

MANITOBA CLEAN ENVIRONMENT COMMISSION

HEARING

VIVIAN SILICA SAND EXTRACTION PROJECT

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Transcript of Proceedings
Held at Mennonite Heritage
Village
Steinbach, Manitoba

Monday, March 6, 2023

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Janine Gibson

Reporter: Arfana Mulla

1 MONDAY, MARCH 6, 2023

2 UPON COMMENCING AT 01:30 P.M.

3

4 THE CHAIRMAN: Chair. So, thank you
5 very much and welcome back everyone to day five. As this
6 is the beginning of a new week, I will acknowledge that we
7 are on Treaty 1 Territory, the original lands of the
8 Anishinaabe, Cree, Oji-Cree, Dakota, and Dene People, and
9 on the homeland of the Metis Nation. I hope everyone had
10 a good weekend and that we're recharged and ready to go.
11 You probably saw Sander and Byron standing near me. We
12 were, in the interest of transparency, trying to balance
13 some time here. So, it would appear, because we only have
14 three hours today and six hours tomorrow, and on my
15 tentative agenda we are to get through the geotechnical,
16 and hydrogeology, and geochemistry, and it doesn't look
17 like that's going to happen. So, the suggestion is that
18 we cut into day seven on March 8th and maybe we have to
19 carve off the morning, which is originally scheduled for
20 the participants. So we'll play that by ear.

21

22 But in the interest of time, I will
23 introduce Gerd, who is from Arcadis, who I understand has
24 about 30 minutes of slides and then we will run down the
25 time. And while he's doing that, I'm going to do a little

1 more time management. So Gerd, over to you please.

2

3 SECRETARY: Secretary. State your name
4 for the record, please.

5

6 MR. WIATZKA: Gerd Wiatzka, W-I-A-T-Z-K-A.

7

8 SECRETARY: Gerd, do you solemnly affirm
9 that the evidence to be given by you shall be the truth,
10 the whole truth, and nothing but the truth?

11

12 MR. WIATZKA: I do.

13

14 SECRETARY: Thank you.

15

16 THE CHAIRMAN: And Chair. And Gerd,
17 while I know it's very difficult to do, every time you hit
18 that button, if you could state your name, the transcriber
19 in Toronto would really appreciate it.

20

21 MR. WIATZKA: I'll try to remember that.
22 Gerd. So, I guess I'm on and Chair has indicated I have
23 half an hour, I think. I have a relatively simple,
24 straightforward presentation that you have copies of. The
25 focus of the presentation is on the Stantec geotechnical

1 report, and I'll get to that in a second. I'll give you a
2 bit of background on myself. I'm a civil engineer.
3 Forty-plus years in the mining sector, having spent time
4 both with mining companies, design engineering companies,
5 and environmental consultants. I've looked at mines both
6 across Canada, the United States, and South America, as
7 well as internationally. I'm a generalist by trade, but
8 heavily involved in mine decommissioning and closure.
9 Structural engineer to begin with and spend all aspects of
10 operations from beginning to end. I've been supported in
11 this assessment by colleagues from Arcadis, Mr. Tony
12 Brown, about 25 years he specializes in environmental
13 assessment. He's been involved in some of the largest
14 environmental assessments in Canada, including the Giant
15 Mine and the Faro, as well as many projects in the
16 Northwest Territories and Nunavut. Also by Charles
17 Gravelle, who is a Queen's graduate both in civil
18 engineering and geotechnical engineering, who's got about
19 29 years of geotechnical experience.

20

21 Collectively, we looked at the information
22 provided by Stantec and AECOM in terms of getting our
23 bearings on what was being presented, and I'll go to the
24 first slide on that. And what I've done here is rather
25 than meet sort of having a couple of bullets and rambling

1 about the bullets, I -- I wanted to make sure I gave you
2 the text of -- of what we had and where we're coming from,
3 and then talk around that. But basically, we were
4 retained by CEC in April of last year specifically to
5 focus on the geotechnical aspects of the proposed project,
6 as well as to provide comments on general practices and
7 kind of expectations we would have from our experience in
8 terms of environmental assessment and -- and new projects.
9 Our focus, as mentioned here in point two, was the
10 proposed extraction process, the geotechnical principles
11 that were in the modelling -- that were being done in
12 association with that, and the potential environmental
13 effects of the sand extraction. We looked at it both in
14 terms of the actual detailed assumptions used and how they
15 were -- the modelling results that came out from that.

16

17 Consistent with, you know, the -- the
18 primary focus of an EA proposal is our -- review is to see
19 if -- if it makes sense within the context of the project,
20 the nature, and -- and setting of the project, and if
21 there are any fatal flaws associated with that. We were
22 not trying to redesign, or reengineer, or come up with
23 alternatives to it, but to assess what was being presented
24 in -- in a fair and -- and appropriate manner. And -- and
25 we recognize, and I think there was some talk about that

1 last week, that there are some things and some questions
2 that are still unanswered and that are more in the purview
3 of the regulatory or permitting regime and -- and that's
4 appropriate for all kinds of -- of environmental
5 assessments.

6
7 We provided our summary to CEC on comments
8 in -- on the 27th of July. We had a technical meeting
9 with ourselves, and Hartmut, and AECOM, and Stantec -- I
10 believe Stantec was there -- to try to make sure that we
11 understood what we'd read and that there was no
12 misinterpretation of that. And based on that we -- that
13 discussion, we finalized our report feeling that what we
14 had seen was appropriate for our understanding of what was
15 there.

16
17 We saw in the IR phases that additional
18 information was provided which clarifies some -- some of
19 the questions that were sort of lingering in the
20 background. And last week's presentations, I felt
21 personally, were very informative to expand on the
22 understanding of some of the techniques both from a mining
23 point of view and what the consequential results in terms
24 of cavern structure were. So that was very informative to
25 us and we're here to sort of talk about the findings that

1 we presented back in September.

2

3 So you know, the first slide here is we've
4 got topic one which is and -- and let me know, I don't
5 know if I can make it bigger on the screen. Can you see
6 the screen all right? So, slide one was the extraction
7 method, and we -- we felt important to acknowledge that
8 going in, as you are planning to do in this particular
9 project, it is less disruptive, less invasive than
10 conventional extraction of sands or gravels of -- or open
11 pit mining. So, we felt it was important to acknowledge
12 that. However, we put a caveat to that that said,
13 notwithstanding that there are issues that you have to
14 look at in terms of environmental assessments and
15 potential impacts to make sure that there are no
16 significant impacts. So, we also, from our perspective,
17 what we saw was that this was something that was a new use
18 of existing technologies, airlift, rotary drilling and so
19 on, but doing it a scale that was different than had been
20 done before, and that, from our perspective, within the
21 environmental assessment context, this meant you had to be
22 a bit more prudent and -- and a little more sensitive to
23 the uncertainties that may be associated with -- with this
24 kind of an activity. And I guess the last point there is
25 that -- and this is not my area of expertise, but again

1 within reading the -- the environmental assessment and the
2 discussions in the paper, there was -- in Stantec
3 document, there was always recognition that the two
4 aquifers were important. And there was comments about
5 keeping them separated. So, we felt as we read that, that
6 was an important consideration for us.

7
8 So in terms of the geotechnical and
9 topographic impacts of mining, you know, we -- we
10 recognize that there will be a permanent change to the
11 underground geology of the area. And last week somebody
12 used the phrase honeycomb and -- and that actually hit
13 home with me quite a bit because room and pillar, to me,
14 is much more structured, much more hard rock defined,
15 whereas honeycomb seemed to represent what you --what I
16 was looking at in --in the Stantec presentations from last
17 week. And so, you know, it's not a -- it's not to comment
18 other than to say there's a permanent change from
19 something that has a -- a sandstone layer that's intact to
20 a sandstone layer that has voids in it as represented by
21 the -- by the caverns.

22
23 What we looked at was the Stantec 2022
24 report. We did not look at any of the underlying 2019 or
25 2018 reports. So that was our principal focus. Just

1 wanna check here. And when we looked at that, we saw that
2 -- and I think the wording within Stantec was that the --
3 that the lower portion of the cap rock could fail under
4 the flex considerations. I don't think Stantec explicitly
5 said at that time that the shale would collapse, but in
6 order for the shale to collapse -- or sorry, in order for
7 the lower cap rock to fail, the shale was obviously
8 failing. So, that was our first, sort of, observation.

9

10 We went through the various assessments
11 that Stantec had done and recognize that -- and assess
12 basically their set of design parameters that would limit
13 the progression of -- of any kind of a failure up to the
14 surface. We had no problems with that from a -- from a
15 sort of review point of view, and we noted that Sio Silica
16 had committed to implement these design parameters back in
17 January 2022. And that most recently, just before these
18 hearings started, that Sio had come up with a revised
19 extraction plan that incorporated that. So, based on all
20 that and -- and we can go and talk a bit later on --
21 depending on timing on the presentation. We considered
22 that the issue of our -- of subsidence to surface
23 associated with -- with the caverns had been adequately
24 addressed by Stantec. We felt that obviously there's a
25 lot of recommendations, design parameters that were

1 provided by Stantec and that Sio had committed to
2 implementing in the course of the work and we felt that's
3 fundamental, but if it were done based on the assessment
4 that had been provided, for -- for our perspective, we
5 didn't think that that was an issue from an EA point of
6 view, and it had been appropriately addressed.

7
8 Now the last bullet down there, bullet six,
9 we say well, there was mention -- and you know is -- is
10 the area all the same? And you're looking at this is for
11 the four-year extraction project. So, we said these --
12 our agreement with that is -- is consistent with the fact
13 that you're only looking at the four years at this point
14 in time. And I think that's consistent with the Stantec
15 recommendations that say no matter what you're drilling,
16 you're supposed to be looking at doing some pre drilling,
17 assessing of -- of the capstone, assessing of the
18 weathered conditions, doing your sonar assessments of how
19 the well -- how the cavern is developing. So, I don't
20 think that's a surprise in terms of say, going beyond the
21 boundaries.

22
23 And before I get to this, I think that was
24 the most fundamental aspect of our review. I mean I'm
25 simplifying it here, but Stantec provided a good

1 discussion last week, and I can go back, as I say, at the
2 end if I have time still, show some slides that were
3 presented then, but fundamentally the concern about
4 subsidence to surface I think has been adequately
5 addressed in the process.

6
7 You know, we've mentioned at the beginning
8 that, you know, this project obviously has some less --
9 it's less intrusive, less invasive than open pit mining,
10 and our perspective I think agreed with the proponent
11 saying that if it's managed well and there's no reason it
12 shouldn't be managed well, the surface soils shouldn't be
13 materially impacted during operations. So that's
14 basically bullets one and two. I think there's nothing
15 unique about the surface. You know, you're doing wet
16 conveyance, you're doing controlled small -- small
17 extractions. So, again, we didn't have any concerns or
18 issues with regard to soil impacts on surface.

19
20 The biggest sort of finding from our
21 perspective was the collapse of the shale aquitard. In
22 reading the EA documents, we saw references to the wells
23 being sealed, we saw well -- references to the importance
24 of having that sorry, aquitard, and point three talks to
25 that. That's something we -- at the beginning, we were

1 looking at it. We saw that this was on the Sio website
2 saying important to have these critical divide between the
3 two freshwater aquifers. So finding, you know, seeing the
4 report that the shale might collapse was, to us, a very
5 important finding that needed to be considered as part of
6 the hydrogeo. We were not looking explicitly at the
7 hydrogel ourselves, that's another consultant for CEC, but
8 also within the context of what we were reading, it wasn't
9 totally -- it wasn't clear to us if it had been considered
10 in the AECOM modelling. Certainly in -- from the
11 documents -- I think you guys clarified it during the
12 technical sessions, that you -- and you spoke to that last
13 week, but certainly in the EA we didn't have the feeling
14 that that was considered. So, that was the big point
15 there. And we think it's an important point related to,
16 you know, the groundwater quality and again for additional
17 discussion that you'll have, but we're going to defer to
18 Hartmut in that discussion.

