? Does that -- have you accounted for that at all?

MR. DAVE HARPLEY: Dave Harpley. The water balance is not constrained by the -- the water storage pond in the sense that we're not proposing to store everything in the pond all the time. We're dealing with split streams of mine water and mill water and treating. So from -- from a purely water management perspective, icing on the pond really doesn't affect the water management strategy system.

In addition to that, we've operated through the winter on two (2) or three (3) occasions when there's been activities onsite, and including when we had a polishing pond in operation. And, yes, we get ice maybe up to 1 foot thickness, but we can still use the pond. We can still operate the pond. We can, in fact, keep the -- the inflow and the outflow ice free by just

keeping the water circulating.

So we don't believe and we don't foresee that we're going to have significant issues with icing in -- in the big pond during operations.

UNIDENTIFIED SPEAKER: And with some -- will some of that water be used in water treatment? This is one (1) of the questions that I have that leads up to another one.

MR. DAVE HARPLEY: Some of which water?

UNIDENTIFIED SPEAKER: Some of the water within the tailings pond, will that be used for -- or --

MR. DAVE HARPLEY: No. No. No, the -- the water storage pond feeds the mill. It does not feed the water treatment plant.

UNIDENTIFIED SPEAKER: Okay. One (1) question I had, I guess, was just I've heard of some instances where wa -- ice formation expels some substances from the ice, and I'm wondering if that would affect your chemistry at all and be an issue.

How -- how would you see that being an issue, if at all?

MR. BYARD MACLEAN: Yeah, the ice ends up being fairly pure water, but with a foot on the surface, it being several metres deep, it might up the -- the grade of material going back into the building. But

since it's going into the building for processing, I don't think it causes us any problems. It's Byard MacLean.

(BRIEF PAUSE)

THE FACILITATOR: Thanks for that. One (1) related question with effluent from the water treatment pond. Can you describe the use of the catchment pond during various seasons during operations?

MR. DAVE HARPLEY: Dave Harpley. The catchment pond essentially manages surface water runoff. So in -- in the open water season it collects drainage from the main site ditch, and also a ditch that runs alongside the mill. And, at that time, the intent would be to have the effluent from the treatment plant mixing with surface runoff within the pond before discharging via the outlet pipe to the outfall.

In the wintertime, we would propose to effectively close the pipe from the treatment pond to the outfall so it was a direct discharge and basically taking the catchment pond out of the equation. The reason for that is, obviously, runoff would then, at that point, not be flowing into the pond and we would not -- not want the -- the discharge to be compromised by icing in -- in the

catchment pond, which -- which could actually freeze near to or at the bottom of the pond itself.

We would ensure that the -- the pipe discharge would remain ice free by maintaining flow, which usually does -- does that for us, or, if necessary, we can heat trace the line to make sure it doesn't ice up.

THE FACILITATOR: Thank you for that, Dave. Parks Canada, please.

MR. JAMIE VANGULCK: Jamie VanGulck with Parks Canada. I'd like to come back to Appendix J with the water quality predictions. And I'm sorry for going down this route one more time, but I'm still a bit confused with some of the -- the terms used in the table and how they're going to be applied.

Am I understanding things correct when I say, the in-stream objectives that are shown in these tables for the other metals par -- parameters, and as well as the other parameters, so that would be the cadmium -- sorry, the -- the nutrients and some of these other metals, that those in-stream objectives are not what you're recommending for being acceptable concentrations in the environment?

MR. DAVE HARPLEY: Correct. The reason being is the appropriate CCME guidelines are

significantly higher than the site-specific numbers, indicating that on a -- on a -- on an aquatic toxicity basis the site-specific guidelines don't really help us, or are not really necessary in avoiding significant impacts.

MR. JAMIE VANGULCK: Jamie VanGulck with Parks Canada. So will the -- will there be limits set for acceptable concentrations of these parameters?

MR. DAVE HARPLEY: I -- that's up to the Water Board to decide, I guess. But I wouldn't be surprised to see numbers for a good number of them in the end-of-pipe constraint, but we would not expect to see these numbers, the site-specific numbers in a -- in our objectives for the receiving environment because currently we could not meet them and, more importantly, we don't believe they're necessary for environmental protection.

THE FACILITATOR: Thank you. Is there a follow-up question or a related question on the topic?

MS. ROCHELLE DRUMM: Rochelle Drumm, WESA. I have some questions with respect to the tables in -- in Appendix J. But, for the post closure mining in-stream concentrations...right. There's -- during the low Prairie Creek flows there are expected exceedences of cadmium, lead, and zinc. And there are no tables for the

other metals that were produced, so I'm not sure if there's other exceedences that may be predicted as well for post-closure.

