

Canadian Nuclear  
Safety Commission

Commission canadienne de  
sûreté nucléaire

Public hearing

Audience publique

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Le 22 septembre 2016

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280 Slater Street  
Ottawa, Ontario

Salle des audiences publiques  
14<sup>e</sup> étage  
280, rue Slater  
Ottawa (Ontario)

Commission Members present

Commissaires présents

Dr. Michael Binder  
Mr. Dan Tolgyesi  
Dr. Sandy McEwan  
Ms Rumina Velshi  
Mr. André Harvey

M. Michael Binder  
M. Dan Tolgyesi  
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Secretary:

Secrétaire:

Mr. Marc Leblanc

M. Marc Leblanc

General Counsel:

Avocate générale :

Ms Lisa Thiele

M<sup>e</sup> Lisa Thiele

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Ottawa, Ontario / Ottawa (Ontario)

--- Upon commencing on Thursday, September 22, 2016 at 1:18  
p.m. / L'audience débute le jeudi  
22 septembre 2016 à 13 h 18

**CMD 16-H5.A**

**Opening Remarks**

**M. LEBLANC :** Bonjour, Mesdames et Messieurs. Bienvenue à cette audience publique de la Commission canadienne de sûreté nucléaire.

The public hearing is regarding the request from the Saskatchewan Research Council, or SRC, to remove the hold point for Phase 2 of the Gunnar Remediation Project.

During today's business, we have simultaneous interpretation.

Des appareils pour l'interprétation sont disponibles à la réception. La version française est au poste 2 and the English version is on channel 1.

We would ask that you please keep the pace of your speech relatively slow so that the interpreters have a chance to keep up.

Les transcriptions seront disponibles sur le site Web de la Commission dès la semaine prochaine. And

to make those transcripts as meaningful as possible, we would ask everyone to identify themselves before speaking.

I'd also like to note that this proceeding is being video webcast live and that the proceeding is also archived on our website for a three-month period after the close of the hearing.

As a courtesy to others in the room, I would ask that you please silence your cell phones and other electronic devices.

Monsieur Binder, président et premier dirigeant de la CCSN, va présider cette audience publique.

Mr. President.

**THE PRESIDENT:** Thank you, Marc. Good afternoon, and welcome to the public hearing of the Canadian Nuclear Safety Commission.

Mon nom est Michael Binder. Je suis le président de la Commission canadienne de sûreté nucléaire.

Je souhaite la bienvenue aux gens ici présents and welcome to all of you who are joining us through the webcast.

I'd like to start by introducing the Members of the Commission.

On my right is Monsieur Dan Tolgyesi; on my left are Dr. Sandy McEwan, Ms Rumina Velshi and Monsieur André Harvey.

We already heard from our Secretary, Marc Leblanc.

We also have with us here today, Ms Lisa Thiele, Senior General Counsel to the Commission.

I would now like to call for the adoption of the agenda by the Commission Members, as outlined in Commission Member Document 16-H5.A.

Do I have concurrence? For the record, the agenda is adopted.

Marc...?

**MR. LEBLANC:** The Notice of Public Hearing 2016-H-04 was published on June 24th of this year.

The submission from the Saskatchewan Research Council (SRC) and the recommendations from CNSC staff were filed on July 22, 2016.

The public was invited to participate by way of written submissions. August 22nd was the deadline set for filing by intervenors. The Commission received two submissions.

September 14th was the deadline for filing of supplementary information and presentations and I note that presentations were filed by SRC and CNSC staff.

The way things will work today is that we will begin with the presentations by SRC followed by the CNSC staff and then we will proceed immediately with the

review of the written submissions filed by the intervenors and questions pertaining to those interventions and then will be followed by general rounds of questions.

Mr. President...?

**THE PRESIDENT:** Thank you. Before we proceed with the presentation on SRC's request, I would like to recognize some people and check technology if it works.

So first of all, I understand that joining us via teleconference is Dr. James Irvine. Can you hear us?

**DR. IRVINE:** Yes, we can hear you well.  
Thank you.

**THE PRESIDENT:** And we also have Mr. George Bihun -- I'm not sure I pronounced it correctly -- from Ministry of Environment of Saskatchewan. Can you hear us?

**MR. BIHUN:** Yes, I can. I can hear you.  
Thank you.

**THE PRESIDENT:** Okay, thank you. And there are also people from SRC we should only introduce, I guess, as part of your opening remarks.

Am I missing anybody? Okay. We will see once you introduce them.

**CMD 16-H6.1/16-H6.1A**

**Oral presentation by**

**Saskatchewan Research Council**

**THE PRESIDENT:** Okay. So let's start by calling for the presentation from Saskatchewan Research Council as outlined in Commission Member Documents 16-H6.1 and 16-H6.1A.

I understand that you, Mr. Muldoon, will make the presentation. The floor is yours.

**MR. MULDOON:** Good afternoon. For the record my name is Joe Muldoon from Saskatchewan Research Council. I am the Vice-President of the Environment Division at SRC.

I have with me today:

- the Manager of the Environmental Remediation Program, Ian Wilson;

- the Chief Scientist for the project Alexey Klyashtorin, behind me to my left;

- Skye Ketilson, the Gunnar Other Site Aspects Project Manager, behind me to my right;

- Mark Calette, Senior Advisor for Community and Aboriginal Engagement, behind me;

- Mark Liskowich, Principal Consultant, to my right, far right, and Trevor Podaima, Senior Consultant,

both of which, Mark and Trevor are our design consultants, SRK.

To my left, I have Cory Hughes, Executive Director of Mineral Policy for the Saskatchewan Ministry of the Economy.

So I will just start the presentation.

As you know, SRC is here today applying for a licence hold point release for the Gunnar Other Site Aspects Remediation Activities. The release of this hold point will allow SRC to begin final planning and procurement processes for this work and, most importantly, allow this component of the remediation activities to be integrated with the tailings-covered construction already started.

This will result in a much more holistic approach to site remediation and allow a more effective and efficient project implementation.

The purpose of the Gunnar project is to reduce the safety and environmental risks that the site poses to the public utilizing sustainable remediation options that are both technically and economically feasible. It's also to implement a long-term environmental monitoring program and minimize long term care and maintenance at the site as part of the eventual entry of the site into the provincial institutional controls

program.

Both the requirement and benefit of the Gunnar Project has been the development of a meaningful engagement strategy with local community members over the course of the project.

As stated in the Gunnar Environmental Impact Statement, SRC understands that it has a duty to consult with local Aboriginal community members about possible effects of the remediation project. Based on feedback from industry, Aboriginal communities and government, we feel that SRC has a leading engagement strategy in place for its legacy mine and remediation projects.

We will present a short video at the end of this presentation which covers the last community visit to the Gunnar site in August of this year.

This slide provides a brief update of what has happened with the Gunnar tailing project since the hold point was removed last year. So the tailings remediation hold point was removed in December 2015. We have completed the detailed remediation design report. We have awarded through procurement the remediation contract to a Fond-du-Lac Nuna and joint venture, Fond-du-Lac First Nations being found within the Athabasca Basin.

And we have started site preparation

initiation in September of this year. We are underway with that as we speak and we are -- we will begin the full remediation operation where we will really get into the bulk of the work in the spring of 2017.

I will now turn the detailed description of the project over to Ian Wilson, the Manager of the Environmental Remediation Program at Saskatchewan Research Council.

**MR. WILSON:** For the record, my name is Ian Wilson. To facilitate SRC's project management and corresponding with the CNSC licence structure, the Gunnar site has been divided into the tailings and the other aspects. For clarity, the remainder of this presentation will focus on the other aspects with a goal of removing the licence hold point.

The other site aspects are defined as:

- Non-contaminated demolition debris which consists of asbestos-containing materials, steel, wood and concrete; contaminated and hazardous materials which consists of hydrocarbon-contaminated soil and rock; treated wood and PH-impacted material, waste rock;

- The general site which consists of three mine openings; catchment-3 drainage, incidental site debris and areas of gamma over the objective levels and the water-filled open pit.

The specific objectives of the Gunnar Other Site Aspects Project are:

- The stabilization of waste rock piles to minimize human health risks posed to by the gamma radiation and the slope instabilities;

- Minimize of contaminant releases from the tailings and waste rock to Lake Athabasca;

- Permanent disposal of all waste materials in a manner that is environmentally sound and meets regulatory requirements;

- Remediation and re-contouring of the landscape in a manner that is compliant with the natural surrounding and future use of the site;

- And taking measures to ensure conventional health and safety.

The major sources of risk to public safety and the environment that the Other Site Aspects currently contain are physical hazards; for example, waste rock slopes, metal debris and access to the underground; exposure to radiation found on waste rock and mill debris, exposure to chemical contamination found in waste rock, remaining mill process chemicals in the acid plant area and potential exposure to asbestos-containing materials.

The remediation objectives for the Other Site Aspects Project, as taken from the EIS, is the long

term mitigation of residual public safety and environmental health risks applied to radiation exposure, water and air quality.

To specifically meet these objectives a remediation plan has been developed to:

- One, consolidate and permanently dispose of the non-hazardous demolition debris;

- Two, consolidate and permanently dispose of contaminated rock and debris;

- Three, stabilize waste rock slopes;

- Four, reduce gamma exposure through use of an engineered cover;

- Five, minimize contaminant loading to St. Mary's Channel in Zeemel Bay;

- And six, monitor the site to ensure public and environmental safety during and after the remediation work.

Remedial options were generated through the decision tree process of the EIS, through consultation with community members during meetings and workshops and by reviewing input from regulatory authorities.

Remedial options were evaluated using a number of facets including safety which is the number one priority on this project; the decision tree from the EIS which you have seen before during previous Commission

hearings; multiple accounts analysis which is a quantitative process that assigns numeric values to options based on risk, adaptive management cost and public perception, and input from local community members.

From the evaluation of all options, preferred options have been identified for each site aspect and will be presented in subsequent slides.

For the non-contaminated demolition debris which is marked in blue and consists of asbestos, steel, concrete and wood, the preferred option is to construct an onsite landfill in the mill and acid plant area, as marked in yellow. The landfill will be constructed in accordance with Saskatchewan Ministry of Environment Regulations, classified as Type I waste, and house approximately 99,000 cubic metres of asbestos, steel, concrete, wood waste.

The advantages of this remedial option are: A low risk of differential sediment, low permeable nature of the bedrock floor, good public perception ranking, situated away from Zeemel and St. Mary's Channel, the shortest haul distance which equates to the lowest cost and allows for flexibility in unforeseen events and adaptive management.

The execution of this landfill will be to haul and place demolition debris on a prepared landfill base covered with approximately 19,000 cubic metres of

concrete and followed by a 0.5 metre thick cover of clean, locally-sourced aggregate.

For the contaminated and hazardous materials which are marked in red, the preferred plan is to excavate the acid plant material which is PH-impacted and haul to the tailings area while the remaining material consisting of approximately 4,000 cubic metres of hydrocarbon-impacted soil and rock and contaminated wood will be consolidated into one landfill marked in yellow.

The landfill will be constructed in accordance with Saskatchewan Ministry of Environment Regulations classified as Type II waste and be a dry tune concept built on competent bedrock floor. The advantages of this remedial option are utilizing existing bedrock foundation; good public perception situated away from Zeemel Bay and St. Mary's Channel. It is the shortest haul distance and allows for the maximum flexibility for unseen events.

The execution plan for this landfill will be to excavate PH-impacted material and bury under the tailings cover; prepare the bedrock foundation for landfill base and cover with 1.2 m thick clean local aggregate.

The remedial objective for the waste rock as taken from the EIS is to remove physical hazards to humans and wildlife, reduce gamma exposure, reduce human

health risks and reduce ecological risks from uranium loading.

For the waste rock pile marked in green and grey the preferred remedial option is to re-establish the historic channel and grade; cover and revegetate the waste rock piles. The advantage of this option is it presents the least amount of risk compared to other options, allows for adaptive management, is highly favourable compared to the pit fill option due to the significant disadvantages of backfilling the pit discussed in later slides; more economic than other options.

This option calls for the removal of approximately 851,000 cubic metres of waste rock overlying in an historic stream bed for integration into the tailings as grading material. The remaining waste rock pile will be re-sloped; drainage features installed and covered with 0.5 metres of local aggregate and revegetated.

The waste rock underlying the former tank farm and camp will also be regraded.