19

20 One of the things that ties into both the -
21 - both the sandstone and the aquifer intermixing from that
22 is, of course, closure. Conventional mining, there's
23 pretty clearly defined closure practices, removals of
24 things, and where you have surface plant facilities,
25 you'll fall into that pretty easily. You don't have that

1 much. There's nothing unique there. The question is what
2 is required for closure of the wells or the caverns? And
3 again, this goes into the realm of -- of the hydrogeo
4 assessment, but as you spoke last week, it's expected that
5 the shale will fail, and we find it difficult to
6 understand how you would seal a well that is sealed in the
7 shale to begin with, or if the -- if the limestone
8 fractures in the bottom or the -- the flex fracturing goes
9 up above a seal. So, it may be something that you design
10 around and you have it -- the hole sealed further --
11 higher up et cetera, et cetera, but we didn't see anything
12 that really addressed that explicitly. So, that's
13 something that can be pursued. But we think it is
14 important question because if -- if the shale and the
15 limestone collapse within the caverns, then even if you
16 have the well sealed, you still haven't -- you still have
17 a connection between the sand aquifer and the limestone
18 aquifer. So again, we're not saying what that means in
19 terms of water quality or in terms of permitting, but we
20 think it's important question and it could be something
21 that -- that would benefit from Sio pursuing. And you may
22 already have done that. But from our report at the time
23 we were looking at it, we felt it was very important to
24 raise.

25

1 Accidents and malfunctions. You know, as
2 we said, we don't think that surface subsidence will occur
3 based on following the -- the guidance from Stantec.
4 However, it's like all good things where you have to look
5 and say, well, what if the unforeseen happened? Is it
6 reasonably possible to think that there might be some
7 circumstances in which you did? And that could be either
8 that the -- the geology is different, that there's
9 something unanticipated. And typically, even in the most
10 well-designed systems, say an earthwork dam, say a rock-
11 fill dam for a tailing structure, you still do consequence
12 analysis for hypothetical events that might happen should
13 something unforeseen occur, whether it's an extreme event
14 beyond the design criteria, whether it's an error, whether
15 somebody didn't capture some underlying foundational
16 weakness, or whether it's an operating error. So, again,
17 one of our comments to CEC was to say well, it would be
18 prudent to look at say well, what if something did happen?
19 What if a cavern did fail to surface? Is this something -
20 - how would you deal with it? Just simply backfill it?
21 Would you -- what would you do? And within the context of
22 -- of the geotechnical aspects, I think it's a reasonably
23 fair -- fair question and -- and I suspect that your
24 consultants can deal with that. Yeah, so that's basically
25 points one, two, and three wrapped together.

1
2 Management plans. We are used to seeing
3 more detailed conceptual management plans in the mine
4 sites that we look at that are being proposed. We
5 recognize that, I think, Sio's approach was that you would
6 have a four-year period in which you develop some
7 understanding of the behaviour of things, and that during
8 that period you would be both in the permitting process as
9 well as in the operational process, you would develop some
10 plans and then improve on those. So, we don't have a
11 problem with that strategy, but we still thought that
12 there might be some -- there might be some merit into
13 trying to get a little bit more advanced than that at this
14 stage of the game. So, it's something that we put forth
15 as something for consideration and it's really to address
16 the uncertainty of this kind of an approach.

17
18 And here on this point here I said, "Well
19 the approach is acceptable when you know what you're
20 looking at, but it is a new and unique operation." And
21 so, we would highly recommend that -- that to the degree
22 that you can flesh out some of these things, both for
23 yourself and for other stakeholders, it would be important
24 to understand what kind of management plans you can put in
25 place.

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Sort of in a summary point, you know what -
- what we said is that Stantec '22 presents technical
analysis of potential failure modes that, in our opinion,
are generally appropriate for the project that is
undergoing environmental assessment. We agree with their
assessments, their conclusions, and their recommendations.

For those that didn't read the report, we
also looked at all their underlying assumptions. We asked
for additional information on borehole logs where we
questioned how they got their -- their strength factors,
et cetera, et cetera and our technical people who were
looking at that were satisfied that these were reasonable
and appropriate assessments.

We think it's really important that Sio
make sure that they do look at the criteria that Stantec
has, and they've committed to that. But it's important
going forward that they look at all that criteria and
adhere to it. And if they do, then we feel comfortable.

And I'll, if I have time, I'll go over some
of that criteria at the end of the presentation, but the
one that -- that sticks in my mind -- well, several of

1 them do this is the monitoring, the cavern monitoring, and
2 -- and one -- a test of doing a cluster test something
3 larger than a single hole.

4
5 On the subsurface failures, we note -- and
6 last week was -- it was really much more explicit than it
7 had been in the documents before, but last week there was
8 discussion both of the -- the shale layer collapse, but
9 also the fractured layer -- fractured limestone layer
10 collapse above the shale layer. And we used the word
11 "may" when we looked at it back in September. And in this
12 particular case, you know I've written in "will" because
13 it sounded like there would be a lot more collapsing than
14 just the occasional -- the occasional borehole. But we
15 recognize that that has nothing to do with the overall
16 geotechnical stability in terms of surface subsidence.

17
18 In terms of consequences on the water -- on
19 the water quality of the mixing of the two aquifers, again
20 we just noted for -- for others, in this case CEC's
21 hydrogeological expert, in terms that this will happen,
22 and from our perspective, the challenge was in terms of
23 closure. What, if anything, can you do? And if nothing,
24 what does it mean in terms of consequent water quality?

25

1 I'm just going to drop out and go to -- I
2 think it was this document where I was just taking from
3 last week's presentations. And it's, you know, it's been
4 a week since -- so, here's what we looked at. We looked
5 at the different failure modes that had been presented by
6 Stantec. We looked at this particular figure at the time,
7 and when we saw that, that had us concerned because what
8 we'd been looking at was separation of the aquifers. And
9 then last week, Stantec provided these images, which I
10 personally found very helpful. It gave me another
11 perspective in terms of how the mining actually occurs.
12 And of course, there's a criteria table. And there's also
13 -- which really hasn't been spoken about much, is the
14 distance separating the caverns but it's clearly defined.
15 So, in some cases it's -- it's talked about it's at 60
16 metres and others it's -- it's 70 metres, but that's the
17 short-term distance before the five metre slump on either
18 side of the cavern.

19
20 So, these are their results. And again, we
21 did not argue with those. And it's their recommendations
22 -- and again, we support that.

23

24 So, and you know, the -- the unique thing
25 here is that these recommendations apply constantly to

1 every hole you drill. And so, it does -- it is requiring
2 a level of engineering and management that is different
3 than, say, an open pit mine. You have a survey, or you go
4 in, you have to find the limits of -- of the reserve and
5 you cut to it, et cetera. Here, you're going to have to
6 do data collection, interpretation, analysis, and
7 decisions for mining. And I think as you pointed out --
8 Sio pointed out last week, it's something that, in that
9 first four- year period, you'll have to work with, refine,
10 and -- and I think Stantec uses that term as well, to
11 refine your -- your analysis as you go forward. And it's
12 all doable, but it takes effort, and it takes commitment.

13

14 So, in summary, you know, we had no issues
15 in terms of surface subsidence associated with this. But
16 we did raise the issue of -- of long-term effects,
17 potential effects on the aquifer mixing.

18

19 That's it for me.

20

21 THE CHAIRMAN: Thank you very much.
22 So, I understand, for the record, that the proponent would
23 like to question last, okay, and you've asked for an hour.

24

25 MR. DUNCANSON: Sander Duncanson.

1 Yes, Mr. Chair, I -- that's my best guess right now.

2

3 THE CHAIRMAN: Chair. Thank you very
4 much. So, I think I'll start by giving each of the
5 participants a half an hour and we'll see how that goes.
6 So, Dennis, do you wish -- you do, all right. That
7 answers my question. You're out of your chair like a
8 shot. Please, come up to the front. Chair. I understand
9 people may want more time. Unfortunately, time is not our
10 friend as I look at the schedule and it's a zero game.
11 So, what you would lose -- or what I might give you here.
12 You're simply going to lose in your time as participants
13 in your ability to -- to testify. So, let's try and make
14 it work. Let's start with a half an hour, let's run
15 through the gambit, and let's see if anyone wants to cycle
16 back before I go to the proponent. Please proceed.

17

18 MR. LENEVEU: Good afternoon. It's Dennis
19 LeNeveu. I have a few questions on the Arcadis
20 geotechnical analysis. The first question I have is
21 related, in particular to, the slope stability, and I
22 didn't see a lot of discussion of that in the report. And
23 then we found some new information that all the parameters
24 for slope stability were not measured. They were either
25 taken from literature values or one parameter, the

1 cohesion, was back calculated from an overhang situation
2 in the cavity and was told that sampling techniques such
3 as sonic drilling would have disturbed the sample too
4 much, and that's why sampling wasn't done. Although, I do
5 note in the literature, they got their samples from
6 somewhere -- even subterranean samples. So, can you
7 comment on this lack of actual data for the sand and no
8 measured values? Is that an issue that -- that you could
9 comment on, please?

10

11 MR. WIATZKA: Gerd Wiatzka. In talking to
12 my geotechnical people, they came to the same kind of
13 discussion as Stantec presented last week, which given the
14 cohesion of the sand, the nature of the sand, and the --
15 basically, the equalization of pressure, is associated
16 with the cavern, that they felt that the slope for this
17 purpose was adequately described. They had no problem
18 with this 65% slope.

19

20 MR. LENEVEU: Thank you for your answer.
21 You had no problem that none of the parameter values were
22 actually sampled and measured?

23

24 MR. WIATZKA: No, they had no problem with
25 that.

1

2

MR. LENEVEU: Okay, thank you. I just ---

3

4

5

THE CHAIRMAN: Chair. Gentlemen, I appreciate the exchange. Please state your name.

6

7

MR. LENEVEU: It's Dennis LeNeveu. I'd just like to draw your attention to their -- unfortunately, I don't have a slide, but their diagram of the overhanging cavity, and it doesn't really match the side scan sonar. It shows an overhang over the entire cavity, whereas the side sand (sic) sonar showed an overhang just in the shale. And at the bottom of the shale, there was actually a slope of about -- much more gradual in the other direction, which doesn't seem to support this idea that there's a consistent overhang in the cavity. And so that, I would say the side scan sonar (sic) results do not support this very large cohesion value of 250 -- 220 kilopascals. It was never measured. Can you comment on that?

21

22

23

24

25

MR. WIATZKA: It's Gerd Wiatzka. No, I can't comment on that. I know that our technical people looked at that's -- at both the supplementary information that was provided during the IR phases, as well as the

1 original information from the side scan. We had been
2 asked by CEC to comment on that and our technical people
3 indicated that they had no concerns with that.

4
5 MR. LENEVEU: Thank you for your answer
6 about that. I'm also wondering about -- there is a
7 Stantec limit that they shouldn't be extracting when the
8 limestone is less than 15 metres thick. And east of
9 Highway 302, almost all the data from the wells and the
10 boreholes is under 15 metres thick, although Sio Silica
11 produced two points in the limestone that were just a bit
12 over all those sort -- total limestone, not competent
13 limestone. So, I didn't see any reference in your report
14 to this limit of the 15 metres and how it related to the
15 field values. There's a lot of data from the borehole and
16 well information reports that show east of 302, in most
17 cases, the limestone is less than 15 metres. Can you
18 comment on that?

19
20 MR. WIATZKA: We were looking at the Stantec
21 design parameters, so we were not looking at field
22 conditions in the area. We were looking at the design
23 assumptions based on what they were looking at. So, you
24 know, their -- their Table 9 provided guidance on
25 limitations and criteria, and that's what we considered.

1

2

MR. LENEVEU: Thank you for your answer.

3

There's one other concern I have. It's Dennis LeNeveu.

4

During extraction there's a -- will be a change in

5

pressure in the formation due to the well extraction,

6

especially when you have up to maybe three extraction

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wells operating at once. And the permit for injection

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required that be measured, it wasn't. And I would -- the

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reason you measure it is it can have an effect on the

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stability of the cap rock. For instance, if there's a big

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drawdown then there would be a net extra pressure on the

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cap rock from the drawdown underneath, and I don't think

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that was taken into account in your analysis. Can you

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comment on the fact that the change in pressure induced by

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the extraction was never measured and not in your

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analysis?

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MR. WIATZKA: Wiatzka. No, I can't comment

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on that.