Those concentrations were based on extreme low flow conditions and the assumption that was made for groundwater recharge into the streambed was a 50 percent reduction of what is generally expected for that same month.

And I'm wondering if it's possible to do a sensitivity analysis because the 50 percent reduction may not be accurate all the time and if it's only a 75 -- a 25 percent reduction in groundwater flow then those concentrations may even be higher and exceed for more months.

MR. CHRISTOPH WELLS: It's Christoph Wells from Robertson GeoConsultants. Could you just clarify, is this for the load balance work that was done by Robertson?

MS. ROCHELLE DRUMM: Rochelle Drumm from WESA. Yes, my concern is just the choice of choosing 50 percent reduction in groundwater discharging into the ba -- into the base of the stream and as a result decreasing the loadings from the vein fault and from the waste rock pile.

MR. CHRISTOPH WELS: Well, we're usi --

we're using very low flows in the stream, so it seems reasonable to me that the groundwater system is also low, and 50 percent is less reduction in the groundwater system than we assumed for the stream flow, so I'm already on a very conservative side to keep the groundwater at a higher level reduction than the -- the overall catchment.

So I could do this, but is it a realistic scenario? That -- that will be my question. It's easy to do a sensitivity run with 25 percent or in -- in fact -- no, higher, to 75 percent groundwater flow, it's -- I don't know, I find it an unreasonable assumption. Fifty percent, to me, is an already high assumption.

MS. ROCHELLE DRUMM: Rochelle Drumm, WESA. I -- I -- some of the groundwater may be coming from a longer flow path deeper down. And, in that instance, the gradients in the groundwater won't be affected by some difference in precipitation of dry months as much as something that's at a shorter groundwater flow path into the streambed.

And, as it is now, it doesn't seem like there any monitoring wells in the Prairie Creek elevial -- alluvial aquifer or in the Harrison Creek alluvial aquifer that are deeper than about 5 or 8 metres, yet those deposits are as thick as twenty-five (25) or forty

(40), something to that effect, and so that's why I'm concerned that maybe 50 percent may not be accurate.

And, also, some of the low flow conditions, or extreme low, may not be 50 percent of the flow for that particular month over the sixteen (16) years that it was -- it may just be like a 25 percent reduction in the streambed, not 50 percent.

So -- and -- and I'm just thinking that those concentrations could increase quite significantly if that was -- a sensitivity analysis was conducted. And you may find that you will exceed over more months than just a few.

MR. CHRISTOPH WELS: Christoph Wels again. Well, my response will be that we have to -- if you want to do these calculations, they have to be justified. We can't just do 75 percent, 80 percent. There has to be then a decision made which is the reasonable scenario. My professional judgment was that 50 percent is a conservative assumption.

One way you can look at this is to look at one -- (1) of the few pieces of information, we have good information on is the flow from the tunnel. And the flow from the tunnel goes down dramatically seasonally. And, in fact, it's highly responsive to rainfall.

So that is my analogy, the best analogy I

have today, to assume that there is a highly transient groundwater system. And if you look at those discharge changes over the seasons, and also over the years depending on the wetter and drier years, I see a very significant change in groundwater flux, and this is coming from the MQV because that's where the mine is getting its water from.

So my professional judgment still stands, that I think 50 percent at a very extreme low flow scenario is actually a conservative assumption.

MS. ROCHELLE DRUMM: Rochelle Drumm, WESA.

MR. DAVE HARPLEY: Sorry, Dave Harpley. I just wanted to add to that. The -- the low flows occur in late winter, and, at that time, I think it's probably fairly safe to say that the flow is based on groundwater discharge to the stream.

So it seems logical to me that if the groundwater discharge to the stream is normally low, then the groundwater discharge everywhere is going to be normally low. So it seems logical to me that bears out Christoph's assumption.

The other thing that I think plays into this is we can't just consider this one (1) item of this equation in isolation, all the other assumptions. Part

of the assumption going into the -- the low balance is how much groundwater actually contacts the backfilled tailings mix.

And Christoph's modelling has indicated that 99.9 percent of the flow goes in the fracture mass around the backfill and does not contact the backfill. However, I think that we assume that only 99 percent of the water does that. So we've already been an order (sic) conservative in the contact of the backfill mix is low calculation.

So, I mean, you can look at all sorts of conservatism, but, you know, it seems to me that it's -- it's distinctly additive, and we've already been very conservative -- or, you know, in the first place.