This slide shows the proposed post-remediation landfill and waste rock landforms. The landfill and waste rock slopes will be graded between 4:1 and 5:1. Micro-topography will be incorporated into the slopes to break and promote vegetation and reduce erosion.

For the remaining general site items which

consists of openings to the underground, elevated gamma areas and additional incidental debris, the preferred remedial option is to cover the access to the underground with stainless steel caps, cover the elevated gamma areas with 0.5 metre of local aggregate and revegetate and remove incidence of debris and place into the appropriate onsite landfill.

The advantages of this option is that the steel caps provide a strong, durable and easily fabricated and modified mechanism to prevent access to the underground, while the local aggregate cover provides radiation insulation, while eventually blending into the surrounding land forms.

The remedial objectives for the open pit, as taken from the EIS, is to reduce human health risks, reduce ecological risks and provide structural stability, which it is now doing in its current form with the water.

This animation shows the pit from an aerial photo vantage, with both the pit depth and the underground workings to scale.

This animation shows a 3D rendering of the open pit and underlying mine workings. The animation will stop momentarily to align from the perspective of the previous slide.

It should be noted that the pit is just a

surface expression of a much larger underground system that goes down 600 metres from surface.

Also of note is the red oval in the pit, which is an approximation of the opening of the pit to the underground, scaled based on historic information.

These animations were used successfully to convey information to community leaders who were very grateful for this form of visualization of historic information.

--- Pause

**MR. WILSON:** For the open pit, the preferred remediation option is to reduce loading to the pit by dealing with other site aspects and through the development of a monitoring plan to assess the outcome of reduced loadings. The overriding advantage to this option is safety.

Other options, including dewatering and infilling with waste rock, have an inherent risk to worker safety during implementation due to uncontrollable pit wall stability and subsidence of material from the pit to the underground.

Other major advantages of this remedial option include no adverse effects on aquatic or terrestrial plant and animal populations, it allows for adaptive management in the future and a reduction in loading to the

pit from its current state in red to the proposed state in black.

This table generalizes and shows all site aspects in its current condition when applied against the criteria from the EIS and the proposed preferred remedial options. As you can see, all the EIS criteria have been covered by the proposed remedial options presented today.

During future implementation of the other sites aspect project, SRC will rely on its robust and field-tested project management approach, which consists of its corporate ISO 9000 2009 system, a site-specific management system which consists of programs and plans related to safety, radiation protection, environmental monitoring and protection, communications training and quality, and the execution plan, which includes project charter, governance, milestones, risk registry and management, management controls, performance management, quality management, financial controls, communications, consultation and engagement, environmental protection, safety, procurement, regulatory and resourcing tools.

SRC also manages and maintains an 80-person camp onsite and the associated infrastructure that will be utilized for this project during implementation.

SRC's anticipated forecasted timeline and

milestones for the other site aspects and tailings projects consist of remediation work between 2016 and 2022, post-remediation monitoring between 2022 and 2035, and entry into ICP after 2035.

Since the start of Project CLEANs, SRC has conducted more than 135 formal meetings with community members.

SRC continually communicates with community members and leadership through radio, print, our website, faxes, posters, fact sheets, teleconference, direct mail, email, text, Skype, Dene interpretation and Facebook.

To provide a better framework for its interaction with the community representatives and leadership, SRC has conducted multiple site tours.

As part of the previous Gunnar demolition and materials abatement activities, SRC and its contractors have conducted asbestos abatement training, safety training and radiation training.

As part of SRC's management of Project CLEANs, it has expanded this training to include essential skills training, driver licence training, heavy equipment training, and will continue to expand its training programs following input directly from community members.

Other ways in which SRC engages with

community members in the Athabasca Basin region includes through the Athabasca sector gathering, capacity and training initiatives partnered with the Prince Albert Grand Council, local site monitors providing independent site auditing, inclusion of community members on public procurement teams, SRC participant funding for its engagement events, which includes travel, accommodation and honorariums, local aboriginal labour inclusion which is greater than 50 percent in all of our projects, and presentations made during environmental quality community meetings.

From feedback received from private industry, First Nations, government, SRC has been told that it has an industry leading community engagement strategy. As part of this strategy, SRC has pushed the boundaries of public procurement to maximize local involvement and sustainable development opportunities. As such, SRC has been nominated for both the Government of Saskatchewan Premier's Award of Excellence and the Canadian Public Procurement Council Achievement of Excellence in Procurement.

SRC has developed and will continue to support a strong mutual relationship with the leadership and people of the Athabasca Basin region.

Specific community engagement events that

have taken place to facilitate the creation of other site aspects remediation reporting includes hosting a workshop and submission of preliminary remediation design report for CNSC and public review in August of 2015, travel to Black Lake, Stony Rapids, Hatchet Lake and Wollaston, and Uranium City from December 1st to 4th, 2015 for community meetings, hosting a Gunnar Other Site Aspects Workshop in Saskatoon on April 26, 2016, hosting an onsite leadership tour of Gunnar Mine on August 22nd, 2016, and hosting the Gunnar Other Site Aspects Workshop in Saskatoon on August 23rd, 2016.

SRC continues to work with community Elders from the region to integrate local plant knowledge into its revegetation strategy for Project CLEANs sites. This knowledge exchange is conducted in both the communities and at the sites themselves.

In partnership with the Prince Albert Grand Council, SRC created and facilitated the Student Environmental Monitoring Project at the Gunnar site this summer. This program will be an ongoing mechanism for developing an awareness and spark for environmental sciences and engineering for local young people in the Athabasca Basin. It is hoped that working with our project partner, SRC can develop local expertise in the region to monitor the Gunnar and other remediated sites into the

future.

I will now pass the presentation over to Joe Muldoon.

**MR. MULDOON:** For the record, Joe Muldoon.

Just before we close our presentation, I want to share a short video outlining community member comments from our last site visit in August of this year.

When we hear community members describe the project and tell our story, we feel that our aboriginal community engagement activities have been successful. It is our intent, as mentioned already, to continue this dialogue with communities throughout the project.

With your patience, I will also show a very short video -- these are always very short, videos are good -- I want to show a very short video that describes SRC's approach to meeting the challenge of managing the multiple data that is created with these kinds of projects and ensuring that this data is stored where it can be used now and be accessible into the future.

As evidenced by some of the animations that we showed earlier, they were instrumental in terms of explaining to communities the impacts of working within the pit and why we wanted to go with the options that we have been before the Commission today.

So this information, just the way that we

have been able to develop some of these geospatial applications has been very helpful.

So I'm just going to move quickly to these two slides to show the community leaders first, the tour.

--- Video presentation / Présentation vidéo

"It was an abandoned mine that was just left. There was no long place to do any cleanup or anything like that, so nobody really pushed for a cleanup until now."

"One of the main concerns of our people is the impacts of the contaminants that's in the water, that's in the land."

"I'm not pleased about it, but what can one do, the damage has been done already. So with that, we can only assess the damage and hopefully one day it will be all cleaned up."

"What you're walking on now is -- this is the tailings."

"With the tailings, I know -- I don't know how many football fields, it's massive. That's where they used to pump all the waste from the mine."

"As you can see, they're pretty fine and if you get a good wind, they can blow. After all the study that we have done over the years and talking with people in the area to cap these tailings using some of the material that's naturally available, the clean material, so anytime where the snow melts or anytime where there's a rainfall event, instead of going into the tailings themselves, picking up contaminants within the tailings and running back to the water, it's going to shed, just like a roof on your house is going to shed it."

"There's three sections of the tailings and they're going to start tackling one at a time I guess and hopefully clean it up."

"If it all works out, it will be great. It's, you know, shutting off the source of the contaminants going into the lake."

"We're putting and designing an engineered landfill to place all the

material that you see around."

"You see all that waste out there, all the metal and stuff like that, it's not going to be taken out of here, but they will put it in a place that you can contain it so that it's not scattered everywhere, which is good."

"It's a positive step in terms of remediating and cleaning up the site. It's getting better every year. So hopefully with this project that's going to happen here, it will make it even safer, which will be really good."

"Our people are going to be here long after any mine site that's in the region. We're not farmers, you know, we go out, our grocery store is out in the bush and out on the lake, so we want to make sure our land and our water is safe for future generations."

--- Video presentation / Présentation vidéo

"This brief presentation outlines

SRC's environmental data management system for site remediation.

Data that is collected during site remediation work is usually spread across multiple documents and can be difficult to access. To help streamline this process, SRC developed a holistic environmental data management system which enables data to smoothly flow from its initial collection through the centralized data storage to project stakeholders. In the system, all data can be accessed through a web portal which doesn't require any specific technical skills.

This map shows the former Gunnar mine site and can display locations where environmental samples were taken. The map features a dynamic legend and pop-up menus with additional information about each sample and its location.

Users can view historical mining structures and wastes and access

historical and recent photos from certain vantage points to see how the site looked before remediation began and how it looks now.

Gamma dose rate patterns can also be accessed and specific values can be viewed across the map.

The web portal also allows you just to overlay aerial photos from different points in time. Users can swipe between images to compare them and the same can be done with historical drawings of the site.

The system also incorporates underground data.

This view shows the Gunnar mine's underground workings in scale with an aerial photo.

SRC system also includes a 3-D model of the underground features and corresponding statistics.

When it comes to reporting, data can be easily gathered in a pre-set reporting ready format within minutes.

Sample analytical data can also be easily gathered for a specific location, media or parameter.

SRC's environmental data management system enables swift data processing and analysis and creates new opportunities to use data for well-informed decision-making."

**MR. MULDOON:** And that concludes our presentation from Saskatchewan Research Council.

**THE PRESIDENT:** Thank you. Thank you very much.

--- Pause

**CMD 16-H6/16-H6.A**

**Oral presentation by CNSC staff**

**THE PRESIDENT:** I would like to move to the presentation from CNSC staff as outlined in CMD 16-H6 and 16-H6.A.

I understand -- who is going to make the presentation? Obviously, my notes here are not right.

**MS TADROS:** I will, sir. Haidy Tadros, for the record.

**THE PRESIDENT:** Okay. Please proceed.

**MS TADROS:** Thank you.

Good afternoon, Mr. President, Members of the Commission.

For the record, I am Haidy Tadros, Director General of the Directorate of Nuclear Cycle and Facilities Regulations.

With me today to present this item are my colleagues, Ms Karine Glenn, Director of the Wastes and Decommissioning Division, and Dr. Karina Lange, Senior Project Officer also with the Wastes and Decommissioning Division.

We are supported by several other colleague specialists here today who are available to address any comments you may have.

The purpose of this presentation is to provide the Commission with CNSC staff's evaluation and recommendations regarding Saskatchewan Research Council's request to remove the hold point for Phase 2 of the Gunnar Remediation Project in order to allow for remediation of the entire Gunnar site.

I will now turn the presentation over to Ms Glenn to provide information regarding the Gunnar Remediation Project and the Phase 2 hold point.

**MS GLENN:** Good afternoon.

For the record, my name is Karine Glenn.

The Saskatchewan Research Council, SRC, is carrying out the remediation of the Gunnar uranium mine and mill site, as authorized by the Commission in January 2015.

In this presentation we will provide you with some history on the file and on the Phase 2 hold point, discuss CNSC staff's assessment of SRC's remediation plans for the site and provide a summary of aboriginal and public consultation. Finally, we will present CNSC staff's conclusions and recommendations.

SRC is carrying out the remediation of the Gunnar site in three phases. The subject at this hearing is on SRC's request to the Commission to remove the regulatory hold point for Phase 2 of the Gunnar project. Phase 2 consists of carrying out remediation activities of the Gunnar site.

The legacy Gunnar mine and mill site is located approximately 600 kilometres north of Saskatoon on the north shore of Lake Athabasca. The Gunnar mine began operations in 1955 and the site was shut down in 1964. The ownership of the site then reverted back to the Province of Saskatchewan.

The Gunnar site consisted of open pit and underground mine workings, mining infrastructure, mine tailings deposits covering an area of over 70 hectares and waste rock piles. At the time of closure, the open pit and

underground workings were flooded and the mineshaft and associated openings were plugged with concrete.

Federal oversight of the site did not begin until the year 2000 when the *Nuclear Safety and Control Act* came into effect. During the early 2000s, CNSC staff requested that the Saskatchewan Ministry of Environment improve the conditions of the site in accordance with the CNSC requirements.