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21

THE CHAIRMAN: Chair. So, I know

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it's difficult to remember to save your name, so I'm going

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to try something different. If you go a sentence or two

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deep and you hear a clap, it will be my clap, and it's

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your cue that you forgot to say your name.

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MR. LENEVEU: Thank you. It's Dennis LeNeveu. There's no comment on that, but is that not a deficiency in your determination? Is there not a situation that could arise where the pressure differential is a serious problem? After all, all over Western Canada produce, water and so on, is injected wastewater and they must measure pressure, and they must know the strength of the cap rock because the injection pressure can compromise the cap rock. So, even though you have no comment, can you make any statement at all about this deficiency?

MR. WIATZKA: Wiatzka. I will check with our geotechnical specialist.

UNIDENTIFIED SPEAKER: Oh, thank you!

MR. WIATZKA: Yeah, I know my name. Wiatzka, it's number two. I'll check with our geotechnical person and endeavour to get back to the Commission.

MR. LENEVEU: Thank you. I look forward to your -- it's Dennis LeNeveu. Just one other question about your conclusion that the surface disturbance for

1 this project would be less invasive than, for instance,
2 extracting from open pit. It's my understanding the
3 extraction ratio is very small, so the footprint of this
4 project is much, much bigger than you have to extract the
5 sand from an open pit, the same amount of sand, and when
6 you look at the diagrams of the honeycomb of all your
7 wells then -- and all the slurry lines, and connection
8 lines, and equipment that have to be moved around, and the
9 actual area that they're going to cover, which can be in
10 24 years, I believe 40,000 hectares, I'm not quite sure of
11 the number, would you not say that in terms of an aerial
12 disturbance that for the same amount of sand, this method,
13 the footprint is much, much larger, so maybe that
14 conclusion of it being less invasive is not valid. Can
15 you comment on that?

16

17 MR. WIATZKA: Wiatzka. You know, there are
18 mining methods, strip mining for nickel for example, that
19 strip acres and acres and acres. That strip mining, that
20 destroys everything, and then you put it back in some
21 form. There are massive open pits that are huge, so
22 stripping ratios multiple, you know five to one, ten to
23 one, 20 to one, so, it's -- it's not comparable. You
24 know, if you had to strip mine this operation you'd -- it
25 would be uneconomic in my opinion. However, you know the

1 -- the comment about the pipelines, yes there are
2 temporary, transient stations there, yes, they will have a
3 short term, but in our opinion it is not as -- as invasive
4 and -- and irreparable on surface. And you're right,
5 there is lots of honeycombing underneath and that's
6 important consideration, but on surface I believe this is
7 less -- less damaging than other forms of mining.

8

9 MR. LENEVEU: Thank you for your answer.
10 It's Dennis LeNeveu. I have one more question related to
11 the honeycomb. I understand the slope stability was a 2D
12 analysis, and the honeycomb is very complex three-
13 dimensional geometry. I understand that a 2D analysis
14 would be good for a long room with a -- a face like that,
15 but -- or a curved face with many of them where -- and
16 adjacent honeycombs where it can fall from all sides. Can
17 you comment on the uncertainty involved in the slope
18 stability analysis for a two-dimensional analysis, when in
19 fact, you have a very complex three-dimensional honeycomb
20 pillars?

21

22 MR. WIATZKA: Wiatzka. Again, I think our
23 geotechnical people looked at it from the kind of model
24 that was used, the description of the caverns, and believe
25 that what Stantec has presented is a reasonable conclusion

1 in terms of safety, in terms of engineering design. I
2 think also though, that Stantec has recommended that Sio
3 do a cluster -- analysis of a cluster of wells and see if
4 there's any changes. So, we totally support that, but at
5 this stage, we don't have a problem with what they did.

6

7

MR. LENEVEU: Thank you for your answer.
8 It's Dennis LeNeveu. So, in the slope stability analysis,
9 2D you showed some pictures. I only saw one cavity, but
10 there's at least four other cavities around the one
11 cluster that come into play because the slope -- so, I
12 didn't see any of the adjacent cavities 'cause the sand
13 can go in both directions. It's just a -- it's not a hole
14 in a -- in an infinite field. Can you comment about the
15 taking into account the nearby clusters where I only see
16 one picture of one cluster?

17

18

MR. WIATZKA: Wiatzka. Sorry, I cut you off
19 there. Yeah, it was it -- I think for me, it was also
20 good to see Stantec's figure last week where they showed
21 the -- the five cones. And it's my understanding, and --
22 and again I can confirm with our technical people, that
23 basically a cavern is some combination of one to five
24 holes, and that ultimately they will -- they will fill in
25 and -- and get to a certain top where they have a cavity

1 that is one contiguous cavern. And there are limitations
2 on that, as per Table 9, whether it's one hole or multiple
3 holes forming a cavern. That's my interpretation of that.
4 And that, notwithstanding, whether it's one or multiple,
5 you have to have a minimum of 70 metres short term and 60
6 metre long term of pillar or undisturbed sand between
7 adjacent caverns.

8
9 MR. LENEVEU: It's Dennis LeNeveu. Thank
10 you for that answer. Would this, because of that
11 complexity, would it not have been a much surer -- and
12 limit the uncertainty in this problem to use a three-
13 dimensional slope stability model -- I believe they exist.
14 Why wasn't three dimension used in an inherently three-
15 dimensional problem?

16
17 MR. WIATZKA: Wiatzka. We are not trying to
18 reengineer or redesign what Stantec, or anybody, or AECOM
19 has done. What we were asked to do is comment on its
20 adequacy in terms of what they presented. Was it
21 understandable, was it reasonable, did it have appropriate
22 engineering assumptions and analysis for the conclusions
23 that they -- that they arrived at? And that's what we
24 did. We didn't go and try to ask them why they didn't do
25 something else that was not within our scope.

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MR. WIATZKA: Thank you for that answer.

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But is it not in your scope to discuss the uncertainty in the analysis and how -- what their particular method was in relation to the uncertainty and the reliability of that analysis? I -- I would have thought that was part of your mandate.

MR. WIATZKA: Wiatzka. No, our mandate was to see if the conclusions that they had arrived at were reasonable and appropriate based on the assumptions they provided. We didn't -- we were not asked to reengineer or come up with a different way of -- if we would have had a problem with it, if we would have felt it was inappropriate, then we would have raised that, but our technical people did not raise that, and we accepted the -- the conclusions they came to.

MR. LENEVEU: Thank you. That's Dennis LeNeveu. Well, I -- I think the people here would have a much -- feel much better about this if, for instance, rather than 250 kilopascals of cohesion, which I've never seen in the literature for sand, they used the whole range of values, like an more appropriate number you see in the literature of 50 zero -- I see zero. I didn't see any

1 such sensitivity analysis, particularly for the cohesion
2 was back calculated to an overhanging slope that does not
3 exist in the side scan. The overhang was only in the
4 shale. Can you comment on that -- why they didn't do more
5 sensitivity analysis and why they didn't comment on that,
6 particularly with respect to the cohesion, a very huge
7 number that was back calculated?

8
9 MR. WIATZKA: Wiatzka. When you're asking
10 me to comment why they didn't do something, I can't. I'm
11 sort of reflecting on some of the responses last week. I
12 can't project why they did what they did or wasn't. I can
13 only tell you what we did, which was to assess it based on
14 the information provided and our people felt it was
15 reasonable and appropriate for this particular situation.
16 We explicitly were asked by CEC to look at the slope
17 angle, and we did, and our technical people didn't have a
18 problem with it.

19
20 MR. LENEVEU: Thank you for that answer, but
21 you could have, or perhaps should have, commented on
22 sensitivity analysis and -- and perhaps suggested there
23 may be beneficial to see more of it, particularly varying
24 the cohesion. Is that not true?

25

1 MR. LENEVEU: Without -- it's Wiatzka --
2 without sounding flip, there's a lot of things we could
3 have, and perhaps should have, in a different manner. But
4 no, I don't think -- if we would have had any concerns
5 with it, our technical people would have looked at it.
6 Again when -- we looked at some of the underlying data
7 from borehole logs to make sure that the assumptions they
8 had used were appropriate and reasonable. And when we
9 satisfied ourselves as to that, and we satisfied ourselves
10 as the method being used, then we looked at how they
11 concluded it. We weren't looking for other things.

12

13 MR. LENEVEU: Thank you for that answer.
14 It's Dennis LeNeveu. But there was no underlying data in
15 the slope stability analysis -- one back calculated value
16 and literature values. So, I come back to that concern.
17 You say you were -- looked at the underlying data. There
18 was no underlying data for the sand slope stability. Now,
19 you seem to be saying you needed or should -- looked at
20 underlying data. How can you look on underlying data that
21 wasn't there?

22

23 MR. WIATZKA: Wiatzka. I don't know how to
24 answer that question. You're asking me a hypothetical on
25 something that I should be looking at that wasn't there,

1 so.

2

3 MR. LENEVEU: Thank you. I have no more
4 questions.

5

6 THE CHAIRMAN: Chair. Thank you very
7 much. Rural Municipality of Springfield, any questions?

8

9 UNIDENTIFIED SPEAKER: No questions.

10

11 THE CHAIRMAN: No questions. Our
12 Line in the Sand?

13

14 UNIDENTIFIED SPEAKER: no questions.

15

16 THE CHAIRMAN: Gee. MSSAC? Mr.
17 Mann, welcome to the floor again.

18

19 MR. MANN: Good afternoon. This is Jason
20 Mann with MSSAC. I have a -- a short list of questions to
21 ask. And I ask them from the perspective that it's
22 paramount responsibility of a P.Eng. and PGO to protect
23 the public. That is our role. And so, some of these
24 questions I think you've been asked in a slightly
25 different way prior, but I'm still going to ask my

1 questions respectfully, and they may be similar to -- to
2 what you've just heard. My first question, on Page 4 of
3 your slide deck, item three, talks about the design
4 parameters given, and you note that there was a revised
5 extraction plan as a result of some work that was done.
6 We had made an IR request when we noticed the -- the
7 change in the well cluster layout, numbers of wells,
8 inferring that probably it was -- the root cause was
9 related to geotech changes or analyses perhaps. And so. I
10 believe in your slide deck you -- you sort of refer to
11 that, and I -- I just was wondering what were those
12 changes, or call it tweaks in the analysis, that from the
13 geotech perspective was related to the -- the well layout
14 change in the cluster?

15

16 MR. WIATZKA: Wiatzka. It was my
17 understanding that the original layout had been done
18 before the Stantec 2022 document and that Table 9 was what
19 Sio was adhering to in terms of limitations of span and --
20 and differences for the different thicknesses of cap rock
21 and overburden. And that they had plied that Table 9 to
22 come up with the new -- the new well layout plan.

23

24 MR. MANN: Jason Mann. Thank you for
25 that answer. On related Page 5, item four of your slide

1 deck, there is a note here that refers to a letter as of
2 January 21st, 2022 that is -- is related. When I -- when
3 I look up the -- the registry, that letter that I can find
4 is related to the groundwater model authored by Cliff
5 Samoiloff. So, the only thing related to the revised
6 cluster that -- that I could find was a January 24th
7 letter that really shows a plan layout and an
8 environmental assessment of the change in the cluster.
9 So, asking the question in slightly different way, is it
10 simply the Table 9 in the 2022 geotech report that
11 everything is based on? Am I -- or am I missing some
12 other correspondence related to a change or a refinement
13 in the geotechnical analysis that's contained in some
14 other report, or letter, or deliverable of January
15 something, 2022? Just looking for clarity there.

16

17 MR. WIATZKA: Wiatzka. It was my
18 understanding, when we were provided the Stantec report in
19 April, there was also -- we were provided with information
20 that Sio had received the Stantec report and they had
21 agreed to abide by the findings and recommendations of
22 that report. So, this last -- the last layout was the
23 first time we saw something new because the -- the other
24 layout had come before the Stantec report.

25

1 MR. MANN: Jason Mann. Thank you for
2 that answer. Perhaps, and I don't know if there's process
3 involved, but I would just like to put on the record, if
4 there was some other deliverable or letter correspondence
5 related to the change in the layout that's related to
6 geotech work, we would please like to be let know where
7 that might reside.