(BRIEF PAUSE)

MS. ROCHELLE DRUMM: . . . more comments on that particular issue, but I -- I do have another comment with respect to the post-closure concentrations. We -- you do have predictions of exceedences for cadmium, lead, and zinc. And it is said that you believe that natural attenuation will clear up these exceedences by the time that discharges to the river.

And is this based on studies of the

natural attenuative (phonetic) capacity of the aquifer over the long-term, or just a general assumption?

MR. DAVE HARPLEY: Dave Harpley. I guess it's may -- it's a general assumption. It's a recognition that not all metals are -- behave the same way in the natural environment. Some are conservative; some aren't. Sulfate and zinc are ones -- sulfate is not a metal obviously but they're conservative parameters, but other metals, including cadmium and lead, are not conservative.

So we're merely just indicating that the numbers that we've shown in these predictions are purely arithmetic. And it -- it does not take into account any attenuation, which almost certainly will occur, and quite significantly. So the exceedence is, yes, they're there. They are still fairly close to the site-specific guideline. And it would not take much attenuation at all to knock those numbers substantially lower.

MR. ROCHELLE DRUMM: Rochelle Drumm, WESA. I guess I was thinking possibly if -- if the groundwater flow velocity is so fast through the main aquifer fault, or the main quartz vein fault, that you will not have the sort of absorption of cadmium and lead onto your aquifer medium, or possibly that -- that you just have exceeded your capacity in the aquifers over the

long term.

MR. CHRISTOPH WELS: Christoph Wels speaking. It's theoretically possible that what you're saying is correct, that -- that either the -- the kinetics are changing or -- or not -- not sufficient to precipitate out these metals. We're talking about very low trace concentrations to begin with, and all the statement was saying is that it is, in my experience, at very few sites do I see metals at these low concentrations.

As particular, some of these that are still under now know -- we're talking about very minimum flows, the only times there's an exceedence. And if it's arsenic or lead or something, I don't see these trace metals typically being completely mobile.

I can't refute what you're saying, that's theoretically possible. It's just my experience is that there is a conservative transport calculation tends to be what the word says. It's very conservative. That you're assuming that there is no chemical reaction occurring along the flow path.

In groundwater, yeah, but we're talking about a permeable fault zone. But if you do the calculations, the travel time is not like we're talking about, you know, metres an hour or something. These are

still very relative to kinetics absorption, are still relatively small velocities.

I -- I don't know what to say. I think you have a theoretical argument, but my experience speaks against it. I think my experience says that those low concentrations -- that those types of metals at low concentrations don't behave conservatively normally.

MR. ROCHELLE DRUMM: All right, thank you.

THE FACILITATOR: Thanks very much. Anything further?

(BRIEF PAUSE)

UNIDENTIFIED SPEAKER: Yeah, just one (1) further question. I -- I mean, I understand that this discussion, there's still time allocated tomorrow for people to probably reflect on all of this information. I think, David, you've -- you've done an admirable job of trying to respond to the -- the questions and provide information, so certainly having your consultants here has been helpful.

Just going back to the issue of the regulations and acknowledging the fact that Canadian Zinc is looking for or proposing something that does --

doesn't quite fit into the box that is currently there but is -- fits into a box that is being considered or under consideration, as you mentioned, via INAC through their draft -- or the Land and Water Board.

And I'll give kind of a what-if scenario. If that change in regulations was not possible and Canadian Zinc was required to comply with the existing guidelines and meet the compliance guidelines that are currently in place at end-of-point discharge, what -- how does that affect the viability of your -- of your operation?

Is -- I mean, how big a deal is that, I guess, simply put, in terms of the grand scheme of things?

MR. DAVE HARPLEY: Dave Harpley. First of all, I guess I'm not sure why the Water Board would not be amenable to looking at that approach given that their own internal research indicates it's the direction they should be heading in.

Second would be, if for some unknown reason they couldn't go in that direction, then the next step would be to consider end-of-pipe EQC that are different on a monthly basis that tries as best as it can to adjust for the seasonality in the receiving environment.

I don't think that's the best approach because, as I explained before, it's too rigid. It doesn't allow for modifications based on actually what's happening in the receiving environment, but it would be better than one (1) set of numbers for the whole year, which would be restrictive to the operation and would also necessarily mean additional impacts on the receiving environment.

THE FACILITATOR: Thanks for that answer. We're about 4:30 right now. Our agenda says call it quits at 4:45. So if there's any further questions on this topic we'll address them. Thanks, Paul.