In 2006, the Saskatchewan provincial government signed a cost sharing agreement with the federal government and named SRC their agent for licensing and remediation of the site.

To address the hazards associated with the ongoing deterioration of 50-year-old buildings onsite, the Commission issued SRC an order to bring down all the structures. This work was completed in 2011 and the order was closed.

The purpose of the Gunnar project is to remediate the Gunnar site to a safe and stable state and, to the extent practicable, restore the environment, including land, water, air, fish and wildlife.

The environmental assessment accepted by the Commission in 2015 defined specific objectives for the cleanup of the Gunnar site. SRC has already discussed these objectives in their presentation, so I will move

right away to the next slide.

The remediation work is taking place in three main phases.

Phase 1, which is now complete, consisted of site characterization and the development of the remediation plans for the various site components. Phase 2 consists of carrying out the actual remediation activities, and Phase 3 consists of long-term monitoring and maintenance, leading eventually to institutional control, which is currently scheduled to occur in approximately 2035.

This slide shows a timeline that depicts the progress of the Gunnar Remediation Project starting in 2015 when the Commission first accepted the EA and issued SRC a licence with hold points for Phases 2 and 3.

In November 2015, the Commission approved the partial removal of the Phase 2 hold point, allowing SRC to implement the remediation plans for the tailings area only.

The subject of today's public hearing is on SRC's request to remove the remainder of that hold point to allow the remediation of the other site components.

Interested aboriginal groups were invited to participate in all phases of the project review process, including both Phase 2 public proceedings.

The current licence for the site expires in 2025. At that time it is expected that the remediation activities will have been completed.

SRC is required to request the Commission's approval prior to moving to Phase 3 of the project, which consists of maintenance and monitoring, and preparation for the transfer of the site to institutional controls.

Following the November 2014 hearings for the Gunnar EA, the Commission in their record of proceedings requested that SRC develop plans for remediation of the different site components and present those plans at a public hearing with written interventions.

Through the public hearing on September 30, 2015 for removal of the Phase 2 hold point -- for the partial removal of the Phase 2 hold point and today's proceedings, SRC has complied with the Commission's request.

I will now turn the presentation over to Dr. Lange to discuss CNSC staff's technical review of the remediation plans and public consultation on the project.

**DR. LANGE:** Dr. Karina Lange for the record.

SRC is requesting the removal of the remainder of the hold point for Phase 2 of the Gunnar

Remediation Project. To satisfy conditions for removal of the hold point, SRC has submitted remediation plans, along with supporting information for the remaining site components in August 2015.

Those plans were updated this year in 2016 in response to requests from CNSC staff, the Saskatchewan Ministry of Environment and local aboriginal communities. SRC posted their plans on their website as well as regular updates about the progress of the project.

A community workshop on the remediation plans took place in Saskatoon in April of 2016 with CNSC, SRC and the Ministry of Saskatchewan. SRC continues to engage communities on the remediation plans, as you have seen in their presentation.

SRC has completed Phase 1 work in January 2015 and this work has been completed in accordance with CNSC requirements.

The Commission approved SRC to carry out remediation of the tailings area in November of 2015, and therefore the tailings area is not included in today's evaluation.

Briefly, the tailings remediation plan consists of the construction of an engineered cover on the tailings area at the Gunnar site which totals more than 70 hectares in area.

CNSC staff have completed their review of SRC's remediation plans for the Gunnar waste rock piles, open pit and mine openings. The next few slides discuss CNSC staff's technical review.

SRC's remediation plan for the waste rock piles consists of reducing the volume of waste rock by using it as tailings cover, grading the remaining waste rock piles to reduce the height and steep slopes, and then placing a 0.5 metre till cover that will be vegetated with native plant species on the surface of the waste rock. These activities are designed to meet the EA objectives to improve public safety, reduce radiation exposure, decrease infiltration into the waste rock and provide a vegetated landscape.

SRC's remediation plan for the open pit consists of reducing contaminated water flowing into the pit and ensuring the continued isolation of the pit from Lake Athabasca by maintaining the rock barrier between the pit and the lake. These activities are designed to meet the EA objectives, to improve the water quality of the pit and to prevent contamination of Lake Athabasca.

SRC's plan for the mine openings is to construct custom-designed engineered caps over the vent raise, mine shaft and back raise. These caps will be secured with bolts and grouting for long-term performance.

These activities are designed to meet the EA objectives to reduce public safety risks caused by unsecured mine openings.

The Gunnar site also, as you saw in the previous presentation, has demolition debris such as wood, old pipes and equipment scattered around the site. Although the Commission has not requested the plans for demolition debris to be part of this public hearing, management of the debris is included in staff's CMD as cleanup of this debris will have a positive impact on improving safety of the site, along with general aesthetics.

Cleanup of the demolition debris consists of reducing the volume, for example by cutting up larger pieces, and consolidating the majority of the waste into an onsite landfill that meets provincial requirements.

CNSC staff's evaluation focused on geotechnical engineering, hydrology and contaminant transport as well as radiation exposure and long-term stability. Staff evaluated the remediation plans against the objectives outlined in the EA and for compliance with CNSC standards and regulations as well as with good engineering practices for similar legacy mine sites.

Based on CNSC staff review, staff have concluded that the remediation plans for the remaining

Gunnar site components is complete, meets the objectives of the Gunnar Remediation Project Environmental Assessment and complies with CNSC regulatory requirements.

Since the November 2015 Commission hearing, CNSC staff have carried out a number of consultation activities. These include:

- providing a copy of the Commission's Record of Proceeding, including Reasons for Decision regarding the hearing to partially remove the hold point to allow for remediation of the tailings area;

- staff participated in SRC's annual tour of Athabasca communities from November 30th to December 4th in the winter of 2015;

- a letter was sent for information regarding the current Gunnar Remediation Project hearing on the removal of the remaining hold point;

- the workshop was held in April 2016 with SRC, the Saskatchewan Ministry of Environment, which brought community representatives together to discuss the remediation plans for the site;

- staff provided SRC's updated Gunnar Site Remediation Plan to communities for review and opportunities were provided to communities for written comments on the submission.

The Joint Gunnar Remediation Options

Workshop that took place in April with SRC and the Saskatchewan Ministry of Environment was successful in bringing a large number of community representatives together to discuss SRC's remediation plans for the site.

CNSC's participant funding program was used to facilitate this workshop and this funding was in addition to the funding that was previously awarded to the identified aboriginal groups to review SRC's remediation plans.

The workshop was successful in meeting its intended goals. Community representatives provided valuable feedback on the Gunnar remediation plans directly to SRC and their engineering consultants.

There was a lot of positive feedback on the progress of the project. However, there were still important concerns and questions raised by the community. These included the health of country foods, long-term monitoring and community involvement, incorporating traditional knowledge into remediation work, questions on the remediation plans themselves, scheduling and poor water quality around the site.

In response, SRC has committed to addressing these concerns by incorporating comments into the design plans, such as contouring the waste rock piles and vegetating their surface with native plant species to

conform with the natural landscape, having Elders visit the site and provide knowledge and feedback on remediation activities and long-term monitoring, and by hosting community monitors at the site that can observe how communities are involved in the remediation and the long-term monitoring of the Gunnar site as well as the local region.

CNSC awarded a one-time participant fund of \$47,790 for the review of all of SRC's remediation plans and participation in both public hearings on SRC's requests related to the Phase 2 hold point. The deadline for applications was June 19, 2015.

The Participant Funding Program granted funding to the following groups: Athabasca Chipewyan First Nation, Prince Albert Grand Council, Saskatchewan Environmental Society and Métis Nation Saskatchewan Northern Region 1.

I will now hand the presentation back to Haidy Tadros to provide staff's conclusions and recommendations for the Phase 2 hold point.

**MS TADROS:** Thank you.

This is Haidy Tadros for the record.

Based on CNSC staff's review of the information, we conclude that the remediation plans for the remaining Gunnar site components of the waste rock piles,

open pit, mine shaft and demolition debris comply with CNSC regulatory requirements and meet the objectives of the environmental assessment for the Gunnar Remediation Project.

CNSC staff further conclude that SRC has carried out an effective aboriginal and public consultation program and that input from local communities is considered in the remediation plan.

In summary, CNSC staff conclude that SRC has met the Commission's requirements for removal of the hold point for Phase 2 remediation activities.

With that, CNSC staff recommend that the Commission consider removing the hold point for SRC to proceed with all Phase 2 remediation activities at the Gunnar site.

CNSC staff will report annually to the Commission on the Gunnar Remediation Project as part of the regulatory oversight report on uranium mines, mills, and historic and decommissioned sites.

Thank you and we are now available to address any comments.

**CMD 16-H6.2**

**Written submission from**

**Saskatchewan Environmental Society**

**THE PRESIDENT:** Thank you.

Before we open the floor for questioning, as has been normal practice, we would like to deal first with the written interventions.

The first submission is from Saskatchewan Environmental Society, as outlined in CMD 16-H6.2.

Are there any questions from Commissioners? Who wants to start?

Mr. Tolgyesi...?

**MEMBRE TOLGYESI :** Merci, Monsieur le Président.

On page 3 of the submission, Saskatchewan Environmental Society is saying that:

"The Gunnar site necessitates a plan that offers a good expectation of remaining effective over many hundreds or thousands of years without human intervention. Given the nature of the wide distribution of contamination at the Gunnar site, such long-term stability would be

extremely difficult to provide."

(As read)

What are your projections regarding the period of future monitoring? How long should you go in the future?

**MR. WILSON:** For the record, my name is Ian Wilson.

I guess after the site has been put into the provincial Institutional Control Program, the program itself, there are mechanisms involved to monitor the site in perpetuity as well as funds set aside for maintenance. So I guess as an answer to that question, the Government of Saskatchewan will take back that site and monitor it over the course of its lifespan I guess.

**MEMBER TOLGYESI:** Are there any funds or financial guarantees which should be constituted to perpetuate the monitoring?

**MR. HUGHES:** Cory Hughes for the record.

So when a site enters -- when it's released by the CNSC and the Saskatchewan Ministry of Environment to enter into the Institutional Control Program, there is funding required as part of the entry for the monitoring and maintenance and a schedule is devised. There's also an unforeseen events fund that would cover activities or circumstances outside of what was planned in

the decommissioning plan. Those funds are invested in the long term. There is a return on those, so those funds will grow over time.

There is a financial assurance required initially to ensure that if something happens in the short term before the funds are sufficient that the responsible party, in this case the Government of Saskatchewan and our funding partner NRCan, would be responsible for that. But over time, those funds will grow and those sites will be monitored in perpetuity, as Mr. Wilson said, to ensure that funding is available and those sites will be monitored until the end of time right now is the plan.

**MEMBER TOLGYESI:** Do you forecast that eventually this contamination and discharge will reduce to the level where it could be self-sustained and will not necessitate in the long term -- I'm not talking about five years, 10 years, but projection in the long term -- that it will self-sustain and not need anymore much more monitoring?

**MR. WILSON:** The monitoring schedule will be adjusted over time, so I think that there would be input to that as to what the status of the project was over time. Right now we are not making projections that monitoring is going to end at a certain period, though.

**THE PRESIDENT:** Just to follow up. Just

remind me again, in the unlikely event in which Saskatchewan reneges on the commitment, is CNSC able to get back and get involved if something happens? I mean this is a very hypothetical situation. It's not a one-way flow, is it? I mean from a regulatory perspective if there is a requirement to re-regulate, the CNSC has the mandate to do so, just to allay the hypothetical doomsday scenario that is being described here.

**MS GLENN:** Karine Glenn for the record.

The Commission grants an exemption based on the fact that there are appropriate institutional controls in place. That is the premise behind the release from CNSC oversight into the care of another body. Should that body no longer be there or no longer be in place, that site would then at that point still require a CNSC licence under current CNSC regulations.

**THE PRESIDENT:** Thank you.

Dr. McEwan...?

**MEMBER MCEWAN:** Thank you, Mr. President.

So on page 4 of the Society's intervention, section 3, page 4, they discuss the erosion elements and I must confess as I was reading the consultant's report, it struck me that some of the coverings and some of the elements to a total lay person seem thin.

Are the criticisms there of the rate of erosion valid or has enough conservative component been put into the plan that should there be a one-in-500-year event of rainfall, for example, to ensure that the slope would remain stable?