8
9 MR. WIATZKA: Sorry if I can reply to that.
10 This first letter that we're referring to was simply an
11 acknowledgement that -- that Sio had received the Stantec
12 report, and they were agreeing to abide by its
13 recommendations. That's not a change at that time. The
14 documents we saw from the EAP still had the seven well
15 cluster, still had all the other things. So, the first
16 change from Sio that we saw in terms of extraction plan
17 was the January 24 correspondence.

18
19 MR. MANN: Thank you for that answer.
20 Page five, as well, again and -- and maybe I'm -- I'm
21 missing something, but the comment made here is "The
22 revised extraction plan appears to have addressed or
23 incorporated design parameters or changes in design
24 parameters". The dialogue that I've heard so far, and I -
25 - and I could be wrong, but I believe the dialogue we've

1 heard so far related to the change in well cluster
2 layouts, numbers of wells, from prior panels were related
3 to efficiency -- well sand extraction efficiency. This
4 statement seems to suggest that the revised extraction
5 plan appears to have incorporated the design parameters.
6 Again, on this one, just for clarity, are you speaking to
7 that Table 9?

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MR. WIATZKA: Wiatzka. Yes.

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MR. MANN: Jason Mann. Thank you for
that answer. Page five, item six of your slide deck,
"focus on impacts at surface" was a statement made in --
in terms of your review, and not necessarily as related to
impacts as a result of subsurface geotechnical failure.
Just looking for your perspective on how those two things
are not related, if you could elaborate on that please?

MR. WIATZKA: Wiatzka. Stantec, and I think
Sio, in last week's discussions, clearly indicated that
they were not counting on strength of the shale layer.
They were using -- from a surface point of view, they were
using the cap rock. So, from a surface subsidence point
of view, shale layer was not considered and there was no
discussion of the shale layer collapse from a geotechnical

1 point of view. We -- we raised the issue of the shale
2 layer collapse because it basically -- its collapse
3 provided a connection between the two aquifers.

4
5 MR. ANN: Jason Mann. Thank you for
6 that answer. So, if I can ask it in a different way or --
7 or look for a bit of clarity, the collapse of the shale
8 and some of that nearby, or just above, overlying
9 carbonate rock is -- is known. We've -- we've seen that
10 in the -- in the presentations. So, then for -- in your
11 review, to disconnect those two things occurring, I would
12 infer that then based on the report you reviewed, you
13 would concur, and I think I've heard you say this, but
14 correct me if I'm wrong, that the cap rock analysis done,
15 how it was done, the assumptions made, were adequate, and
16 so, then that -- the strata that does collapse and hasn't
17 been relied on is one thing, and because you feel that the
18 geotechnical analysis of the remaining cap rock being
19 sufficient to maintain a span, then those two things can
20 be separate, i.e. surface subsidence from the -- the
21 collapse that's allowable or has been discussed, in terms
22 of the shale. That's where you can make that separation?
23 Am I correct in that?

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MR. WIATZKA: Sorry, I cut you off.

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MR. MANN: Sorry, I'm just trying to -- trying to make that separation. So, again, the failure of the strata that everyone agrees to here, I believe, that will fail hasn't been relied on for the cap rock, and because of that then, in your review of the work that was done, you can separate the two issues of a collapse and subsidence. Is that correct?

MR. WIATZKA: Wiatzka. Yes.

MR. MANN: Okay. Jason Mann. Thank you for that answer. Chair, just checking on time?

THE CHAIRMAN: Chair. So, you started at 2:25, it's 2:32. You're only seven minutes in.

MR. MANN: Jason Mann. Thank you. Question related to the stand-up slope in the sand of 65 degrees, which I believe I heard from the panel was related to or -- or backed out to a 35-degree friction angle. But fundamentally at 65-degree slope in the sand, which, again, in sonar imagery, has been steeper and overhanging and a bunch of other things, I would be interested to hear your perspective on whether that is a

1 slope that would be interpreted to be observable into the
2 future and or separately, would you feel like perhaps, the
3 imagery captured that shows those slopes in the sands as
4 they are, is related to perhaps a difference in cohesion
5 or other cementation in the upper part of the -- the sand
6 strata, versus below, or some other combination thereof.
7 So, I'm trying to boil this down to a question, I guess.
8 Do you feel like the 65-degree slope given -- in terms of
9 some of the analysis done in the sand, is appropriate and
10 secondly, perhaps appropriate for the long term?

11

12 MR. WIATZKA: Wiatzka. In discussions with
13 our geotechnical expert, he had no problems with it. He
14 provided similar rationale, as Stantec had independently.

15

16 MR. MANN: Jason Mann. Thank you for
17 that answer. So, with that answer and -- and I
18 appreciate, I think I heard this in your -- in your prior
19 discussion, the point of view of your review was looking
20 at the adequacy and the appropriateness of the engineering
21 done, the assumptions made of what was done, and not ask
22 why something wasn't done. Did I hear that correctly?

23

24 MR. WIATZKA: Yes. Wiatzka.

25

1 MR. MANN: Thank you for that answer.
2 Jason Mann. Just one last question. Relates to the cap
3 rock. And given that there are pervasive vertical joints
4 within the carbonate strata in this province, Manitoba,
5 and that the geotechnical analyses done to date, and the
6 associated failure modes of shear and bending failure of
7 that cap rock assume basically a -- a continuous and
8 horizontally bedded cap rock that does not account for
9 vertical joints. Do you think that the analyses done to
10 date are adequate to resolve another possible failure mode
11 that might occur when taking into account the inclusion of
12 vertical joint sets?

13
14 MR. WIATZKA: Wiatzka. I just wanna think
15 of your wording here. Is it adequate to preclude failure
16 of other possible -- or other possible failures due to
17 vertical? I think you know, Stantec has provided a set of
18 assumptions saying that you can't just go willy-nilly
19 drilling this stuff without looking at what you're
20 drilling into, and I think they had recommended angular,
21 or some kind of inclined, drilling. I think that was part
22 of the discussion you had with them last week. And I
23 think you -- if you can get better information and more --
24 I don't -- I think precluding something from happening,
25 it's -- it's difficult to -- to say and -- and that's why

1 we're saying you should be looking at a larger test. You
2 should be learning from anything you do going forward.
3 It's important to refine any of the assumptions they've
4 had. So how can you preclude something that you don't
5 know if you have? So, I'm -- I'm trying to be, you know,
6 it's as frank as I can be without -- you can get -- the
7 assumption was, as you say, that it's -- it's horizontal
8 planning, that was their failure mode, and that they only
9 had, I think, vertical. I think that's what you guys said
10 last week in terms of your -- your drilling. And yes, if
11 you could find some more. And certainly one of the things
12 we looked at was to have -- spatially there may be
13 different -- different characteristics in the bedrock in -
14 - in different areas, as opposed to just assuming it's all
15 the same everywhere. So, I think it's prudent to get more
16 information to keep building up the database to make sure
17 that the assumptions that created Table 9 are in fact true
18 in other places where you go and where you try to mine.

19

20 MR. MANN: Jason Mann. Thank you for
21 that answer. Sorry, just in the dialogue, I do have one
22 last question. I think -- I think I heard you say that it
23 would be prudent, or worthwhile, recommended -- maybe I'm
24 using the wrong words, but long story short, it would be
25 worthwhile to execute or do a full extraction test with a

1 full cluster. In many ways in -- in a situation like
2 this, there's always the build up from learning
3 information, gathering more information, doing a design,
4 and doing some sort of a scale test to verify what -- what
5 you think you know and maybe find out something you don't
6 know. That's -- that's engineering practice in many ways.
7 In fact, it's something that was recommended or asked
8 about in the IR's, whether there would be a commitment
9 made to do a full-scale extraction test. Or perhaps in
10 another way, why one wasn't done? That'll be in the IR
11 along the way here. My understanding, my recollection, in
12 terms of Sio's response at that time, and please correct
13 me along the way here, or thereafter, if I am wrong, their
14 response was 'Well that's like a full-scale mining
15 exercise and we wouldn't pursue it at this time'. I'm
16 hearing that it would be very worthwhile to do a full-
17 scale extraction test, within doing so, collect data and
18 measurements, all the things we've been talking about, and
19 demonstrate how the thing will perform. So, if I'm
20 hearing you correctly, and please correct me if I'm wrong,
21 you would concur that that would be a logical progression
22 of -- of looking at moving this potential extraction
23 process forward. Is that correct?

24

25

MR. WIATZKA: Wiatzka. Yes. And I would

1 point out that in Stantec's recommendations from their
2 report, and from last week, they say, 'complete multi-well
3 extraction testing to confirm conditions'. So, that ties
4 into what you're saying. You know the details of what's
5 involved in -- in that, is up -- is something they can
6 work on in detail, but it's -- to me that would be the
7 opportunity, yes.

8
9 MR. MANN: Thank you for that answer.
10 And sorry, one related question. Who do you think should
11 evaluate the details that would need to be captured under
12 such a full-scale extraction test?

13
14 MR. WIATZKA: Well, obviously Stantec, as
15 the one doing it would be doing their first analysis, but
16 I think in terms of disclosure, it would make sense to
17 share that with all the stakeholders that are interested
18 in it.

19
20 MR. MANN: Jason Mann. Thank you for
21 that answer. And I appreciate your time and the panel's
22 time. I have no further questions.

23
24 THE CHAIRMAN: Chair, thank you very
25 much. Yes, sir, MBEN. Chair. So, what I propose is

1 we'll give you your full 30 minutes, which will take us a
2 little bit past the top of the hour, which we would
3 ordinarily break. We'll have a break and we'll come back
4 and proponent it will be your time. Please proceed.

5

6 MR. WILLIAMS: Williams speaking.
7 Good afternoon, Mr. Wiatzka. I'm just directing your
8 attention to Figure 5 from the Arcadis report, which is
9 the project spatial scope. You recognize that Figure 5,
10 sir?

11

12 MR. WIATZKA: Wiatzka, yes.

13

14 MR. WILLIAMS: And in purple is the
15 mind life extraction area being the 24 -- expected 24-year
16 life of the project -- of the development. Agreed?

17

18 MR. WIATZKA: Wiatzka, yes.

19

20 MR. WILLIAMS: And recognizing --
21 Williams speaking -- that this is an excerpt based upon
22 the original extraction area, which has been amended
23 somewhat, in the top right-hand corner is the what was at
24 the time of the filing of the EAP, the -- the area
25 encompassed by the first four years of silica extraction.

1 Agreed?

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MR. WIATZKA: Wiatzka, yes.

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MR. WILLIAMS: And when Arcadis undertook its evaluation of the EAP, it would be accurate to say -- Williams speaking -- that you're analysis did not specifically address the impacts of the broader 24-year development. Agreed?

MR. WIATZKA: Wiatzka, agreed.

MR. WILLIAMS: Your focus was on the -- the narrow window of the phase one extraction area, correct?

MR. WIATZKA: Wiatzka, yes.

MR. WILLIAMS: And because your analysis does not examine the broader scope and longer time frame of the 20-year plan, IT has the potential to underestimate the spatial extent, duration, and significance of project impacts. Agreed?

MR. WIATZKA: Wiatzka. It's -- the

1 terminology of project is -- is what I struggle with
2 because literally, it's the first four years, and then of
3 course, the longer term, as has been described by Sio and
4 others.

5
6 MR. WILLIAMS: Your -- your analysis,
7 because it does not examine the broader spatial scope and
8 longer time frame of the 24-year plan, has the potential
9 to underestimate the spatial extent, duration, and
10 significance of the overall development impacts. Agreed?
11 Williams speaking.

12
13 MR. WIATZKA: Wiatzka, yes.

14
15 MR. WILLIAMS: And wary of a further
16 clap, Williams speaking, yet again, Mr. Wiatzka, your
17 analysis did -- does not consider the impacts of the
18 processing facility in combination with the impacts of the
19 first four years of extraction. Agreed?

20
21 MR. WIATZKA: Wiatzka. We did not look at
22 the processing plant.

23
24 MR. WILLIAMS: Williams speaking.
25 Looking at the overall analysis of Arcadis and consistent

1 with your understanding of the objective of environmental
2 assessment, your assessment evaluated whether the proposed
3 undertaking was likely to result in significant adverse
4 impacts that cannot be mitigated. Agreed?