MR. NATHAN RICHEA: Thank you. It's Nathan Richea, with INAC Water Resources. I was just trying to follow the -- I guess the discussion that was going on about the in-stream objectives. I don't know. I guess I just -- I -- I'm lost. And I was just curious. I know we're almost at the end of the day today, so obviously we need to -- I need to do some thinking overnight.

I wonder if it would be possible the first thing tomorrow morning we could kind of maybe -- it's been really helpful to kind of -- you know, we had a diagram sort of how the water treatment plan works and that kind of stuff. And it's been really helpful to sort

of put -- wrap our heads around things.

I'm just curious because we talked about, you know, changing in sort of the regulatory paradigm, I guess, for this and having EQCs for end-of-pipe and then EQC's sort of -- or not -- some kind of criteria for -- for the receiving environment. And it's relatively new to, I guess, a lot of the reviewers here.

And then we talked about the in-stream objectives, and some will be there that will be sort of met with others or presented, but they show that they may or may not -- may not be achievable in how that works. I'm -- I'm just trying to figure out sort of how if we maybe -- if Canada Zinc could kind of go through and describe their process maybe for the first half hour or something tomorrow morning. And then everyone's sort of on the same page so that if we do start asking questions or whatever, we're not getting pulled in different directions or -- or different areas.

I -- I know it's -- the information, you know, it's here and -- but just a lot of us are just trying to wrap our head around how this could potentially work and -- and how. And as we go, sometimes we don't fully understand I guess maybe the concept, and then it causes more confusion as you look at the next item, right. And so I think some of us are having some

difficulty. Just a suggestion for tomorrow.

THE FACILITATOR: That's a fair and reasonable request. Is Canadian Zinc amenable to some type of brief, half hour presentation to go over the water quality criteria tomorrow morning?

MR. DAVE HARPLEY: Dave Harpley. We are happy to do whatever people feel will be useful. I would, however, suggest that perhaps the best way to prepare for that discussion would be for parties to read again Chapters 6 and 8 of the DAR that explain the development of the water balance and also have schematics of the water balance for both summer and winter, to explain how the thing actually functions and -- and how the whole water management strategy was developed.

And then Section 8 takes you through the review of generic water quality guidelines and indicating those metals that are close to or above some of those guidelines, and, therefore, why we proceeded to develop site-specific guidelines for those key metals.

And then, after you've read that and understand -- understood that, then come and look at the appendix J of the IR response and -- and the regulatory instrument. I think that would be the best preparation you can have for discussion in the morning.

THE FACILITATOR: Thank you. So I'll

take that as a, yes, you are willing to do a presentation as long as we all do a bit of homework apparently, so, a couple chapters of reading should prepare us for that.

MR. NATHAN RICHEA: Thank you. It's Nathan Richea, with INAC Water Resources. I will commit to doing some reading tonight. And thank you for agreeing to sort of doing that for us tomorrow.

I guess I don't want to say anything further because we might as well just wait for tomorrow. There are some things that sort of are deviating from sort of standard process, and it's hard for us to kind of wrap our heads around it. And it's not that we've sort of not done our homework. It's just typically there's objectives for -- typically there's objectives for -- sorry. Typically there's objectives for a number of parameters that are potential to have some adverse effects in the environment, and we'll -- I'll look at this information tonight and get back tomorrow. If anyone else has anything.

(BRIEF PAUSE)

THE FACILITATOR: Oh, sorry. Was I seeing things? Well, that's a good sign that it's time to wrap things up. Okay, with that, I -- I hope

everybody -- all participants here found today's discussion and question-and-answer useful. And I thank everybody for participating. I thank the parties and the developer and consultants for being here.

Tomorrow I'll make -- we'll have our van on time at the Explorer so we should be able to start at 9:00 a.m. tomorrow.

MS. ANNE WILSON: It's Anne Wilson here. A quick question.

THE FACILITATOR: Go ahead, Anne.

MS. ANNE WILSON: Are we scheduling the AEMP for between 11:00 and 12:00? I would just like to confirm the time so I can bring in another EC person.

THE FACILITATOR: Yes, I can confirm that. We'll discuss AEMP between 11:00 and 12:00 tomorrow.

MS. ANNE WILSON: Anne Wilson. Thank you.

THE FACILITATOR: Thanks for your participation, Anne, and we'll talk to you tomorrow. I'd like to confirm maybe the number of people that will be using the van tomorrow just so we -- we know if we need one (1) or two (2). Thanks very much.

--- Upon Adjourning

Certified Correct

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Wendy Warnock, Ms.