**MR. MULDOON:** Joe Muldoon for the record. I will ask Mark Liskowich from our design consultants to answer that question.

**MR. LISKOWICH:** For the record Mark Liskowich.

SRK Consulting utilized accepted engineering best practices for the development of the cover design system in order to ensure that the design meets the objectives of the approved Environmental Impact Statement.

To that end, the criteria, the design criteria for the waste rock cover system is to ensure long-term geotechnical stability, ensure the ability for vegetation to take hold within the cover system and ensure that radiation protection or gamma emission is reduced to acceptable levels.

The modelling used to do the design indicates that the erosion that can be expected is manageable, that there will be -- into the long term it's important to understand as well that the relationship between erosion of the cover and time is not a linear

function. We expect and anticipate that the majority of the erosion that would be associated with the cover would occur in the early phases of the cover system after construction, which would take place during the post-remediation monitoring phase. So there will be ample opportunities to address any erosion that exceeds acceptable limits.

**MEMBER MCEWAN:** And presumably the rapidity with which the vegetation is re-established would also contribute to the stability of the slope and the reduction of the erosion?

**MR. LISKOWICH:** That's correct.

**THE PRESIDENT:** So -- by the way, thank you for all the engineering diagrams and studies and maps. We really enjoyed looking at them, not that we understand a lot of them, but that's why we have specialists.

I would like to hear from CNSC specialists whether, in reviewing this, you took a look at climate change, whether one in 200 is a good representation or maybe we should have gone way, way beyond that. Erosion as a function of some of the rain, downpours that we are experiencing recently are not exactly normal, so I don't know how you take all of this into account. So staff...?

**MS TADROS:** So we will have Dr. Shizhong answer the technical questions.

With regards to the design features, both the slope and the erosion controls in place, including a robust monitoring and maintenance plan will ensure that the cover remains effective and the technical considerations, as you say, have been looked at.

I will ask Mr. Shizhong to answer that question.

**DR. LEI:** For the record my name is Shizhong Lei.

When we reviewed the assessment, CNSC staff did look very carefully about what methodology they used, what kind of design storm they used. The most important part is their soil loss of the calculation.

SRC used the widely acceptable approach that was described in Agriculture Canada's handbook called "Revised Universal Soil Loss for practice in Canada" and it is a result of decades of studies by the federal government, provincial governments as well as universities. It is widely used by people in Canada.

The most important part for calculating the soil loss is -- they have many different parameters. The most important part is called the rainfall erosivity. The rainfall erosivity is determined by the total amount of precipitation in a storm event as well as the kinetic energy which is characterized by the peak 30-minute

intensity of the precipitation.

In this case SRC used a 200 -- first of all, the formula is used to calculate the annual average soil loss, which for the vegetation it's established the estimate annual soil loss is about 1.5 millimetres per hundred years.

And the storm, they used the 200-year storm. CNSC staff considered it conservative because SRC gathered climate data around the region, around Gunnar, and they picked up the most conservative number of climate data, which is from Stony Rapids, which is about 175 kilometres away from Gunnar site. The 200-year storm at Stony Rapids is actually higher than the 1000-year storm near the Gunnar site.

**THE PRESIDENT:** So like all theories, it's a theory until you are executing in practice. So my question is really, if the theory doesn't deliver the result, is there any remediation that one can do after a few years if you have to augment your calculations?

**MR. WILSON:** For the record, my name is Ian Wilson.

To answer that question, because the site, after a post-remediation monitoring, is going into the ICP program, there are mechanisms within that program that would allow for not just monitoring maintenance but

unforeseen events as we are speaking about here.

**THE PRESIDENT:** Thank you.

Ms Velshi...?

**MEMBER VELSHI:** So I mean I don't want to go through all the issues raised here by the Saskatchewan Environmental Society, but, staff, do you have any general comments, any here that caught your eye and said, yes, we should look at this a little closer?

**MS GLENN:** Karine Glenn, for the record.

I'll ask Dr. Lange to expand on that. But we did go through all of the concerns that were raised by the Saskatchewan Environmental Society. The CNSC staff's review and assessment of the plans did show that it was adequate to achieve the EA of objectives, as were accepted by the Commission in 2015.

**DR. LANGE:** Dr. Lange for the record.

Saskatchewan Environmental Society brought up almost all of these concerns and questions at that workshop that we had in 2016. We had an opportunity to discuss each of their concerns with the community, with the Saskatchewan Ministry of the Environment and, at that time, the community seemed appreciative of the comments and questions.

However, I felt, along with others at the meeting, that we were able to see all of these questions

and concerns addressed by going forward with the proposed remediation plans. I'd say the number one point of interest was involving the communities in future monitoring activities.

As you could see from SRC's presentation, they have shown a commitment to continue to engage communities in long-term monitoring and remediation activities.

**MEMBER VELSHI:** Thank you. See, if I look at say number 4, because you've talked about erosion, contamination of Lake Athabasca, have you done any modelling of what that may look like? We expect it to decrease over time, but has there been any modelling done?

**MR. MULDOON:** Joe Muldoon, for the record. I'll ask Alexey Klyashtorin, our Chief Scientist, to answer the question.

**DR. KLYASHTORIN:** For the record, it's Alexey Klyashtorin.

Well, there is a lot of information in the EIS regarding estimated loading from the site of contaminants of potential concern, COPC, from the Gunnar site to Lake Athabasca. We expect, upon completion of the remediation activities, we expect significant reduce of this loading and, therefore, we expect a significant reduce of CRPC concentrations in the water bodies immediately near

the site.

Also we have an extended monitoring program, which is to be implemented during the remediation activities as well as after the remediation activities. Implementing these monitoring programs we will have all the data to be able to see how the situation in Lake Athabasca improves with time.

Then we will compare these results with the projections done as a part of the EIS.

**MEMBER VELSHI:** Thank you. It was really the projections I was getting at. So you've done enough modelling to know what to anticipate. So when you're monitoring, you can compare it with that?

**MR. KLYASHTORIN:** Yes. It's a part of our EIS and it's a part of the particular design.

**THE PRESIDENT:** So just to piggyback on this, and maybe I missed it in this documentation. What I was looking for is -- in fact, I actually really enjoy your charts that show the loads and where it comes from and all the flows. I think it's the first time I really understood what's going on and who's doing what to whom.

But what I really would like to have seen is your projection about what is -- you keep sending more and more uranium and radium to the lake and to the pit and to the site. So I didn't understand how you're sending

more and more uranium, then how the situation will improve? In other words, over time how the improvement will be realized if you keep on loading more and more uranium?

I was looking for your projection of what's going to happen after 10 years, 20 years, 30 years. What is your estimated actual level of uranium in the lake and the various things? So does it exist anywhere?

**MR. LISKOWICH:** For the record, Mark Liskowich.

In actual fact, the design of each of the covers will ultimately reduce the uranium loads to the lakes. So we're eliminating the transportation of the uranium off of the site. We're, in a sense, encapsulating it within the landfill systems and within the waste rock covers to limit the amount of uranium that actually reports to the receiving environments.

So in the long-term, the concentrations and loadings to Lake Athabasca will be reduced significantly.

**THE PRESIDENT:** You're reducing it, but you're not eliminating it. So the question is over time it would have been nice to see what is the steady state level you will reach somewhere? Because there will be eventually a steady state to this, is there not, or do you think it's going to be down to negligible background?

**MR. MULDOON:** Joe Muldoon, for the record.

The models were completed -- and Mark, I'll ask you to expand -- the intent is, as Mark indicated, is to encapsulate, take the contaminants -- for instance, in the pit, is to take those sources and eliminate the avenues that they're taking to get to the lake. Those numbers are projected. They weren't all in the presentation, but we did put the ones in the pit specifically in the presentation.

The intent is to meet the water quality objectives and their release rates that were identified as part of the environmental assessment.

So all of the numbers and all of the projections that were made in terms of the reductions, meeting Saskatchewan water quality objectives, et cetera, all of those this remediation plan identifies the pathways and the routes that we'll take to meet all of those objectives.

But I'll ask Mark to follow-up on that.

**MR. LISKOWICH:** For the record, Mark Liskowich.

I think the information that you're looking for is primarily located in Appendix B of our updated preliminary report. Essentially though, the uranium loadings will be entering into Zeemel Bay as well

as St. Mary's Channel will be reduced. We do have predicted levels.

They won't be eliminated or down to zero, but they will certainly be below Canadian Drinking Water Quality Guidelines as well as Saskatchewan's Surface Water Quality Objectives.

**THE PRESIDENT:** Staff, do you agree, number one, and did I hear that eventually we are actually aiming at actually being able to drink the water?

**MS TADROS:** Haidy Tadros, for the record.

So, as presented in staff's presentation, the licence does include a third hold point. When the remediation and decommissioning activities are complete it's at that time that the Saskatchewan Environmental Society will be able to comment on the proposed environmental monitoring program, that will continue with monitoring on the recovery of this site.

Perhaps we can ask Mr. George Bihun of the Saskatchewan Environment for his comments?

**THE PRESIDENT:** Go ahead please.

**MR. BIHUN:** George Bihun, for the record.

I can't recall seeing the projections there. If they're in the appendix, as Mark said, the numbers will come down and we'll see what they are in the long-term monitoring. But I've never seen the projections.

I think I know what you're asking for. I don't recall seeing them either myself. They may be out there, I don't recall at this moment.

**THE PRESIDENT:** Staff, do you want to add anything to this?

**DR. LANGE:** Yes. So the model, I agree, that they did not put the actual water quality objectives in comparison to what you're used to seeing, predictions for concentrations, in the local water bodies. However, over time, those concentrations will decrease.

I would ask Mike Rinker to comment on the modelling for the site. But I would like to confirm that they did carryout models that calculated a reduction in loading, which ultimately did lead to a target concentration that was less than water quality objectives.

I'll pass it to Mike Rinker to comment on those objectives.

**MR. RINKER:** Mike Rinker, for the record.

So I think one thing that's important is that the environment is not a closed system. So by decreasing the loading, you're not adding to a fixed system that would cause an increase in concentration.

So high loadings right now are showing an environmental footprint in Zeemel Bay, but it's quite restricted and close to the waste rock pile where you

actually see a signature of those loadings.

When you decrease them by a factor of 10, as they predicted, we do expect the concentrations to get below drinking water quality objectives and surface water quality objectives. Perhaps Dr. Goulet could add more detail to this.

**DR. GOULET:** For the record, I'm Richard Goulet.

I work for the Environmental Risk Assessment, but I'm also an Adjunct Professor at the University of Ottawa. I teach environmental remediation and environmental toxicology.

What I'd like to add to that is basically as like the loading is reduced in the environment, you have to see the water column, plenty of particles that will capture all these contaminants, they'll settle over time in the sediments.

So as the contaminant loading reduces with time, you'll get cleaner layers of sediments with time, and the fish and the invertebrates that will inhabit those sediments over time will be less exposed to contaminants. So, with time, they'll be safer and safer.

So I think that's how we need to see, the situation right now.

**THE PRESIDENT:** Okay, thank you.

Monsieur Harvey.

**MEMBER HARVEY:** I think it's my turn, yes.  
Merci.

My question is address to SRC. There has been many meetings, consultations, workshops during the last year. I suppose that the Saskatchewan Environmental Society they did participate to some, if not to many of those meetings.

So I just want to have your perception, to receive a report, a memo like this, after all that with nine recommendations, are you surprised to receive that? All those things should have been discussed, I think, during those meetings. So what is your perception of such report?

**MR. MULDOON:** Joe Muldoon, for the record.

The first thing I'll say is I would not pretend in any way, shape or form to speak on behalf of SES. Certainly, that's their prerogative and they put this in.

SES attended the leadership, they attended the spring meetings with us, and then were up on site in August as well. So they certainly have been participating all along with all of the major processes that we've carried out with respect to public consultation.

I think a project of this scope and this

scale, it's difficult to balance best practices, and certainly we're following all of the best practices and have very good design engineers undertaking the planning for us in this regard.

I think there's always that thought that we can always do better and we'd like that extra measure. So I think that's probably where some of this comes from. I think where we have this covered, I think where we've got it well-covered, is that, number one is we'll continue to consult all of our numbers and all of our data's going to be open, CNSC staff are involved obviously with that as well.