5
6 MR. WIATZKA: The question of adverse --
7 significant adverse impacts, I think, is one that relates
8 ultimately to the groundwater question. We have -- there
9 are voids which will stay forever. Whether they represent
10 an adverse impact is -- is a question, and I think that's
11 beyond my interpretation.

12
13 MR. WILLIAMS: Sir, if you need a
14 reference, I don't think you do, but when you were looking
15 at -- in terms of this, using -- within the scope of your
16 expertise, the question you were asking yourself is
17 whether the proposed undertaking was likely to result in
18 significant adverse impacts. Agreed?

19
20 MR. WIATZKA: The primary focus of our
21 assessments was that your technical subsidence. We
22 provided -- we were asked to provide commentary on other
23 aspects of the assessment. So that was something we are
24 providing from a professional opinion point, not
25 specifically addressing the EA process.

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MR. WILLIAMS: Okay -- Williams speaking -- but at a high level, sir, you've been involved in environmental impact assessment for decades, agreed?

MR. WIATZKA: Wiatzka, yes.

MR. WILLIAMS: And sir -- Williams speaking again -- you're quite familiar with the term "significant" as it is used in impact assessment. Agreed?

MR. WIATZKA: Wiatzka, agreed.

MR. WILLIAMS: Williams speaking. And focusing on the term significant, it is fair to say that in the environmental assessment process, an assessment of whether there are predicted significant impacts on a valued ecological component may involve considerations of the magnitude of the impact. Agreed?

MR. WIATZKA: Agreed.

MR. WILLIAMS: Williams speaking. And that significance assessment, also may involve considerations of the duration of the impact. Agreed?

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MR. WIATZKA: Wiatzka. Agreed.

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MR. WILLIAMS: Williams speaking.

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MR. WIATZKA: Wiatzka, agreed.

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MR. WILLIAMS: Williams speaking.

And finally, sir, in assessing significance, it is important also to assess the importance of the ecological component being considered. Agreed?

MR. WIATZKA: Wiatzka. Agreed.

MR. WILLIAMS: And -- Williams

speaking -- in assessing the significance of the ecological component, consideration can be given to a variety of factors, including, but not limited to, community priorities, legislative guidance, and scientific understandings of the particular ecological component.

1 Agreed?

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MR. WIATZKA: Wiatzka. Agreed.

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MR. WILLIAMS: Williams speaking.

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Mr. Wiatzka, in the Arcadis September 2022 review of the

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Sio Silica project, use the term "cumulative effects". Do

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you recall that, sir?

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MR. WIATZKA: We commented on it, I believe.

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MR. WILLIAMS: And sir, at a --

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that's if you're looking, I don't think you need to go

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there, but it's Section 6.2, Page 24, in the bottom right.

15

Williams speaking. Mr. Wiatzka, at a conceptual level --

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Williams speaking -- cumulative effects result from the

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impacts of a project under consideration when combined

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with impacts from other past, existing, and reasonably

19

foreseeable activities. Agreed?

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MR. WIATZKA: Agreed.

22

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MR. WILLIAMS: Williams speaking.

24

And based upon your many years of experience with mining

25

and in the industry, sir, you'll agree that cumulative

1 impacts are important because significant adverse effects
2 may result not only from the direct effects of a project,
3 but from a combination of effects of multiple projects
4 over an extended period of time, correct?

5

6

MR. WIATZKA: Wiatzka. Agreed.

7

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MR. WILLIAMS: Williams speaking.

9 And significant cumulative effects can occur when too much
10 is happening within too small an area and over too brief a
11 period of time. Agreed?

12

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MR. WIATZKA: Wiatzka. Agreed.

14

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MR. WILLIAMS: Williams speaking.

16 And in those circumstances, sir, a threshold may be
17 exceeded, and the environment may not be able to recover.
18 Agreed?

19

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MR. WIATZKA: Wiatzka. Agreed.

21

22

MR. WILLIAMS: Williams speaking.

23 Mr. Wiatzka, the project proposal presented by Sio Silica
24 does not present a cumulative effects analysis. You'll
25 agree with that, sir?

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MR. WIATZKA: Wiatzka. Agreed.

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MR. WILLIAMS: Williams speaking.

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So, sir, you were unable to determine whether the project might result in significant cumulative impacts. Agreed?

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MR. WIATZKA: Wiatzka. Agreed.

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MR. WILLIAMS: Williams speaking.

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MR. WILLIAMS: Williams speaking.

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Mr. Wiatzka, through the Chair to you, I wonder whether you'd be prepared to take an undertaking to provide some written thoughts on what -- what might assess if one wanted to -- what might assist if one wanted to undertake a cumulative impacts assessment that would be relevant to -- to the determinations here?

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THE CHAIRMAN: Chair. So, the question is on the record, I noted. And I will take it under advisement.

MR. WILLIAMS: Williams speaking. And thank you, Mr. Chair and members of the panel.

Mr. Wiatzka, I can provide you references if you require them, but on a number of occasions in the course of your technical review of September 2022, you suggest that Sio Silica might consider undertaking a sensitivity analysis. Do you call that, sir?

MR. WIATZKA: Wiatzka, yes -- not specifically, but I remember we talked about that.

MR. WILLIAMS: Williams speaking. And sir, would it be fair to say that a sensitivity analysis examines the robustness of a model's outcomes by examining the effects of independent parameters on dependent parameters? Agreed?

MR. WIATZKA: Wiatzka. Agreed.

1 MR. WILLIAMS: Williams speaking. At
2 a high level, the independent variables are varied over a
3 range and their effect on the outcome is observed.
4 Agreed?

5

6 MR. WIATZKA: Wiatzka. Yes.

7

8 MR. WILLIAMS: Williams speaking.
9 And in terms of this sensitivity analysis, if the output
10 varies noticeably when changing the input variable from
11 minimum to maximum over a range, then the output is said
12 to be sensitive. Agreed?

13

14 MR. WIATZKA: Could you repeat that last
15 word? The output is ---

16

17 MR. WILLIAMS: Is said to be
18 sensitive.

19

20 MR. WIATZKA: Agreed.

21

22 MR. WILLIAMS: Williams speaking. If
23 the output does not change much, it is said to be
24 insensitive or robust. Agreed?

25

1 MR. WIATZKA: Agreed.

2

3 MR. WILLIAMS: Williams speaking.

4 And Mr. Wiatzka, outcomes that remain robust while
5 changing the input values of the parameters help to
6 strengthen the credibility of the model. Agreed?

7

8 MR. WIATZKA: Wiatzka. Yes, but there have
9 been occasions where output has stayed the same because
10 something inside was totally out of whack, and it didn't
11 matter what you did in the system, and you still got the
12 same answer. So, I think in general, providing the models
13 are appropriate, that makes sense, but sometimes models
14 have a factor that it doesn't matter what you put in here,
15 it gets neutralized here, and this is something. So, in
16 the general sense, yes, but there are times when that
17 isn't the case.

18

19 MR. WILLIAMS: Williams speaking.

20 Thank you for that answer and for that clarification, sir.
21 Mr. Wiatzka, it's Arcadis' understanding that continued
22 separation of the two aquifers -- It's Williams speaking,
23 by the way -- is a fundamental design requirement of the
24 proposed project. Agreed?

25

1 MR. WIATZKA: That's the -- Wiatzka --
2 that's the impression we had from the documents we had
3 reviewed at that time.

4
5 MR. WILLIAMS: Thank you for that.
6 Williams speaking. And it would be your understanding,
7 sir, that the shale serves as an important aquitard that
8 limits the flow of waters between the Red River carbonate
9 limestone aquifer and the underlying Winnipeg Sandstone,
10 aquifer. Agreed?

11
12 MR. WIATZKA: That's what had been in the
13 literature from others, yes.

14
15 MR. WILLIAMS: Williams speaking.
16 We'll come to the sonar imaging in just a second, sir, but
17 the concern that you had expressed in your September 2022
18 report was a concern that there might be significant
19 breaches in the shale aquitard, which would occur when the
20 shale collapsed into the underlying void. Agreed?

21
22 MR. WIATZKA: Wiatzka. Agreed.

23
24 MR. WILLIAMS: Williams speaking.
25 And recognizing that we're now close to the -- to moving

1 into the hydrogeological field, your concern was that
2 significant breaches in the shale aquitard might create a
3 hydraulic connection between the Red River carbonate
4 aquifer and the Winnipeg Sandstone Aquifer. Agreed?

5

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MR. WIATZKA: Wiatzka. Agreed.

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MR. WILLIAMS: If we -- Williams
9 speaking -- if we could turn to Sio Silica's response to
10 the second round Clean Environment Commission IR 14,
11 specifically Appendix A PDF 17, please? Mr. Wiatzka, at
12 the -- Williams speaking -- at the time of your original -
13 - or at the time of your report in September 2022, you had
14 had the opportunity to look at some of the sonar scans,
15 but not the sonar scans that extended out a month or four
16 months from the extraction. Agreed?

17

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MR. WIATZKA: Wiatzka. Agreed.

19

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MR. WILLIAMS: And you'll agree --
21 Williams speaking -- that what you have before you is a
22 solar scan of BRU 92-8 comparing the depth and breadth of
23 the extraction void after one month, in blue, versus the
24 depth and breadth of the extraction void after four
25 months, in red. Agreed, sir?

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MR. WIATZKA: Wiatzka. Agreed.

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MR. WIATZKA: Wiatzka. Agreed.

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MR. WIATZKA: Wiatzka. Agreed.

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MR. WILLIAMS: And sir -- Williams speaking -- directing in your attention to the right hand side of this of -- of the document before you, you'll see shale formation based upon the solar scan being about ten feet thick, between 156 feet in depth and 166 feet in depth. Agreed?

MR. WILLIAMS: And focusing on the four -- four months after extraction on BRU 92-8, it would appear that the ten feet of shale immediately above the sandstone silica extraction has collapsed. Agreed?

MR. WILLIAMS: And moving even above the shale formation and focusing again on the after four months from the extraction and delineated in red, it would appear that there's been a collapse of an additional seven feet of overlying limestone. Williams speaking. Agreed?

1 MR. WIATZKA: Wiatzka. Agreed.

2

3 MR. WILLIAMS: And subject to check,
4 Mr. Wiatzka, recognizing the smallness of the -- the
5 picture, would it be fair to suggest that in terms of the
6 extraction after four months in red, that the widest
7 breadth of the void at four months is 37 feet to the left
8 and 37 feet to the right. Subject to check, sir?

9

10 MR. WIATZKA: You're right. I can barely
11 read that. So subject to, I won't argue with that.

12

13 MR. WILLIAMS: And again, subject to
14 check -- Williams speaking -- that would suggest that the
15 widest extent of the void at four months was 74 feet.
16 Agreed?

17

18 MR. WIATZKA: Wiatzka. So, that distance is
19 correct, I believe, subject to confirmation. I'm not sure
20 if that's length or width.

21

22 MR. WILLIAMS: Fair enough, sir.
23 Thank you. Williams speaking. From a geotechnical
24 perspective, would it be fair to describe the collapse of
25 this shale as irreversible?

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MR. WIATZKA: Wiatzka. Yes, I think that's
fair.

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MR. WILLIAMS: Williams speaking.
From a geotechnical perspective, would it be fair to
describe the collapse of the seven feet of limestone also
is irreversible?

MR. WIATZKA: Wiatzka speaking. Yes.

MR. WILLIAMS: Williams speaking.
Mr. Wiatzka, would it be your understanding that the
current operational plans that the proponent envision
about 1,200 silica extraction wells over the first four
years of operation?

MR. WIATZKA: Wiatzka speaking. Yes, I
don't have the exact number, but it seemed to be in that
order of magnitude.

MR. WILLIAMS: Williams speaking.
Mr. Wiatzka, is it conceptually possible that the collapse
of the shale aquitard could be a feature of all 1,200
extraction wells?

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MR. WIATZKA: Wiatzka speaking. I guess conceptually it could be. I don't believe it was stated as such within the Stantec reports. They say -- I think the original document pointed out the collapse of the upper -- sorry, the lower cap rock, and so, therefore it was implied that the shale would collapse. And I think, in last week's discussion, there was more discussion about the actual shale collapsing as part of -- of the cavern development. Whether that's all part, I don't think there's ever been a specific number.