We have the long-term monitoring. Communities, including SES, will be involved with that. We have the ICP that in the very long-term as the program enters into institutional controls. Then if the numbers aren't coming down as projected, there's the opportunity to then go in and fix it.

Our intent, obviously, is from a costing side, is to take the approach now, to undertake all of the work that needs to be required and ensure that we meet the targets that we've laid out that are based on solid modelling based on the science that we have.

We certainly don't want to have to go back in and do any major work, and that's why I think we've been

very careful in the way that we're going to both design and implement that design.

So I think we have enough opportunities to ensure that we're able to meet the targets. I'm not surprised and there's absolutely nothing wrong with always being pushed to the limit with respect to our design and where it can to, and we'll continue to do that, understanding that we're also operating with public money and we have to ensure that we use it effectively and efficiently.

**MEMBER HARVEY:** That is very nice to see it like that, yes, to be pushed.

**THE PRESIDENT:** Thank you.

Monsieur Tolgyesi.

**MEMBER TOLGYESI:** There was a note on page 5 where, according to Saskatchewan Environmental Society, there is a kind of mix-up. When you're talking about pH-impacted rock and contaminated rock, I suppose the pH-impacted rock is rock which has acid generation potential or is acid generating? While as contaminated rock, it's contaminated by other elements, other contaminants?

I'm sorry, was I clear? No?

Yes? Okay.

So it is good, my perception, or is it

wrong?

**MR. MULDOON:** I'm going to ask Alexey Klyashtorin to deal with the pH-rock and where it's going and the impacts.

**MR. KLYASHTORIN:** For the record, it's Alexey Klyashtorin.

When we are talking about pH-impacted rocks we are mainly talking about the acid plant footprint. The rocks there are not acid-generating by themselves, but mainly because as they were contaminated by elemental sulphur and some products of its oxygenation and weathering in time.

So that's why we do not call the rocks by themselves acid-generating, but the material which is rock mixed with this elemental sulphur and its products has very low pH. So that's why we call it pH-impacted. For this area, I mean acid plant footprint, we do not anticipate any other contaminants, but low pH.

**MEMBER TOLGYESI:** So when you say low pH, it's acid?

**MR. KLYASHTORIN:** Yes, it's very diluted sulphuric acid, that's how we see this.

**MEMBER TOLGYESI:** You expect, if I understand well, you will store or pile this acid-affected rock on the tailings --

**MR. KLYASHTORIN:** Yes, we incorporate it as a tailings cover.

**MEMBER TOLGYESI:** -- and eventually for the cover? Okay.

**THE PRESIDENT:** Thank you.

Dr. McEwan.

**MEMBER MCEWAN:** Thank you, Mr. President.

The one other thing that struck me as I looked at this was under miscellaneous questions, (e), which is on page 5. In particular, looking at the 3D rendered image you did of the whole mine pit, if I remember it correctly, the bottom of the shaft is about 600 metres. So the hole of the shaft is flooded down to the 600-metre level. Therefore, there will be a uranium concentration through the hole of the 600 metres or, as they say, is there a relative concentration that will be higher up?

Is there any loss of water from the lower levels of the pit or is it fixed once we get down there? If there is loss, does that create a future potential risk to the lake?

**MR. KLYASHTORIN:** For the record, it's Alexey Klyashtorin.

At the moment, we do not have any evidence of active water exchange between the flooded mine working and upper parts of the water column in the flooded pit.

Moreover, we have a lot of evidence of the existence of the so-called chemocline at the depth of approximately 70 metres in the pit. What is interesting, that uranium concentrations below the chemocline, below the depths of 65-70 metres in the pit are lower than uranium concentrations above the chemocline and in the surface part of the water column.

That's why we have no concerns -- well, that's why we have no concerns about any potential for the deep water from the ground mine working coming to the surface of the pit, because its water exchange very likely doesn't exist, the chemocline is the evidence.

Second, even if we imagine this may happen, then the concentrations in the bottom of the pit is lower than the actual concentrations in the upper part of the pit, so it will not be a problem.

**THE PRESIDENT:** Okay, I'll bite. Explain to me -- I thought uranium sinks? Why is the upper part more concentrated than the lower part? Please explain to me the physics here.

**MR. KLYASHTORIN:** Yes. Well, it's not physics, it's chemistry, I believe.

--- Laughter / Rires

**THE PRESIDENT:** That explains why I don't understand.

**MR. KLYASHTORIN:** In my opinion, it's mainly because of the lower oxygen concentration in the deeper part of the pit, so uranium has less opportunities to be in its 6 oxidized form, that's called Uranium(6), which is known to be very well soluble, and much more soluble than the so-called uranium(4) form.

So the ratio between two forms of uranium is different in the upper part, more oxygenated, and lower part less oxygenated. That's why uranium concentration in the bottom of the pit is lower than in the upper.

**THE PRESIDENT:** Thank you for that.

Ms Velshi.

Monsieur Harvey.

**MEMBER HARVEY:** Quick question on page 19 of your -- or it's, no, it's not in the... Sorry, not yet.

**THE PRESIDENT:** Okay. Anybody else?

So the only thing is that, as staff already said, there will be an opportunity for such interveners in fact to take a look at the annual reports that shows about progress here and comment and intervene on anything that requires further discussion.

So thank you.

**CMD 16-H6.3**

**Written submission from  
Prince Albert Grand Council**

**THE PRESIDENT:** I'd like to move on to the next submission, which is from Prince Albert Grand Council, as outlined in CMD 16-H6.3. Any comments?

Monsieur Harvey?

**MEMBER HARVEY:** Page 2, at the top of the page, there is an expectation that much of the work that will be done at the Gunnar site will be done by the Indian Nations, Indian People. I saw that there is already work done by the natives, and you think that will continue and a good proportion of the work will be done by those resident people?

**MR. WILSON:** For the record, Ian Wilson.

The answer is yes. Part of our procurement process and part of the contractual obligations, that we hire for any of the prime contractors that will do this work are very succinct local labour inclusion, local equipment inclusion, and a per cent of the total value of their portion of the work left in the communities to the point where we have both bonuses and penalties should they not meet that.

**MEMBER HARVEY:** Thank you.

**THE PRESIDENT:** Dr. McEwan?

**MEMBER MCEWAN:** So on the first full paragraph on page 2, is there indeed a real risk of a short-term disruption to the trappers and fishermen by the activities on the site or can they be constrained so that that risk actually isn't real?

**MR. WILSON:** For the record, Ian Wilson.

Whether there is either a real or perceived risk, part of what we do is talk to the owners of that trapline to make sure that they understand what the project entails, to see if there's any risk to their trap lines and adjust or compensate in anyway.

**MR. MULDOON:** Joe Muldoon, for the record.

There likely will be some level of short-term disruption. As Ian has mentioned, we've already started discussions with any of those impacted with respect to trapping. I just wanted to make sure that we have that covered.

**THE PRESIDENT:** Ms Velshi.

**MEMBER VELSHI:** So I just want confirmation from both of you that as far as this intervention's concerned, they show no concerns with your remediation plans as presented, correct?

**MR. MULDOON:** Joe Muldoon for the record.

Again, I want to be very careful in terms

of -- we've gone out and done the consultations, we've explained everything and have been very open and transparent in all of our planning and in our implementation. We've done everything in our power to ensure that we are, from an economic side and a socioeconomic side, that we're working with the communities.

So we've gotten very good support. I won't pretend to say that there's not going to be somebody somewhere out there -- and certainly we've heard from, you know, those that aren't necessarily comfortable with every approach that we take and every step that we take. So I don't think I could say here honest that, you know, there aren't absolutely no concerns.

But I believe that we've, in working with CNSC staff and with the meetings that we've done, that we've actually -- we've very much gone that extra mile. And that the vast majority of those that we've interacted with are comfortable with and, most importantly, understand what we're doing and why, and they're supporting the approaches that we're taking.

**THE PRESIDENT:** In fact, maybe staff can augment. My understanding was that we got a lot of representation to get on with it, to get the work started here.

**MS GLENN:** Kairine Glenn, for the record.

I'll pass the question back to Mr. Levine, who's with our Aboriginal consultation group and attended the workshops and toured the communities.

But I'll begin by saying that should there be any concerns going forward by the community, the Gunnar project will be reported on annually by CNSC staff beginning in December of this year as part of the regulatory oversight report, and this will be the plan going forward, and written interventions will be solicited and participant funding is being offered.

**MR. LEVINE:** Adam Levine, for the record.

So you're right, Dr. Binder, one of the main concerns was wanting for the projects to actually get started, as you saw in the video that SRC presented, that many of the community representatives and leaders really want to see this cleaned up, because this has been going on for many many years now and it's been a long process and it's been an important process for them to be a part of.

So we've had a lot of great discussions, the workshops have been very helpful in getting out those concerns and educating both ourselves and the communities about the concerns and about the plans that the SRC have to remediate this site.

I think we've gotten to a place now where

everyone's comfortable with the information that's been provided, with the consultation that has been done, and I think everyone's ready to move forward.

As has been mentioned already, we're going to continue to work with the communities, we're going up there again in December or January sometime this winter with the SRC to do the annual tour of the Athabasca communities, and we'll continue to engage them and make sure that they're involved. And any concerns that are raised, we'll be there to help address them.

But it's been a very fulsome and thorough engagement process to date, and I think that many of those concerns have been addressed.

**THE PRESIDENT:** Thank you.

Any other questions?

**MEMBER HARVEY:** A quick one.

**THE PRESIDENT:** Monsieur Harvey.

**MEMBER HARVEY:** My question goes to the President. At the end of the last paragraph, "We look forward to meeting with CNSC President Dr. Binder." So do you have a date?

**THE PRESIDENT:** I'm always available and happy to meet with whoever wants to meet with me.

**MEMBER HARVEY:** There's no date. You like dates?

--- Laughter / Rires

**THE PRESIDENT:** Well, they can set-up a date anytime. I think we are planning to go to La Ronge. I don't know how far that is, but it may be an opportunity to meet.

Okay. So I'd like now to open up the questions by commissioners on the two presentations by SRC and staff. But I'm just wondering, do we need a 10-minute break?

Okay. We'll come back at 3:05.

Thank you.

--- Upon recessing at 2:54 p.m. /

Suspension à 14 h 54

--- Upon resuming at 3:09 p.m. /

Reprise à 15 h 09

**THE PRESIDENT:** Okay, we are back and we're going to start the question period avec M. Tolgyesi.

**MEMBRE TOLGYESI :** Merci, Monsieur le Président.

When you're looking at a report and make any report, the design report, the site survey is not completed and the design is not completed. Should it be -- staff, should it be completed prior to your approved -- you

accept this proposal?

**DR. LANGE:** Dr. Lange, for the record.

I'm inferring that you are talking about how the detailed design plans have not yet been reviewed by staff.

**MEMBER TOLGYESI:** Yeah.

**DR. LANGE:** Okay. For this project the SRC required -- and I'll ask SRC to confirm this after -- the SRC will be hiring a contractor if they get permission to proceed to Phase 2. So CNSC required SRC to demonstrate that they are able to fulfil the EA objectives through their remediation plans, that CNSC requirements are met and, as well, that they are going to carry out remediation plans in line with good industry practice and that will, staff is recommending, enable them to move on with remediation of the remainder of the site.

And at that time they will hire a contractor to develop the design -- the detailed design plans. That said, CNSC staff is going to review those detailed design plans and that is a condition in the licence condition handbook that staff approve those design plans and ensure they are still consistent with the objectives.

And I'll ask SRC to talk about their contractor.

**MR. WILSON:** For the record, Ian Wilson.

What Dr. Lange had mentioned is actually the process that we are using where we integrate both the prime contractor that does the implementation as well as the present and future design contract for the engineering design through the process. Throughout the process, the entire process, we'll be looking for CNSC as well as Ministry of Environment and other regulatory bodies to continue to, I guess, view and review any engineering designs as well as any implementation plans and any management systems associated with it.

**THE PRESIDENT:** Just bring us up to speed. We are doing -- CNSC released in last September -- allowed you to get work going. Is there any work going now, because I still hear of selecting of contractor? So is there anything has been done and is work already started onsite?

**MR. WILSON:** For the record, Ian Wilson.

Our hold point for the tailings was released. This summer we went out through a public procurement process and we have selected a prime contractor to facilitate the tailings work as per the signed design. We are actually starting and kicking off, doing some preliminary work this season with 2017 with the majority of their fleet, mobilizing and starting the tailings work over

the next four to five years.

**THE PRESIDENT:** So you have got all the equipment there already or do you still need kind of a harsh winter to allow you to get all the equipment?

**MR. WILSON:** For the record, Ian Wilson.

What we did over the last ice road is we took some of the local pieces of equipment with owners that agreed to bring them over on the ice road. It did two things. It allowed local integration of equipment owners into the project but it also allowed SRC and the prime contractor that's coming in to have a small fleet of equipment to start some preparatory work with the understanding that they will bring other larger implements over on this forthcoming ice road season.

**MR. MULDOON:** Joe Muldoon, for the record.

And that work is beginning now. That contract has been given and the contractor is going to be up on site before the end of the month doing work onsite, road building and burrow activities and so on. So we are doing work in 2016. Obviously, as well as the contractor then has the opportunity to bring more equipment on during this winter season on the ice road.

**THE PRESIDENT:** Thank you.

Dr. McEwan...?

**MEMBER MCEWAN:** Thank you, Mr. President.

Again this is really just trying to understand. So in 5.1.3 of the updated preliminary design you say that viable asbestos is double bagged -- 26.

**THE PRESIDENT:** Of SRC?

**MEMBER MCEWAN:** Of SRC's first document.

How robust is the double bagging over a 100-year design plan for this state? Is it likely to remain intact? If it doesn't remain intact and it's buried at the bottom of the landfill can it be mobilized out of the landfill somewhere else?

**MR. WILSON:** For the record, Ian Wilson.

The design allows for the asbestos to be underlying multiple layers of other materials per the landfill design. The design for, I guess, managing asbestos is exactly what any municipal landfill would do and the same concept is going to apply here.

**THE PRESIDENT:** Thank you.

Ms. Velshi...?

**MEMBER VELSHI:** Thank you. So I want to commend you on your exemplary Aboriginal and public engagement activities. I found the video to be very helpful because it gave reassurance that you had public support. You haven't got many interventions from them in spite of all those activities. So well done in having that 3-D model of the underground workings. It really helped

and I can see how it would be helpful. So and compliments to staff as well for your engagement activities.

Slide -- now, as a quick question, on slide number 19 on the estimated uranium loadings to the Gunnar open pit, as I look at the different areas, you know something that just sort of hit me, was why for the EWRP is the reduction so much less than for the other ones where it's 90 percent or so and it's only 34 percent that you are expecting there? So it's maybe time for another short chemistry lesson.

--- Pause

**MR. LISKOWICH:** For the record, Mark Liskowich.

Sorry for the confusion in formulating our answer here, but I believe the difference in the reductions is largely because the load from the waste rock currently is focused on the channel that we are going to re-establish. The waste rock -- seat one in the waste rock pile is currently the significant contributor to the loads coming from the waste rock pile. By re-establishing the channel that source will be removed which is the majority of the uranium loads. The remaining loads will be from the waste rock that is remaining in-situ which will be covered.

**MEMBER VELSHI:** So the remaining rock in-situ, that production you expect to be in the 80 or 90

percent then?

**MR. LISKOWICH:** The remaining -- the 34 percent of uranium that will continue from the waste rock will report to the pit. The reduction from the waste rock will be realized through the channel.

**MR. MULDOON:** Joe Muldoon, for the record.

I think if -- and correct me, Mark, if I am wrong. The waste rock, most of the contaminants from the waste rock report to Zeemel Bay. There is only a small proportion that reports to the pit. So therefore, the reduction is much smaller relative to when we open up that stream that's going to significantly reduce but it reports the other way to Zeemel Bay.

**THE PRESIDENT:** Just I think -- sorry, staff?

**DR. LANGE:** Dr. Lange for the record.

I just wanted to add that in reviewing these estimates, they are very conservative in nature. So 34 percent upon review, upon our review is actually greater than 34 percent. However, these are the conservative percentages that are presented here. So I just wanted to note that.

And I agree with your earlier comment. It would be good to show a concentration for that reduction because the concentrations in that area are actually fairly

low to begin with. So in addition to a percentage, in the future we will put a concentration in there.

**THE PRESIDENT:** Just a general question. On a couple of the tables here you have what the preliminary design -- where and then the current understanding. What I want to know is what changed? Some of the change is quite significant but how did you come up to the preliminary and then you updated them and it changed quite remarkably, actually? Anybody want to give me kind of a quick overview?

--- Pause

**MR. LISKOWICH:** For the record, Mark Liskowich.

Primarily the difference in the numbers is a reflection of additional data that was gathered over the course of the last year or two. There was a hydrogeological study that was completed that informed us a little bit more from the original assumptions that were made. So there is ongoing data that has been factored into the calculations and into the predictions to give us more certainty and more clarity.

**THE PRESIDENT:** Okay. So you expect these to be a stable now estimate? You don't need more data to collect to verify further?

**MR. LISKOWICH:** No, we don't believe so.

**THE PRESIDENT:** Okay, thank you.

**MEMBER HARVEY:** I'm always here.

--- Laughter / Rires

**MEMBER HARVEY:** One of the comments from the workshop of April 26 was the design to the mine pit -- the mine pit water would be drained and treated. I understand that this is not an option and that the amelioration of the quality of the water will come from the fact that the contamination will be stopped by the -- coming from the tailings.

So I come back to your presentation. Page 21 you say the objective is to reduce human health risks and reduce ecological risks. So I would like to just to compare what are the current risks? What are you trying to ameliorate there?

My question -- my question goes to, well, to both. Yeah, so I don't know who wants to take the lead.

**DR. LANGE:** Perhaps to talk about the current risks most important to the community would be the fish. And I would ask Dr. Steve Mihok to talk about the risk of fish consumption at that site and from there we can talk about other risks.

Would that be all right?

**MEMBER HARVEY:** Are you talking of the risk in the pit, the water in the pit?

**DR. LANGE:** Fishing anywhere around the site.

**MEMBER HARVEY:** Around the site but I'm just talking of the pit itself.

**DR. LANGE:** Oh, okay.

**MEMBER HARVEY:** No, just the pit because in the table on page 20 that was under the open pit. So I'm just -- what are you trying to ameliorate for the pit itself? What is the current problem because the water quality of the pit will probably ameliorate by a natural process if the contamination is reduced? So what is the risk now and what will be -- what is your expectation for the future?

**MR. MULDOON:** Joe Muldoon, for the record.

I will answer generally and I can certainly refer to Ian Wilson for any further details.

With the pit itself from a contaminant side, what we are endeavouring to do is cut off the source of contaminants that are entering the pit and then through the pit would then enter into Lake Athabasca.

When we did our preliminary -- any of our preliminary studies, the impacts in Lake Athabasca because it's in St. Mary's Channel which is where the pit empties into, the contaminants -- the loading was seen as very small, miniscule. You could go 100 metres offsite and you

wouldn't pick up any contaminants because of the volume of water that those contaminants are entering. But what we're -- what we're -- that doesn't mean that there is not an issue in terms of those contaminants going into the lake.

So what we've done is we've cut off the source of those contaminants around the pit because we have to clean up the mill site in the mine, the milling and processing side and the tailings and the waste rock, all of the areas of contamination, sources of contamination that will enter that pit because we have reduced those numbers very significantly, therefore, the impact into Lake Athabasca will be reduced significantly. But it was very difficult to pick up other than Zeemel Bay which of course isn't connected. That's not contaminated by the pit. It was very difficult to pick up those contaminants leaving the pit out in the larger lake proper

So what we're doing is we're cutting off the -- irrespective, we're cutting off those sources which we would have to do as part of our general site clean-up anyway. That ensures then that we are reducing that contaminant load that's entering Lake Athabasca.

**MEMBER HARVEY:** What is the flow coming from the pit to Lake Athabasca? Is this important or is it a small creek?

**DR. LANGE:** Can I just add to what Joe was saying? I'm sorry. I didn't understand your question. Dr. Lange, for the record. I didn't understand your question before but now I have found the slide.

Yes, reducing -- any time there is elevated concentrations in a big pit -- body of water like that, the objective would be to reduce them. And again, I would direct the question to Dr. Steve Mihok just to talk about ecological risks. As far as human health risks go they are minimal but they are there and I would ask Steve to talk about ecological risks.

But just before I do that, to answer your question about flow from the pit to Lake Athabasca, the water level in the pit is higher than Lake Athabasca. However, the flow from the pit to Lake Athabasca is very minimal and a hydrologist was recently onsite this year and did not observe any flow reporting from the pit to Lake Athabasca because there is a barrier between the two. However, just based on general engineering, if you do have a higher water level in the pit you should address -- you should understand that there is a gradient there.

But I will ask Steve Mihok to talk about generally ecological risks associated with a body of water with elevated uranium concentrations.

**DR. MIHOK:** Yes, Steve Mihok for the

record. I am with the Environmental Risk Assessment Division at the CNSC.

So the ecological risks were assessed in the environmental risk assessment and they follow the kinds of procedures that we normally follow. So we have in the background a Canadian Environmental Water Quality Objectives which are most important here in the context of uranium.

So the levels are what you would normally use as a sort of a screening parameter but within the risk assessment the details were actually fleshed out and the risks in the larger bodies of water again are very localized. So the area of interest really is Zeemel Bay and when you catch fish from that area you get very wide ranges in the concentrations of uranium in the fish.

So a fish or a Benthic vertebrate, those sorts of things that are localized near the seat, for example, by the waste rock, do have risks and those risks will be going down essentially with time as remediation becomes effective.

**MEMBER HARVEY:** Okay. Thank you.

**THE PRESIDENT:** Okay, thank you.

Doctor -- sorry, Mr. Tolgyesi...?

**MEMBER TOLGYESI:** Merci, M. President.

I have maybe two questions regarding the

capping of mine openings. According to page 14 what you are saying that shaft inventories and flurries cap or will be constructed according to regulations. Now, you are saying that the concrete pockets which are there right now will be removed and will be replaced by steel covers. And you are saying that it's according to regulations and when you look at article 407 of your mines regulations a shaft raised and added road openings must be secured by covering the top of it with pocket designed or reinforced concrete.

So it's you remove the concrete and you will install a steel cover. And what you are saying, that it has also been previously approved by used -- to be used for mine openings/closures by the chief mine inspector. It was approved for Gunnar Lake or it was approved elsewhere?

**MR. WILSON:** For the record, my name is Ian Wilson.

We have approvals at other projects in the area as a variance as you mentioned. We found that the stainless steel we are much more able to control the materials and the material sourced as stainless steel and get a longer proof life from those steel caps. And so that's where we have instigated them in the past and they have been instigated successfully on other projects nearby.

**MEMBER TOLGYESI:** So you are saying that the steel caps will last longer?

**MR. WILSON:** Based on -- based on some of our research cost-benefit analysis, yeah, we can control the materials better with a steel cap and thereby have a longer proved life of the steel cap than using locally-sourced or concrete that is brought to the area.

**MEMBER TOLGYESI:** And you are saying that to be horizontal to be side sheets, but there will be openings along, about three inches or so opening around. It's -- I'm not sure if it's for ventilation purposes and if it is, how you will protect wildlife or small animals not be -- because it will be covered so it's kind of winter protection, nesting and whatnot. So how you will manage that they will not fell in the shaft opening?

**MR. WILSON:** For the record, Ian Wilson.

From previous steel caps in the area, each of them are specifically field-fitted to the holes to the underground in question, very, very close to the bedrock surface. So there is very, very little gaps in the way of the bedrock surface to the steel caps. But each of those are field-fitted to the specifics of the opening based on, I guess, the rocks surrounding -- the competence of the rocks around it and field installed.

**MEMBER TOLGYESI:** And my last that in general I think in Ontario and Quebec, mine inspectors, because you said that mine inspectors give permission to

construct these types of caps, mine regulations are in such a way that mine inspectors have less discretionary powers and they go much more to regulatory stuff. So there will be no question of interpretation.

That's why I am a bit surprised that what you do. You have permission from chief mine inspector to do -- you have it, you said, for your Gunnar Project. Or not yet but you will apply?

**MR. WILSON:** That's correct. We will apply it. Each of the steel caps like I said is field fitted specific to the holes to the underground in question and reviewed and okayed by the mines inspector prior to any implementation and installation.