MR. WILLIAMS: Thank you for that answer. Williams speaking. Again, when we're looking at the collapse of the shale associated with BRU 92-8, that was ten feet thick of shell, of course. Agreed?

MR. WIATZKA: Agreed.

THE CHAIRMAN: Chair. You have about five minutes left.

MR. WIATZKA: And Mr. Williams, that -- it's Wiatzka speaking -- that's consistent with what their predictions had been in terms of the sections I showed

1 earlier in the presentation from last week's and from the
2 original documents.

3

4 MR. WILLIAMS: Williams speaking.

5 Mr. Wiatzka, of course the life of the project is expected
6 to be in the range of 24 years, you'll recall?

7

8 MR. WIATZKA: Wiatzka. Yes.

9

10 MR. WILLIAMS: Williams speaking.

11 With apologies, Mr. Wiatzka, for my hand on the red
12 button. And sir, over the remainder of that expected
13 lifetime, there will be thousands more extraction wells
14 built. Agreed?

15

16 MR. WIATZKA: We're going to have a dueling
17 argument here with these buttons. Wiatzka. Yes, that's
18 my understanding.

19

20 MR. WILLIAMS: Williams speaking.

21 And there will, of course, be a risk of shale collapse
22 associated with each and every one of those thousands of -
23 - of silica extraction wells. Agreed?

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25 MR. WIATZKA: Wiatzka. Yes, to some degree.

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MR. WILLIAMS: Williams speaking.

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MR. WIATZKA: Wiatzka. If you read it right from the -- then it is, yes, sir.

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MR. WILLIAMS: Williams speaking.

25

Does Arcadis remain of the view as expressed in conclusion

1 number six that I just read to you, sir?

2

3 MR. WIATZKA: Wiatzka speaking. I did not
4 focus in on that part of the discussion at this point that
5 was going on beforehand. I believe there was some
6 additional discussion of UV, but certainly at the time we
7 were looking at it, we felt that was a -- quite a
8 challenging process given the nature of the water. Now I
9 believe that there had been some discussion of cleaning
10 the water, or clarifying, and filtering so -- but we did
11 not look at that since -- since we had written that
12 section of the report.

13

14 MR. WILLIAMS: Williams speaking.
15 And just to be clear then, sir, Arcadis has not
16 readdressed this issue in preparing for the oral portion
17 of the hearing?

18

19 MR. WIATZKA: Wiatzka. That is correct.

20

21 MR. WILLIAMS: Mr. Wiatzka, on behalf
22 of our clients, we thank you for the time, and as always,
23 we thank the panel for the -- the opportunity to ask these
24 questions.

25

1 THE CHAIRMAN: Chair. Chair. Thank
2 you very much. Thank you for the questions. Thank you
3 for the answers. We'll take a ten-minute break. We will
4 reconvene at 3:20.

5

6 (end of file 1, beginning of file 2)

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8 THE CHAIRMAN: Chair, if we could get
9 going, please. Chair. Well, this isn't going to be a
10 controlled experiment. I don't know whether the fear of
11 my clap has improved performance or whether Commissioner
12 Gillies' state your name sign is going to be more
13 appropriate, but either way, let's get underway with it.

14

15 MR. DUNCANSON: Thank you, Mr. Chair
16 Sander Duncanson. I will do my best, but feel free to
17 keep with the clapping if that helps, too. Mr. Wiatzka,
18 nice to meet you. My name is Sander Duncanson. I'm
19 Counsel for Sio Silica. Some of the questions I was
20 planning to ask I think have been covered off by some of
21 the previous questioners, so, I'm hoping we'll come in
22 under my time estimate. But just at the outset, sir,
23 Arcadis was asked to conduct a technical review of the
24 geotechnical aspects of the project proposal. Is that
25 right?

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MR. WIATZKA: Wiatzka. Yes.

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MR. DUNCANSON: Duncanson. Thank you.

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And in Arcadis' written report, there were certain comments made about Sio's processing facility, which has already been approved by the province, as well as the temporal scope of the EAP. Were those things that the CEC asked Arcadis to review, or were those simply observations that Arcadis made as it went through the EAP materials?

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MR. WIATZKA: Wiatzka. I'm wondering -- first of all, I didn't think we'd commented on the processing plant, so maybe you can refresh me there. But our focus was geotechnical, but CEC had also asked us to provide comments from a general perspective, based on our experience elsewhere, where we deemed it might be helpful to the process.

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MR. DUNCANSON: Thank you. Duncanson.

So the -- the comments, Mr. Wiatzka, that -- that were made by Arcadis were around this concept of project splitting and keeping the processing facility separate from the extraction proposal in the EAP. And so, I was wondering whether that was something that the CEC had

1 asked Arcadis to review in terms of the scope of the EAP,
2 or whether that was simply an observation that Arcadis has
3 made as it went through the materials?
4

5 MR. WIATZKA: I think that would be an
6 observation. I think, -- yeah, could you point me to that
7 in terms of the -- the site being -- because I know we
8 commented on the length, the duration of the project, but
9 I didn't think we'd commented on the actual plant. I may
10 be mistaken.

11
12 MR. DUNCANSON: Duncanson speaking.
13 Mr. Wiatzka, this is on hard copy, Page 10 of your report,
14 PDF 15. There were some observations about Arcadis views
15 around exclusion of Sio Silica's sand processing facility.
16

17 MR. WIATZKA: Yes, I see that now. I -- as
18 I say, I -- we talked about the length of time on the
19 four-year versus the 24-year, but we did write that
20 comment in there. So, I appreciate you pointing that out.
21

22 MR. DUNCANSON: Okay. Duncanson
23 speaking. There were also -- there was also an entire
24 section of the Arcadis report entitled "Additional
25 Aspects". That was Section 6. Do you recall that?

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MR. WIATZKA: Wiatzka. Yes.

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MR. DUNCANSON: Duncanson. And

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similarly, sir, were -- were those aspects things that the

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CEC had asked Arcadis to review, or were those things that

7

Arcadis was simply making observations about after it

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reviewed through the materials?

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MR. WIATZKA: I think, based on the way the

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title is written, it was basically after review of the

12

materials, providing some additional comments from a

13

general point of view.

14

15

MR. DUNCANSON: Okay. And so, for

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example, one -- Duncanson speaking -- one of the

17

additional aspects that Arcadis commented on was public

18

engagement, and as part of Arcadis's review, did Arcadis

19

ask Sio or take any steps to determine whether the EAP

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document itself included all details of Sio's public

21

engagement?

22

23

MR. WIATZKA: Arcadis looked at what was on

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the record at that time. We did not engage with Sio at

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that time, no. Wiatzka speaking.

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MR. DUNCANSON: Thank you, sir.

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MR. DUNCANSON: Duncanson speaking.

So, sir, it would be fair to say that in some cases, yes, mines and processing facilities can be treated separately

1 with different permitting and licensing conditions, and in
2 other cases they may be addressed through the same permits
3 and licenses. Is that fair?

4

5

MR. WIATZKA: Wiatzka. Yes.

6

7

MR. DUNCANSON: Duncanson. Sir, you
8 noted in your presentation that it was not clear to
9 Arcadis when it reviewed the EAP initially, whether
10 Stantec or AECOM specifically considered the potential for
11 shale collapse resulting from extraction. Is that right?

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MR. DUNCANSON: Thank you. Duncanson
speaking. In your presentation, Mr. Wiatzka, you also
mentioned the meeting between the CEC's technical advisors

1 and Sio's technical advisors before finalization of the
2 Arcadis report. Isn't it the case, Mr. Wiatzka, that in
3 that meeting, Sio's technical advisors explained how shale
4 collapse was considered in the AECOM work?

5
6 MR. WIATZKA: Wiatzka speaking. In recall -
7 - my recall of the meeting, the primary point that I was -
8 - that I remember is the fact that in -- in those
9 discussions, there was an acknowledgement that closure of
10 the well to separate the -- the two aquifers would be
11 difficult. I don't -- I don't even recall if we had an
12 ultimate answer on that. And I believe there was
13 discussion about how AECOM had considered a broader --
14 some kind of -- and I'm not the hydrogeo guy, so -- but
15 had considered something in lieu of that, but I don't
16 think it was explicit of shale layer collapse. I think it
17 was something that had been done earlier and I recall last
18 week there was some discussion of -- of that. So, I don't
19 remember the details of that call in -- in September, but
20 I think there was some discussion of how it may have been
21 considered -- but I don't think it was explicitly
22 considered at that time.

23

24 MR. DUNCANSON: Thank you. Duncanson
25 speaking. So, that's quite helpful 'cause I think there

1 was some misunderstanding around why certain discussions
2 did not get captured in the -- the final Arcadis report,
3 but I think that -- that's helpful. And just to maybe
4 close the loop on that further, Arcadis in its report,
5 made a number of comments about groundwater issues and a
6 few of those you, touched on in your presentation earlier,
7 but just to confirm, Arcadis did not specifically assess
8 hydrogeology or geochemistry matters?

9

10 MR. WIATZKA: Wiatzka speaking. That is
11 correct.

12

13 MR. DUNCANSON: Duncanson speaking.
14 And while Arcadis made some comments in its report about
15 water treatment, as Mr. Williams was asking you about,
16 just so that I'm clear, that was not an area of focus for
17 Arcadis, and Arcadis has not looked into that issue
18 further based on the supplemental materials that were
19 filed by Sio. Is that ---

20

21 MR. WIATZKA: Wiatzka speaking. Yes, that
22 is correct.

23

24 MR. DUNCANSON: Duncanson speaking.
25 Sir, have -- have you, or any of the other authors of the

1 Arcadis report, ever prepared an EAP in Manitoba?

2

3 MR. WIATZKA: Wiatzka speaking. No.

4

5 MR. DUNCANSON: Duncanson speaking.

6 Are you familiar with the EAP guidelines in Manitoba that
7 set out what needs to be included in EAPs in the province?

8

9 MR. WIATZKA: Wiatzka speaking. Very
10 loosely. Not -- not particularly. And just for
11 clarification, the comments we made to CEC were clear on
12 that, that while we were not, we were providing some
13 opinions that might be of -- of merit and consideration
14 based on experience in other jurisdictions.

15

16 MR. DUNCANSON: Thank you, sir.
17 Duncanson speaking. So, you're aware, Mr. Wiatzka, that
18 many of the Arcadis recommendations go beyond applicable
19 regulatory requirements in Manitoba?

20

21 MR. WIATZKA: Wiatzka speaking. They may or
22 they may not. I'm not a legal person, so, all I can say
23 is that we provided opinions based on observations and
24 experience elsewhere.

25

1 MR. DUNCANSON: Thank you. That's
2 fair. Duncanson speaking. Mr. Wiatzka, you talked in
3 your presentation about Sio's management plans, and I
4 think I heard you say that Sio's proposal to finalize
5 these plans after issuance of a license, and prior to
6 operations is appropriate. Did I get that right?

7
8 MR. WIATZKA: I think we said that we
9 generally agree with that principle, but given some of the
10 uncertainties, it would be beneficial if Sio could do a
11 little more in terms of fleshing out those plans so that
12 both they and -- and other participants would have a
13 better feel for it. So, the TARP, for example, and some
14 of the sort of emergency response, for example -- if you
15 did have something happen. So, that was the intent of
16 that comment.

17
18 MR. DUNCANSON: Thank you. Duncanson
19 speaking. And in your preparation for the hearing, Mr.
20 Wiatzka, did you or your team review all of the draft
21 management plans that Sio filed prior to the hearing?

22
23 MR. WIATZKA: Wiatzka speaking. Yes, we
24 did.

25

1 MR. DUNCANSON: Duncanson speaking.

2 And beyond what you presented on earlier this afternoon,
3 do you have any specific comments on the content of those
4 plans?

5
6 MR. WIATZKA: Wiatzka speaking. Not at this
7 time. I think the only one that sticks in my mind at the
8 moment is the -- the borehole closure plan. So, for
9 example, there was -- you know, you have the mechanical
10 plug, and then you have a certain, I think it's three
11 metres or something of grout, and then it's pebble or some
12 other fill material, and then at some point, there's
13 another plug, and given the nature of the potential
14 laminar failure within the -- the lower cap rock, that may
15 not be enough. So, again it -- it's sort of integrating
16 the geotechnical information that Stantec has provided
17 with the general -- more general well closure. And of
18 course, as I mentioned this morning, sort of looking at
19 the issue, what if anything can be done with regard to,
20 you know, the shale or cap roc failure under -- above the
21 top of the cavern, or if it needs to be done.