**MEMBER TOLGYESI:** Staff, do you have any comments for that; no?

**DR. LANGE:** Dr. Lange, for the record.

I think SRC should also perhaps comment on limitations around materials at a remote site like that including limitations to the accessibility of concrete. But I would like to ask the province who is on the line if they could -- because they have been to some of these sites and visited these caps. So in addition to the concrete, I would ask George Bihun on the line to comment on his observation of these caps.

**MR. BIHUN:** It's George Bihun, for the

record.

Yeah. We have used the caps in place of concrete over the last few years due to the problems with concrete and the longevity of concrete. And as Mr. Wilson said, the mines inspector has given a variance to issue these caps as long as there is a program in place to monitor them for the long run and then that's what is done through the institutional control program. So we have used them. They may seem out of place. Some people have used the concrete but in remote area. It is more seemingly cost-effective and they will probably last longer than the concrete will.

**THE PRESIDENT:** So that gives me an opportunity to ask you.

So in terms of monitoring, and what I want to know for staff, when is -- have we done and when is the first time we are going to do actually our own sampling of the water post then -- I assume the Ministry of Environment of Saskatchewan will also be interested in this. When are we going to do all of this and post it? And then I have a follow-up question to that. Go ahead.

**MR. RINKER:** Mike Rinker for the record.

I will pass this question to Ms Kiza Sauvé, who is responsible for our Independent Environmental Monitoring Program.

But to start it off, we have prioritized our program over the next few years for our operating facilities, so we have not yet gone up to the Gunnar site.

**THE PRESIDENT:** But isn't it now that you want the baseline, because everybody is assuming there are going to be improvements as we go along? Don't you want to have the baseline before you start remediation? I'm talking about right now.

And I don't know if the Ministry of Environment, do you have any kind of baseline data about what is the current status? And of course SRC and some other consultants and the EIS supposedly have measured some of this stuff.

**MR. BIHUN:** It's George Bihun here for the Ministry of the Environment.

Since work was started on the site for demolition -- prior to demolition in 2010, under our approvals from the Ministry, they have been collecting some baseline data that we requested and continue till this day on water data. And they also are -- they have expanded that beyond what our requirements are in collecting a lot of other data over the last several years, building up exactly what you are asking for, what is the baseline, before they actually continue into more decommissioning.

**THE PRESIDENT:** And is that posted

anywhere? Because from here on, the community and all the indigenous people, everybody would be interested in actually seeing over time any change.

**MR. BIHUN:** Yes. The reports that come into the Ministry are not posted, we don't have a system for it. The reports I think in the last few years, our annual reports are put on the SRC's CLEANs site, but going forward how we will report more of that, yes, we just don't have a mechanism right now to put them out electronically at our end.

**THE PRESIDENT:** We will gladly -- I think that CNSC people will gladly help you with that.

**MR. BIHUN:** Good to hear.

**THE PRESIDENT:** Go ahead, Kiza, I think you want to say something about this.

**MS SAUVÉ:** Kiza Sauvé for the record.

To add to what has been said, we would be happy to work with the Ministry of Environment of Saskatchewan to see if we could use some of their data and put it onto our website.

As Mike Rinker mentioned, we are mostly focusing on operating facilities. We do have a bit of a draft five-year plan for independent environmental monitoring in Saskatchewan. With the remoteness of the sites in Saskatchewan, it is a bit trickier for the CNSC to

get ourselves up there to do that independent environmental monitoring, but it is one of the reasons we do many compliance activities and look at the data provided by SRC and we will work with the Ministry of Environment to get their data on our website.

**THE PRESIDENT:** Before remediation starts.

**MS SAUVÉ:** Yes, sir.

--- Laughter

**THE PRESIDENT:** Okay. That was a good answer actually.

--- Laughter

**THE PRESIDENT:** Dr. McEwan...?

**MEMBER MCEWAN:** So in the SRC CMD on page iv, in the Executive Summary, you note that you are going to leave the gamma areas identified in Catchment 3 as is. When I look at the map, this is a very, very large area and it's sort of a very irregular area. I mean what are the levels? How high above background are they and do they create any long-term monitoring problems or safety problems for access to the site?

**MR. WILSON:** For the record, Ian Wilson.

That Catchment 3 area is a pretty swampy area as it currently is now. Not a lot of access, very isolated from the other sites. Specifics to the levels, I will turn it over to Dr. Klyashtorin to answer that, but

when you look from a cost versus benefit analysis, destroying all that habitat to facilitate remediation of an area that no one goes into and is pretty robust right now isn't from our standpoint a very good idea.

But specific levels, I will turn that over to Dr. Klyashtorin.

**DR. KLYASHTORIN:** For the record, it's Alexey Klyashtorin.

Yes, in terms of Catchment 3 area, I can confirm what was just said by Ian Wilson. Yes, it is a wide area with slightly elevated radiation. Normally, it doesn't exceed 2 microsieverts per hour, sometimes less at some points and at some hot spots it's up to 3 to 4 microsieverts per hour but in very limited areas.

So the area is very swampy, it is overgrown densely with natural vegetation and virtually unattended by members of the public or anybody. Also, it is a good natural habitat. Those rates within Catchment 3 are not very high on the average and most of the elevated levels are attributed to narrow channels and those rates are created by some spilled tailings with a depth of no more than 30 to 10 centimetres. So scraping these spilled tailings from the Catchment 3 would mean completely destroying this very well-developed natural habitat. So we decided that benefits will be very limited again,

especially comparing to the loss to the natural environments. So that's it.

**MEMBER MCEWAN:** Catchment 3, what would the background radiation there be? So the area to the north of Catchment 3. I assume it's to the north, it's away from the lake.

**MR. KLYASHTORIN:** North of Catchment 3, you mean the areas close to the Gunnar main tailings?

**MEMBER MCEWAN:** Well again, if you look at Catchment 3, it sort of moves to the east of the main tailings. So if you then just go 10 kilometres north out of that catchment area, is there any major significant background in that area?

**MR. KLYASHTORIN:** For the record it's Alexey Klyashtorin.

Well, all the other part of Catchment 3 which was not impacted by spilled tailings has natural levels of radiation which is 0.14 to 0.2 micro sieverts per hour.

**THE PRESIDENT:** Sorry, just to piggyback on this. Somewhere in the presentation -- I cannot find where -- you mentioned there's other tailings systems, not the Gunnar tailings but further north, the thing that flows into Langley Bay. Langley Bay is not described anywhere in this documentation. So what happened to that particular

area? Are they going to be remediated, not remediated?  
What is the story with those sections?

**MR. WILSON:** For the record, Ian Wilson.

The areas that you reference are a part of the tailings design that we went through the hearing last year with the approved design. As well, Catchment 3, while putting a cover system on the tailings, there is some input from those tailings to Catchment 3 that will be mitigated through the cover design implementation.

**THE PRESIDENT:** All the floor to Langley Bay is being taken care of, and is that not -- that's another -- I cannot see it on a map anywhere, so is that another body of water?

**MR. WILSON:** For the record, Ian Wilson.

That was all per the design of the tailings cover system; correct.

**THE PRESIDENT:** Sorry, Dr. McEwan.

**MEMBER MCEWAN:** It was really just to ask for staff comment on that and it does make sense.

**MS GLENN:** Karine Glenn for the record.

As SRC stated, the Catchment 3 area and the wet tailings area was all covered in the last hearings which we had in September 2015 regarding the tailings remediation plan and that was part of the plan that was accepted as part of the release of the hold point for the

tailings remediation area.

What I can confirm is that CNSC staff was on inspection on site in August of 2016 and they did take radiation surveys while they were on site and their surveys confirmed that the levels are low.

**MEMBER MCEWAN:** So as those other tailings are fixed, would you expect that level to drop with time?

**DR. LANGE:** Dr. Lange for the record.

Over time, naturally in that specific area, and I will ask my -- I have not been to the site and I will ask my colleague to ask about the nature of the site, but just as they described, with those areas to being slightly covered with a vegetation, I would expect that those levels will further reduce. However, I will ask my colleague who was at the site to explain the nature of that area.

**MS PANDOLFI:** Dana Pandolfi for the record.

When we went to Langley Bay as well as the Catchment 3 area, when we were taking gamma dose readings, you noticed it would decrease the closer you got to the swampier areas because, as Dr. Lange mentioned, there is like a natural cover, whereas the areas that haven't been covered your readings are a little more -- increased slightly.

**THE PRESIDENT:** Ms Velshi...?

**MEMBER VELSHI:** Staff, just a confirmation. Once Phase 3 is complete, this whole site is expected to have no restrictions as far as access, trapping, hunting, fishing, whatever?

**MS GLENN:** Karine Glenn for the record.

So at this point in time, before they proceed to Phase 3 there is a hold point, so they first need to complete Phase 2. Then they will come back before the Commission to request approval to move to Phase 3, which is the long-term monitoring phase. At that point it will still be under a CNSC licence. And then through that long-term monitoring and maintenance phase, prior to moving into the institutional control, they will still need to come back before the Commission and present any restrictions if there were to be any regarding the use of the site.

**MEMBER VELSHI:** Right. So what you are saying is at this point in time, it is a little premature to know where they would be at the end of Phase 3 or did the EA establish specific objectives that they had to meet by then?

**MS GLENN:** So the EA's objective was to restore to the extent practicable the land, air, fish, wildlife and the water. So depending on -- as we talked

about fish advisories and fish consumption advisories, depending on what the loadings are as time progresses, those may change. I will ask SRC to expand on what their expected end state of the facility is.

**THE PRESIDENT:** But to be very specific, in fact in one of your documents here you stated the EA set up an objective of 1.14 microsieverts per hour. You always confuse us when you talk about microsieverts per hour because we use millisievert cumulative, 1 millisievert per year. 1.14 microsievert per hour is a lot more than 1 millisievert per year if you do the math I think. I am doing it in my head, somebody can correct me. So what is the eventual target here? Are we aiming at 1 millisievert per year eventually or is it 1.14 microsievert per hour? Can somebody...?

**MS TADROS:** Haidy Tadros for the record. I will ask Ms Adeline Gaw to answer that question.

Before I pass it on to her, the 1.1 microsievert per hour is a reflection that the area is not inhabitable or inhabited, so there isn't a permanent residence, that you can then use the 1 millisievert public dose on an ongoing basis. But Ms Adeline can explain.

**MS GAW:** So that's correct, the 1 millisievert per year is the public dose limit and that

dose limit can't be exceeded. And this 1.14 microsievert per hour dose rate has to do with releasing the site to institutional control and the dose limits shouldn't be exceeded even if people are exposed to these dose rates because of occupancies. So it has to do with the use of the site and the amount of time that these areas are occupied, and the areas that do have higher dose rates aren't expected to be occupied to the point where the 1 millisievert per year dose limit would be exceeded.

And according to the environmental assessment, the gamma dose rates should not result in those limits being exceeded, given the use.

**THE PRESIDENT:** Yes, but if somebody is going to camp there for a year, okay, they are going to exceed the 1 millisievert per year. So they are going to be -- again, I just want to be very precise on what the objective is. So you are not going to allow anybody to set up tents in there for a whole year?

**MS GAW:** Adeline Gaw for the record. It should not be -- the dose limit should not be exceeded. Given the way the site is and the use, so according to the environmental assessment, it is unlikely for the used to be more than six weeks per year given the climate for conducting traditional activities, and according to the assessment it is not believed that the dose limit should be

exceeded given these dose rates. This is also the same dose rates used for other decommissioned sites.

**THE PRESIDENT:** You are using "unlikely", "unlikely." All I want to know is, is there going to be a prohibition of somebody parking there for a year or two? It's a vast area.

**MR. RINKER:** Mike Rinker for the record.

So the environmental assessment considered reasonable scenarios and it's really not reasonable to think of somebody in a tent 24 hours a day in the dead of winter at this site. It is a very uninhabitable piece of land. A lot of those scenarios were informed by consulting indigenous peoples in the North, understanding how they may access the site, what they could be using it for, and generally it's a hunting stop which would occur during those parts of the season where somebody may be on an expedition for fishing or hunting. And the six-week period of somebody staying in a tent on that site is a conservative estimate of what they would do within those sort of activities. Those were the types of scenarios that were modelled in the environmental assessment.

**THE PRESIDENT:** Well, I just found it confusing that you are talking about the 1.14 per hour as equivalent to the 1 millisievert per year. The math doesn't add up, so you have to do a lot of qualification,

which you just did. It's not likely for anybody to stay there for a year and it wasn't kind of clear, the differences.

I'm sorry I interrupted, Ms Velshi.

**MEMBER VELSHI:** So it just means that you can't call it a green site once you have finished, right -- a greenfield site?

**MR. MULDOON:** Right. Joe Muldoon for the record.

The intent of the site is strictly for traditional use, which is weeks, you know, weeks, if even that, at a time, and once the site goes into the Institutional Control Program, the site access in terms of obviously residential or any kind of permanent structures on the site would not be allowed and that is why it is important to put it into the ICP long term so that those kinds of land uses don't occur. It would never be -- it would never come back to a green site per se, or certainly not for many hundreds of years.

**THE PRESIDENT:** Thank you.

Monsieur Harvey...?

**MEMBER HARVEY:** My last question. On pages 2 and 3 of the SRK Consulting memo, it's about the borrow material. We have all the information for the quantities and we have a map of the location. My question

is about -- all those areas is some important surface.  
Will those areas be revisited after the works?

**MR. WILSON:** For the record, Ian Wilson.

They will. As part of the remediation plan, any borrow areas that are impacted will be revegetated with the hopes of being brought up to what they were prior to either investigation or use.

**MEMBER HARVEY:** When you mention it will be over the water table, how many decisions -- you won't go under the water table. Am I right to think that?

**MR. WILSON:** For the record, much of the material used and needed for the engineering design are above the water table. From an operation standpoint, there is nothing preventing us from going and taking material from below the water table. You just have to do it in a sequential fashion where you allow time for water and moisture to drain from that material.

**MEMBER HARVEY:** Okay. Thank you.

**THE PRESIDENT:** Still on the same thing, there is a map here that shows the previous borrow investigation and the current and it is very significantly different. You know, I don't know if you know what I am looking at, there is a great map here. I couldn't even start telling you.

--- Off record discussion

**THE PRESIDENT:** Well, it's Figure 1 in borrow location plan of -- this one. It's in one of the appendices here.

So what happened? I mean none of your original kind of previous things were deemed to be proper borrow. What happened?

**MR. WILSON:** For the record, Ian Wilson.

Simple answer, the more information we have, the more accuracy in the amount and type of borrow that we do have. Each of the borrow investigations have been included with information included to get to where we are at now.

**THE PRESIDENT:** And you have enough material now, as you just said?

**MR. WILSON:** Based on all the studies that we have done, we feel that we have enough material to do what we need to do in both the tailings and the other aspects design.

**THE PRESIDENT:** Thank you.

Okay, Monsieur Tolgyesi...?

**MEMBER TOLGYESI:** So I have my last question also. On two occasions, SRC's report, page 14, when you are talking about contaminated soil and waste rock and debris, but you have -- you will install -- you will excavate and remove pH impacted waste rock from acid plant

and you will dispose of it at the Gunnar main tailings, whereas you will have another waste rock pad, contaminated waste rock pad which will be near the acid plant. Why don't you have just one? Because it is much easier to control, you put everything in the same pile, you recover it once, you have only one place to control. Usually that is what the mines try to do.

**MR. LISKOWICH:** For the record, Mark Liskowich.

The differences between the two contaminants are largely driving the locations. The pH impacted material, as mentioned earlier, will be placed in the tailings facility and will not impact that cover system at all. The remaining contaminated material is largely contaminated with hydrocarbons. It is waste rock that has hydrocarbon contamination, so the intent is to screen that material and segregate that as part of the construction process of that landfill just to ensure that only the hydrocarbon contaminated material goes into that material -- or into that landfill and is contained there. We don't want to liberate hydrocarbons by placing them in another facility.

**MEMBER TOLGYESI:** And Part B of this question is the same thing. You are saying in both places that it will be constructed in a way that there will be 1

metre thick low permeability cover, after you will put 3.3 metres thick frost protection layer comprised of non-hazardous waste, concrete and/or waste rock. And when I go to the design, which is Figure 14, I try to find 3.3 but I find just 2.8, so I am missing half a metre, and it is saying that frost protection concrete. It doesn't say that it is not necessarily concrete as such, it could be crushed concrete and waste rock or, I don't know, cemented waste, I don't know. But I am missing half a metre.

**MR. LISKOWICH:** For the record, Mark Liskowich.

The concrete material is demolition concrete that's onsite, that's that layer.

**MEMBER TOLGYESI:** Okay.

**MR. LISKOWICH:** The missing half a metre I can't speak to right off the top of my head, but I will ask my colleague Trevor Podaima, who is looking at the current design at the moment, to make an additional comment on that.

**MR. PODAIMA:** For the record, Trevor Podaima.

The additional thickness comes out of the vegetated cover layer. It also acts as that frost protection. So we have 2.8 metres frost protection and then another half a metre of cover.

**MEMBER TOLGYESI:** But in your text you are doing 3.3 metres thick frost protection. This layer will be followed by .5 metre thick vegetated cover, which is 3.8. I'm still missing a half a metre.

**MR. PODAIMA:** For the record. Trevor Podaima.

Yes, I think that was just a mistake in the words. It's an overall 3.3 thick metre system. I think what it should have said is followed by vegetative cover or like the vegetation itself. So the design is 3.3.

**THE PRESIDENT:** Well, they will have to correct it then, I guess.

**MEMBER TOLGYESI:** Yes. Because you are saying it's 3.3 metres thick, followed with the placement of .5, which is additional.

**MR. LISKOWICH:** Mark Liskowich for the record.

That discrepancy will be cleared up within the next phase of the reporting, which would be the detailed design report that is due near the end of this year.

**THE PRESIDENT:** Okay.

Dr. McEwan...?

**MEMBER MCEWAN:** So a question for Dr. Irvine if he is still there.

From what you have seen and what you have heard, are you happy that this provides appropriate remediation of the site and protection for the local population and that the impact on traditional foods ultimately is going to be minimized?

**DR. IRVINE:** Yes. For the record, this is James Irvine. I am the Public Health Physician and Medical Health Officer for three Northern Health Authorities, which is roughly the northern half of Saskatchewan.

We have had an opportunity this past winter and spring to review things, particularly as it relates to water and fish, and we have had a chance to meet with SRC, Sask Environment, CNSC staff to look at this. As you know, there has been an advisory in place for fish consumption in the Langley Bay area and we have reviewed that as it relates to Zeemel Bay as well.

In consultation with the group, it was determined that signage would be such that in Langley Bay and inner Zeemel Bay or Zeemel Creek area that there would be limited access to people because of other safety concerns so that there wouldn't be fishing in that area.

But we had determined that there is a significant gradient in going from St. Mary's Channel in through the outer part of Zeemel Bay and then into Zeemel Creek as it relates to water quality but also to fish

uranium levels.

So though the Human Health Risk Assessment, which looks at reasonable scenarios, assessed that the risk to human health was relatively minor, particularly if you are getting your fish consumption from a wide range of areas, including St. Mary's Channel, we looked at it from a perspective of how many fish would need to be consumed on a regular basis in a place like inner Zeemel Bay for it to become a human health risk, and for uranium threshold values, it would be for an adult about two servings of fish per month, so a serving being about the size of a human hand, so about 220 grams.

So for that, there could be situations in which if there was a guide for one of the fishing camps, you know, on occasion there could be a potential for that to occur, but with the area being restricted during the time, especially during the mitigation period, that should be adequate to protect human health.

And following the post-mitigation monitoring, SRC has indicated that they will be continuing to monitor water samples within that area, and we have heard the discussion about sharing that information with members of the public.

I think the idea of not only giving average areas of average fish concentrations in that area

of St. Mary's Channel and Zeemel Bay and Zeemel Creek, it would be important to indicate specifics of the concentrations of the chemical as a potential concern within those fish within each of those areas as well as Langley Bay.

So with that water analysis like that, it should be a good way of monitoring for potential concern in the future. And SRC is in the process now of following up some fish sampling this fall, which will provide some further detail as it relates to Zeemel Bay, Zeemel Creek and St. Mary's Channel.

**THE PRESIDENT:** Thank you, that's very useful.

But while I have you and the Ministry of Environment, just opening it up, at one time the Ministry of Environment of Saskatchewan was going to do cumulative effect of all of Northern Saskatchewan, which I assume will cover Gunnar also. Has that project been launched and are you involved in it, Dr. Irvine?

**MR. IRVINE:** James Irvine for the record.

Presently, there is the Eastern Athabaskan Regional Monitoring Program that is concurrent within the Athabasca area and I am engaged in providing some advice or review of some of the materials from that project.

**THE PRESIDENT:** And the Ministry of

Environment? We were supposed to do a joint -- CNSC was supposed to work with the Ministry of Environment on this cumulative effect, right. Where is this project?

**MR. BIHUN:** This is George Bihun for the Ministry of Environment.

I don't look after -- I don't have direct dealings with that project. There was work done with our Chief Engineer Kevin McCullum dealing on that Eastern Athabasca project and the cumulative effect stuff. I can't really speak to that and he is not available right now.

**THE PRESIDENT:** Anybody in staff that would have this information?

**MR. RINKER:** Mike Rinker for the record.

So we don't know the status of where we are at right now working with the province, other than with the work that we have done with our own IEMP Program, Independent Environmental Monitoring Program, and how it relates to the Regional Environmental Monitoring Program that the province has published. They have a website explaining all of their results, so we have worked together on sharing data.

**THE PRESIDENT:** You will recall this was a big discussion in La Ronge, that we were committed to doing something together. I just want to have a little update as to what happened to that. Okay.

Ms Velshi...?

Monsieur Harvey...?

Back to Monsieur Tolgyesi.

Ah, so you are leaving it up to me. Okay. I have only one very simple question on seismicity. I was struck by this assumption that there was a peak ground acceleration, PGA, equal to 1 in 2475. Can somebody explain to me, how did you derive that, that precise number here and what does it mean here in terms of this particular area and where did you get the data from? And obviously what I am driving at, how that could affect the various structures of the copying, of the tailing cover, et cetera, et cetera.

**MR. SU:** Grant Su for the record.

The number, they obtained from the CSA's research results and they are also putting in the Canadian Building Code. So when you design a structure, you go to the CSA site to see what the potential seismic risk would be. So usually we go to the Canadian Building Code. So in the Canadian Building Code, they provide you all of the data related to the potential seismic risk in that area.

So they got this number, the peak ground acceleration data. So one in 2500 years is considered to have a very high seismic risk and they could have used a newer one, but in order to have more conservative results

for the structure design, they used the one in 2500 years of the rating period. With that peak ground acceleration data, use that data, put it in the design, they have conducted like a slope stability assessment with consideration of the seismic effect. So all you get is what your factor of safety would be.

So this factor of safety is a reference to the current guideline implemented in Canada and also some guideline from the local provinces. So all of the assessment, they ensure the structures, including the cover for the waste rock pile and the tailings, are made -- they have, you know, met the requirement.

**THE PRESIDENT:** While I was fascinated by the accuracy of -- it's not 2500, it is 2475, which always I get suspicious when somebody puts those kinds of numbers. But the real important issue here is, is that kind of a PGA, all the remediation is seismically qualified to withstand that kind of a thing; is that correct?

**MR. LISKOWICH:** Yes, that's correct. Mark Liskowich for the record. That is correct.

**THE PRESIDENT:** Okay, thank you.

Any last questions?

So, first of all, I would like to take note that it's the first time I see three women in front of us talking about technical matters like this, so

congratulations to this.

The second thing I would like to say that, on a sad note, this is the last meeting or hearing for our Commissioner, Monsieur Harvey here. We are sorry to see him leave and we wish him all the best in future challenges.

With that, I need to say something, is that correct?

**MR. LEBLANC:** I will.

--- Laughter

**MR. LEBLANC:** With respect to this matter, we propose that the Commission confer with regards to the information that we have considered today and then determine if further information is needed or if the Commission is ready to proceed with a decision. We will advise accordingly and this concludes the hearing on the SRC's request to remove the hold point for Phase 2 of the Gunnar Remediation Project.

Thank you very much for your attendance and participation.

If anybody took some interpretation devices -- I don't think so, I wasn't sure today -- don't forget to exchange them for your driver's ID.

Thank you very much.

**THE PRESIDENT:** Thank you.

**MR. LEBLANC:** Safe travels.

--- Whereupon the hearing adjourned at 4:15 p.m. /

L'audience est ajournée à 16 h 15