22
23 MR. DUNCANSON: Thank you, sir.
24 Duncanson speaking. Another thing that you mentioned in
25 your presentation and that you discuss in your written

1 report was the technology that Sio proposes to use for its
2 extraction project. And I think the way you framed that
3 in your presentation was new use of existing technology.
4 Is that fair?

5

6 MR. WIATZKA: Wiatzka speaking. Yes, that's
7 how I framed it in the presentation.

8

9 MR. DUNCANSON: Thank you. Duncanson
10 speaking. So, Mr. Wiatzka, would you -- you would agree
11 that the technology that Sio is proposing is, itself,
12 standard and well understood. And what's novel is how Sio
13 is proposing to use that technology to extract sand?

14

15 MR. WIATZKA: Yes. Wiatzka speaking. It's
16 my understanding that you've made a case that -- that it's
17 used in different industries, the airlift and so on,
18 rotary drilling and -- and that, but it hasn't -- that
19 your approach is novel in terms of extraction, quantities
20 of materials in this kind of a formation.

21

22 MR. DUNCANSON: Thank you, sir.
23 Duncanson speaking. Just a -- a few further questions,
24 Mr. Wiatzka. You summarized in your presentation Arcadis'
25 views on the overall assessments, recommendations, and

1 conclusions by Stantec in this proceeding. But just so
2 that we're clear on a few specific components within that,
3 that have been discussed, Arcadis was comfortable with the
4 GSI of 60 that Stantec selected for its work, is that ---

5

6 MR. WIATZKA: Wiatzka speaking. Yes, that's
7 correct.

8

9 MR. DUNCANSON: Thank you. Duncanson
10 speaking. And Arcadis also agreed with the use of side
11 scan sonar data to assess how the cavity will behave post
12 extraction. Is that right?

13

14 MR. WIATZKA: Wiatzka speaking. Yes.

15

16 MR. DUNCANSON: Thank you, sir.
17 Duncanson speaking. And Stantec -- or pardon me, Arcadis
18 also had no concerns with the FLAC modelling that Stantec
19 conducted, and in fact, Arcadis' view is that a reasonable
20 amount of sensitivity analysis was completed in respect of
21 the FLAC modelling and design parameters in the Stantec
22 2022 report. Is that right?

23

24 MR. WIATZKA: Wiatzka speaking. Yes, that's
25 right. The word "sensitivity", I have to go back and look

1 at what we wrote, but again, we had -- we had no issue
2 with it. We had requested some additional information
3 from Sio to confirm some of the inputs that were used at
4 the underlying core. And so, based on that, we accepted
5 what was being done.

6
7 MR. DUNCANSON: Thank you, sir.
8 Duncanson speaking. And finally, with respect to the
9 factor of safety that Stantec used, which was 2.0, in your
10 view, is -- is that also an -- an appropriate ---

11
12 MR. WIATZKA: Sorry for cutting you off.
13 Wiatzka speaking. Yes, we -- we concur with that.

14
15 MR. DUNCANSON: Okay. Thank you, sir.
16 Duncanson speaking. Thank you, Mr. Chair. Those are all
17 the questions that -- that we have.

18
19 THE CHAIRMAN: Chair. Holy smokes.
20 I'm not sure what I'm going to do with all the time here.
21 It's too early to quit. Give me a minute to caucus.
22 Chair. Are there members of the public that would like to
23 ask a question of Mr. Wozniak (sic)? Any members of the
24 public? Going once. Come on up, sir.

25

1 Chair. Welcome back, Mr. Cole, if my name
2 serves me correctly here -- if my memory serves me
3 correctly. Okay, very good. Remember, this is a time to
4 ask questions. There will be an opportunity tonight for
5 those that wish to share their feelings, opinions, or any
6 thoughts they have, and ask questions, but right now,
7 we're asking questions. Your 15 minutes starts now, sir.

8
9 MR. COLE: Ted Cole. My apologies if I'm
10 a little slow, but my question is this. Did you ever
11 check with Mr. Bullen of Sio about his solution to the
12 whole problem of the void space?

13
14 MR. WIATZKA: Wiatzka speaking. No, we
15 never spoke to Mr. Bullen of Sio.

16
17 MR. COLE: Ted Cole.

18
19 MR. WIATZKA: Whoops, sorry.

20
21 MR. COLE: Ted Cole. Would you like to
22 ask Mr. Bullen about his solution to the void space?

23
24 MR. WIATZKA: Wiatzka speaking. I don't
25 know Mr. Bullen. I have no idea what -- what he has. So,

1 we've worked from the information provided us by Sio.

2

3 MR. COLE: Ted Cole. There was a
4 solution presented by Mr. Bullen on October the 19th of
5 '22 in Anola. And it was also, under oath. And he was
6 asked, or Sio was asked about what happens to the void
7 spaces. Would you like to hear what he told the
8 questioner in Anola on October the 19th, '22?

9

10 MR. WIATZKA: Wiatzka speaking. I guess it
11 -- it's a really question to CEC if they can provide that
12 to us.

13

14 THE CHAIRMAN: Chair. Hold for a
15 moment, please.

16

17 I apologize for that delay. My
18 understanding is you're referring to the municipal board
19 hearing that was held on October 19th of 2022 for which --
20 Chair -- for which they understand there is no transcript,
21 but there is an audio recording. Mr. Cole?

22

23 MR. COLE: Ted Cole. I do not know what
24 is available. There were recordings. But we have the
25 gentleman here who spoke and answered the question. Would

1 CEC like to hear what he told the people at that meeting
2 as to how the void would be taken care of?

3

4 THE CHAIRMAN: Chair. So, I would
5 suggest that the only way to know what Mr. Bullen may have
6 said at that meeting is to hear the recording, and I'd
7 rather not hear it third hand.

8

9 MR. COLE: Ted Cole. I would suggest
10 that Mr. Bullen is the first person, not the third person.

11

12 THE CHAIRMAN: I am not into -- Chair
13 -- I'm not asking questions of Mr. Bullen at this time.
14 You may ask questions, sir, of Arcadis at this time. If
15 you wish to ask questions this evening, they may or may
16 not choose to answer them. That is at their discretion.

17

18 MR. COLE: Thank you, Mr. Chair. My
19 apologies for not remembering your name -- and I'm not on
20 drugs. I am clean.

21

22 Now, it was mentioned about you not having
23 complete knowledge of whatever it was here in Manitoba.
24 Does that make a difference?

25

1 MR. WIATZKA: Wiatzka. My name is Gerd
2 Wiatzka, so, it's not a common name. It's hard to
3 remember sometimes. But from a legal perspective, it
4 makes a difference in the sense of what people are obliged
5 to do under the rules in terms of development of
6 materials. So, every -- not every, but many jurisdictions
7 have different requirements at different stages, and they
8 also have different -- for different types of mining or
9 processing. So, some are regulated under federal, some
10 are regulated under provincial. Some provincial
11 jurisdictions have different ways of doing that. And so,
12 the question I think there was were our comments in line
13 with what is being done regulatory wise, and what we said
14 was that we were providing an opinion based on our general
15 experience. And so, these are the kind of things that
16 we're typically seeing, but if it's not required even
17 though they are typically seen, then it's maybe just
18 something about whether someone does more than what is
19 needed or whether it's exactly as required. So, you can't
20 fault someone for doing just what's required. That's
21 okay.

22
23 MR. COLE: Thank you for your answer.
24 Ted Cole. If you were told about Stantec -- in their
25 presentation, they referred to mines that they dealt with

1 -- and I'm going by memory, which isn't so sharp right
2 now, but I believe it was the Yukon, two Saskatchewan, and
3 Quebec. But there was no reference to Manitoba. And I'm
4 not sure if the mines that were mentioned in that listing
5 of their brochure, whether it involved the sand process in
6 all the regions. Now, the question here is, do you feel
7 it would make a difference in their knowledge because they
8 had not referred to a mine in Manitoba dealing with this
9 process?

10

11 MR. WIATZKA: Wiatzka speaking. Stantec was
12 looking at fundamental geotechnical considerations
13 associated with rock mass and overburn. The mines all had
14 different -- I don't know if there are gold mines, if --
15 what kind of mines -- they were hard rock mines, as far as
16 I know, and they can -- they can comment on that. But in
17 my opinion, they would have been hard rock mines. What
18 you're looking at here is a sedimentary type deposit, a
19 layer that's going through, but the strength is coming
20 from the limestone cap rock, and I don't think it makes a
21 difference where that rock is. It is what it is. So,
22 now, the important thing is that you have enough
23 characterization of that rock mass. And several questions
24 have asked about to what degree it's been characterized,
25 to what degree it hasn't been characterized. So, I think

1 in terms of -- in terms of the rock characterization,
2 there are -- and there's enough there for us to feel
3 comfortable that what they've done makes sense. There's
4 also caveats in their recommendation to make sure that Sio
5 doesn't use that blanketly without -- when they go
6 forward. They have to keep reaffirming that the rock mass
7 characteristics are consistent, or better, than that, if
8 they're going to use the criteria, and if it's weaker than
9 they have to spread it out or avoid the area, and so on.
10 So, I think -- I don't think it matters where that would
11 have been, per se. They were just illustrating that they
12 had looked at room and pillar type operations and had
13 calculations that were appropriate for that kind of
14 structure above it. So, I hope that answers your
15 question.

16

17 MR. COLE: Yes, thank you very much. I
18 do appreciate your answers. In your assessment, did I
19 hear something mentioned about public information, or
20 whatever, coming from the company, Sio?

21

22 MR. WIATZKA: Wiatzka speaking. When we
23 first started, we looked at the public information, for
24 example their website. We looked at other information
25 that was on CEC and other -- you know, in terms of the

1 project, to get familiarized with -- with what the project
2 had been described.

3

4 MR. COLE: Ted Cole, thank you for your
5 response. Have you seen the AECOM report?

6

7 MR. WIATZKA: Wiatzka speaking. You're
8 talking about the hydrogeo or the environmental
9 assessment? We -- we saw both. My poor eyes.

10

11 MR. COLE: My apologies.

12

13 MR. WIATZKA: Yeah, I haven't seen this
14 particular document, but I -- we did look at their report
15 from the -- the environmental assessment -- the various
16 parts plus the appendices.

17

18 MR. COLE: Ted Cole. I thank you for
19 your response. And I would like to, at this time, mention
20 that. This is not dramatics. This is for real. Do you
21 feel that when report goes out, that all pertinent
22 information goes out?

23

24 MR. WIATZKA: Wiatzka speaking. I believe a
25 report should be as fulsome as possible.

1

2

MR. COLE: Thank you for your response.

3

In the AECOM, They mention in-person meetings, Anola

4

community, November 29, '21. Approximately 25 people

5

attended. And invitations dropped off -- whatever, da,

6

da, da, da. What I found interesting was the meeting I

7

keep on referring to, on October the 19th of '22, where

8

there was information -- and the same speech we got here

9

for the CEC hearings, the same information, and yet, for

10

whatever reason, that meeting was not listed. It was

11

omitted. And when I see something like that, I can't

12

stand having people omitted. We are real. And I'm only

13

bringing this up because people have been omitted. Their

14

words are lost. Their feelings are lost.

15

16

THE CHAIRMAN: Chair. I'm going to -

17

--

18

19

MR. COLE: My apologies.

20

21

THE CHAIRMAN: Yes, you are -- you

22

are not asking a question, Mr. Cole, and -- and you are

23

out of time, sir.

24

25

MR. COLE: Thank you for allowing me this

1 time. Ted Cole.

2

3 THE CHAIRMAN: Are there other
4 members of the public in -- who would like to ask a
5 question?

6

7 MS. GIBSON: Hello, I'm Janine Gibson. I'm
8 a local resident. I'm -- I'm a member of Our Line in the
9 Sand, but I'm not speaking on behalf of, I'm just speaking
10 as a local resident.

11

12 THE CHAIRMAN: Chair. Proceed. I'll
13 remind you we are asking questions.

14

15 MS. GIBSON: Question only. Yes. Yes, I
16 understand. We're only asking questions. And I do have a
17 question that I hope can be answered because it's very
18 concerning for me. Sir, I understood that you said that
19 you had reviewed the Stantec geotechnical assessment
20 summary and found it to be correct?

21

22 MR. WIATZKA: Wiatzka speaking. Yes, we
23 felt that it was appropriate for what was required.

24

25 MS. GIBSON: Thank you. Janine Gibson.

1 Thank you very much for that answer, sir. I'm looking at
2 "Figure 18, Flack Model of Cavity BRU 92" to estimate the
3 sandstone in situ strength. Now, I understand that the
4 sonar scale that we saw earlier -- I mean the sonar image
5 of what had happened in reality afterwards, rather than
6 this model of the cavity, was on a different well. And I
7 don't -- I'm just wondering if we would expect that the
8 collapse of the shale in this BRU 92-2, if you would
9 expect the -- the collapse of the shale in this model of
10 cavity for BRU 92-2 to be the same as the image we saw of
11 the sonar? I don't know if we can get these up. I'm just
12 -- I'm just -- it's in my career, I'm -- I'm supposed to
13 see inconsistencies and I just see an inconsistency here,
14 and I just wanna be -- clarify if -- if it's actual, or if
15 -- if I'm not being ---

16

17 MR. WIATZKA: Wiatzka speaking. Just for
18 perspective, when I was looking at the image of the sonar,
19 I thought it was consistent with the schematic that they
20 presented, which showed the shale dropping out, and then
21 the cavern above stepping in as the limestone layers
22 collapsed, and getting up, and then getting a flat -- a
23 flat plane where it wasn't collapsing anymore. And in
24 some of their -- in the actual document, they'd also
25 presented that where it came up to an arch, where

1 basically you had enough strength because of the
2 configuration of the limestone cap to reach a point where
3 you had enough strength that it wouldn't crack anymore.
4 So, what I saw in the sonar was consistent with what I
5 expect to see based on the schematics they provided in the
6 report.

7
8 MS. GIBSON: Thank you for that answer. I
9 think I understand it. Janine Gibson here. I just want
10 to clarify a little further so that, even though we are
11 seeing shale collapse, and sandstone being fractured, and
12 possible sandstone collapse ---

13
14 MR. WIATZKA: Wiatzka here. It's limestone.
15 It's ---

16
17 MS. GIBSON: Limestone. Thank you for the
18 correction. Janine Gibson here. So, we're seeing -- in
19 the sonar we saw -- we saw the shale collapse and saw some
20 limestone collapse. And we've also ---

21
22 MR. WIATZKA: Sorry, it's Wiatzka here. I'm
23 just seeing if I can find that quickly. So that's the
24 image, I believe, up there. I don't know how well you can
25 see it. On my computer it looks a lot better the bottom

1 of it, but at the top you can see -- you can see the
2 limestone collapsing in, and the shale is underneath it.
3 Now, the shale layer is not shown very -- very strongly
4 there. Just wanna see if there's a better picture of it.

5

6 THE CHAIRMAN: Chair for clarity.

7 Are you referring to the diagram, the graphic that was in
8 the IR response from ---

9

10 MS. GIBSON: Yes. Janine here. Yes, I am
11 referring to the diagram that was in the IR response, and
12 I was trying to look for it and I couldn't find it. I
13 asked Peter if maybe he could find it. It -- it just
14 appeared to -- it just appeared to me that -- that Stantec
15 hadn't fully outlined the degree to which there could be
16 connection between the honeycomb collapsing. And just
17 being in agriculture, I know that a difference of even a
18 few centimetres in a field in agri can really change the
19 water flow and change productivity for agriculture. So, I
20 have community members asking me to comment on even if
21 with these -- this collapse, that the sonar made so clear,
22 that it could, even if the subsidence is really what might
23 be considered minute, could have a fairly intense impact
24 on agriculture and water flow in the area? And I wondered
25 if you might comment on that?

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MR. WIATZKA: Certainly, I can't comment on the water flow and that, 'cause you know better than me about what the area -- how sensitive it is. But if you look at the figure that's taken from the Stantec report, you can clearly see in the grey area here, that's the shale, and it's dropping down, and they're showing in this particular case an example of how it may -- how it may unravel, how the limestone in the worst kind of case, might collapse in. And as long as limestone doesn't reach up into the soils up above it, you're not going to have a failure at surface because this is still bridging. If it goes there -- and that's why we said -- one of the comments we said was that in spite -- Wiatzka speaking. In spite of, you know, our confidence that they're doing the right assessment, one should look and see what would happen if you did have something breakthrough, either because the layer's different, or -- or something happened equipment wise, you didn't monitor, what could you do, if anything, to deal with something like that? And so, we recommended that's something that Sio look into. But the fact that the shale collapses is not something that is predicted to have an impact on surface.

MS. GIBSON: Thank you for your answer,

1 sir. You don't think the fact that nature or -- Janine
2 Gibson speaking -- that nature hates a vacuum and that --
3 that we're seeing now that after time, there's greater
4 collapse, increases the likelihood that there will be
5 increased collapse and subsidence could be a real issue?

6

7 MR. WIATZKA: As I said to -- Wiatzka
8 speaking -- as I said to someone earlier who was asking
9 about potential predictions, one can never say never, but
10 one also can only deal with the engineering one has. And
11 if you're going to second guess what we think is proper
12 engineering, then I don't know where you -- where you go
13 from there in terms of your confidence in anything. So,
14 again, I think what you have to do is they've got factors
15 of safety, they've got -- they've got a methodology for
16 assessing what's there and checking. So, the real
17 question is, going forward, for example, using a large-
18 scale test, as Stantec has recommended, seeing how it
19 behaves, and can you control it, can you see where it's
20 going. And in fact, you know as Sio has proposed in the
21 four-year plan, you know you have a subset of a 24-year
22 plan, and you know, it's sort of like if you're doing it -
23 - so, if they were to get approval and they were to start
24 doing it, then you would get a good sense of what the heck
25 is going on, not just from a test hole, not just from a --

1 a test cluster, you'd have evidence of what is really
2 happening, and then they would have to come back to the
3 table, as I understand the rules of permitting here, and
4 get approval to continue and to do more. And at that
5 time, as someone pointed out, you'd have 1,000-plus
6 boreholes, X number of clusters from that, and you'd have
7 four years from the first to whenever they start applying
8 for the next stage. And you would have a significant -- a
9 significant real-world data set that is not just
10 engineering based on a few test holes, but from
11 production. And at that point, yes, you may find that
12 they can't do it, you know something's different,
13 whatever. But you may also find that you're much more
14 confident going forward. That it is something that is
15 acceptable within the controls of proper mining and that
16 includes not just the underground but surface, and all
17 those other things that were raised over the last week and
18 -- and will surely be raised this week. So, there's --
19 there's a give and take in terms -- you know, it's like
20 buying the first test car and finding out that shit, it
21 isn't what you wanted, right? But by the time they've got
22 a production run going, you're really happy with it. So,
23 again from our perspective, we looked at the engineering
24 and said, you know, does it make sense, and we asked
25 questions where we had -- where we had uncertainty about

1 how they used it or -- or where we wanted to confirm that
2 the input assumptions were acceptable based on the kind of
3 boreholes they had, and the logs they had. And based on
4 that information, we agreed with -- with their analysis.

5

6 MS. GIBSON: Thank you for your answer.
7 Janine here. I'm just not sure that the fact that nature
8 hates a vacuum was totally taken into effect -- taken into
9 consideration. Would -- would you comment on that please?

10

11 MR. WIATZKA: Wiatzka speaking. I think one
12 of the speakers last week addressed that, saying that, you
13 know, they're -- they're not actually leaving it open,
14 they're actually recirculating. So, they're putting the
15 water back in, and that the sandstone aquifer is comprised
16 of sandstone and water that's in it. And I think it was
17 50-50, if memory serves me correctly, something like that.
18 And that they'll lose about 15% of the water will be
19 retained in the silica sands that they take out, but
20 they're putting water back in. And that there will be a
21 water flow -- and there's a question about what that water
22 quality and all that is -- but ultimately, you don't
23 actually have a vacuum. You don't have an open cavity.
24 You have a filled cavity. It's not filled with sand
25 fully, but it's filled with water and sand to some degree,

1 right. And so you have a -- you have an equalization of
2 pressures to some degree, again. You will still have some
3 flux, but again you're sort of in the mining zone, you
4 will have stuff that you're taking out, that's the whole -
5 - that's the whole premise of it, as I understand it, but
6 after you finish, you're going to equilibrate this to a
7 large degree. So, you know, I -- you know, I don't -- I
8 never like to take somebody's concerns lightly or -- you
9 know, discredit them, or anything like that, but I don't
10 think -- it's not like an open hole that is just getting -
11 - you know, just open, void, air, cavern, tunnel, or
12 something like that. So, I think it's different in that
13 sense.

14

15 MS. GIBSON: Thank you for your answer.
16 Janine speaking. My concern -- my question now is would
17 the water -- you're saying there wouldn't be an open
18 cavity because they've taken out the sand and the water,
19 but they're returning the water. In my mind, the sand has
20 been removed, and a significant portion of it has been
21 removed, and so, that's going to change the dynamic of how
22 the water flows. Would you comment on the difference or
23 do you -- are you aware of the difference between when
24 there is a cavity that has sand and water, and the sand is
25 removed and only water remains?

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MR. WIATZKA: Wiatzka speaking. And I smile because I can't comment on it, but my colleague, Hartmut, will comment on that tomorrow on the hydrogeo side, because he's more qualified to comment on that. All I can say is that don't have a void with air in it, right? And that you don't have that sort of suction -- you know, effect happening.

THE CHAIRMAN: Chair. Ms. Gibson, your time is drawing to a close.

MS. GIBSON: Thank you very much. Janine here. I appreciate your answer in helping me have a more clear picture of it. I guess I'd just like to close with in your experience with mine and mining, which I understand is fairly extensive, have you ever seen a mine where the remediation has -- where the remediation has been successful and there is no environmental damage?

MR. WIATZKA: I smile because I would say, yes. And people would probably argue with me. So, for example, there's Canada's first uranium mine, Great Bear Lake. Indigenous people may say, well, you've got elevated radiation. And I say, yes we do, but not as

1 elevated as it was when the mine was there, because they
2 had pitchblende seams on surface. So, even though it's
3 been impacted, it's actually less of an environmental and
4 ecological health risk than it was before. If I said that
5 to them in Deline, they would kind of like to run me out
6 of town. But it's true. It's a factual thing.

7

8 Cape Breton, the East Coast coal mines have
9 taken 200 years of mining and have done a wonderful job of
10 doing sustainable closure. There are people there that
11 are -- there are lands that have been returned after 200
12 years to -- I'm trying to remember the proper word here,
13 it's not industrial land, it's -- it's basically housing,
14 you know, old age houses. It's absolutely clean, it meets
15 all standards. And that was done after 200 years of
16 intensive mining.

17

18 There have been sites there that have had
19 what they call basically, bootleg coal mines, that have
20 been repaired as part of the closure of the main mine.

21

22 So yes, the answer is there are ways and
23 there have been ways. I've seen lots of mines that have
24 been closed responsibly. And many jurisdictions for the
25 new mines, it is an integral part of what they need to

1 plan for, right from the word go.

2

3 MS. GIBSON: Janine Gibson, thank you very
4 much for your answers. Thank you all. I appreciate the
5 opportunity. Thank you.

6

7 THE CHAIRMAN: Chair, thank you very
8 much. Is there anyone else in attendance from the public
9 that would like to ask some questions? Are there any of
10 the participants in the last few meetings that -- or last
11 few minutes left that would like to ask a question that
12 remains?

13

14 Okay, that leaves me no choice but to
15 adjourn for the moment. We will reconvene in a slightly
16 different format this evening. It will be a public
17 hearing where we will be here to hear from the public, and
18 listen, they don't have to ask questions. They are
19 welcome to share their feelings and thoughts with us. So
20 we'll reconvene at seven o'clock. Thank you very much.

21

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Court Transcriber
March 6, 2023