

NUNAVUT WATER BOARD

Public Hearing
Type "A" Water Licence
2AM-BOS---- New Application
2AM-DOH1323 Amendment Application

HEARING

VOLUME 2

Cambridge Bay, Nunavut

October 25, 2018

1	TABLE OF CONTENTS	
2		
3	Description	Page
4		
5	October 25, 2018	143
6		
7	Continued Presentation by TMAC Resources Inc.	143
8	Nunavut Water Board Staff Question TMAC	193
9	Resources Inc.	
10	Public Questions TMAC Resources Inc.	214
11	Presentation by Kitikmeot Inuit Association	219
12	Nunavut Water Board Staff Question Kitikmeot	225
13	Inuit Association	
14	Nunavut Water Board Staff Question Crown-	232
15	Indigenous Relations and Northern Affairs Canada	
16	Presentation by Environment and Climate Change	239
17	Canada	
18	TMAC Resources Inc. Questions Environment and	240
19	Climate Change Canada	
20	Nunavut Water Board Staff Question TMAC	243
21	Resources Inc.	
22	Nunavut Water Board Staff Further Question TMAC	248
23	Resources Inc.	
24	TMAC Resources Inc. Questions Crown-Indigenous	249
25	Relations and Northern Affairs Canada	
26		

1	Crown-Indigenous Relations and Northern Affairs	259
2	Canada Comments	
3	Nunavut Water Board Staff Further Question TMAC	262
4	Resources Inc.	
5	Closing Remarks by Kitikmeot Inuit Association	265
6	Closing Remarks by Crown-Indigenous Relations	266
7	and Northern Affairs Canada	
8	Closing Remarks by Environment and Climate Change	267
9	Canada	
10	Closing Remarks by Fisheries and Oceans Canada	267
11	Closing Remarks by TMAC Resources Inc.	268
12	Closing Remarks by the Chair	273
13		
14	Certificate of Transcript	276
15	List of Exhibits	277
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		

1 Proceedings taken at Cambridge Bay, Nunavut

2

3 October 25, 2018

4

5 NUNAVUT WATER BOARD

6 L. Toomasie Chair of Hearing

7 R. Mrazek Panel Member

8 M. Nartok Panel Member

9

10 NUNAVUT WATER BOARD STAFF

11 S. Autut Executive Director

12 K. Kharatyan Director of Technical Services

13 B. Kogvik Director of Board
Administration and Communication

14 D. Donald Technical Advisor

15 I. Porter Licensing Administrator

16 T. Meadows Legal Counsel (Meadows Law)

17

18

19 APPLICANT

20 TMAC Resources Inc.

21 O. Curran Vice President of Environmental
Affairs

22

23 M. Rykaart Practice Leader and Principal
Geotechnical Engineer, SRK
Consulting

24

25 M. Henry Technical Director, ERM
Poitiers

26 C. Kowbel Legal Counsel

1 INTERVENERS

2 Kitikmeot Inuit Association

3 J. Roesch Senior Hope Bay Project
4 Officer

5 J. Donihee Legal Counsel

6 Crown-Indigenous Relations and Northern Affairs
Canada

7 S. Dewar Director of Resource Management

8 I. Parsons Manager of Water Resources

9 Environment and Climate Change Canada

10 B. Summerfield Senior Environmental
11 Assessment Coordinator

12 M. Tobin Water Quality Specialist

13 Fisheries and Oceans Canada

14 A. McLellan Fisheries Biologist

15 M. Janowicz Senior Fisheries Protection
16 Program Biologist

17 INTERPRETERS/TRANSLATORS

18 B. Kogvik Inuktitut Translator

19 H. Ohokannoak Inuktitut Translator

20 K. Schumann, CSR(A) Official Court Reporter

21
22 W. Nicoll Sound Technician

23 _____

24 .

25

26

1 (PROCEEDINGS COMMENCED AT 9:09 AM)

2 THE CHAIR: Good morning. This is the
3 second day of our public hearing here in Cambridge Bay
4 on TMAC's application.

5 We'll go ahead with the Applicant's -- continue
6 from your -- yesterday's presentation. Applicant, go
7 ahead.

8 Continued Presentation by TMAC Resources Inc.

9 DR. RYKAART: Maritz Rykaart. Good morning,
10 Mr. Chair and gentlemen of the Board. So we'll pick up
11 from where we left yesterday.

12 I've explained the tailings management area to
13 you, and I was just getting started on talking about
14 the closure of the tailings impoundment area.

15 So what you see on the left-hand side of the slide
16 there is the tailings impoundment area when the
17 operations are done. Everything in grey is exposed
18 tailings, and the area in sort of the blue/green colour
19 is the remaining reclaim pond.

20 The closure strategy is to put a rock cover on top
21 of the tailings. The function of this cover is to
22 ensure there's no exposed tailings that could generate
23 dust, and any human or animals that come into contact
24 with the tailings would not be in touch with tailings.
25 The tailings is not potentially acid-generating, so
26 there's no concern about any contaminants being

1 released from these tailings.

2 Once we've placed a cover, we then check the
3 water, the remaining water in the reclaim pond, and
4 once this water has met discharge criteria, we'll pump
5 it out, and we'll breach the dam.

6 If you remember, the north dam was a frozen core
7 dam, and by breaching it, it means we're cutting a big
8 notch into it, effectively taking the dam away, so we
9 no longer have any permanent water-retaining structures
10 on the site. The rest of the structure then remains as
11 a dry system, and any runoff that falls on the cover is
12 conveyed via channels on the cover system back into the
13 environment. It, therefore, becomes a part of the
14 landscape.

15 This is the cross-section that I did show you
16 yesterday. This is the tailings area prior to closure
17 with everything in yellow and orange being the exposed
18 tailings.

19 This is the slide that shows you what it will look
20 like at closure. There will be a cover system on top.
21 That cover consists of a .3 metre thick layer of
22 crushed quarry rock, and we remove the dam, so the
23 system becomes a dry runoff system.

24 So that concludes my discussion on the tailings
25 impoundment area. The next, I'll talk about the
26 tailings management area which is being constructed at

1 Boston.

2 Similar to the tailings impoundment area, the
3 first thing we do is we conduct a rigorous alternatives
4 assessment. The idea behind this is to determine what
5 is the best location and what is the best technology to
6 use for disposal of any tailings.

7 As part of this assessment, we obviously looked at
8 continuing the use of the tailings impoundment area for
9 the ore at Boston, but following a rigorous assessment,
10 which considers technical, economic, environmental, and
11 socio-economic criteria, we concluded that the best
12 thing to do at the Boston site was to develop a dry
13 stack tailings facility on the land in close proximity
14 to the Boston tailings. So that's, therefore, what we
15 decided to do. And the area on the left of your figure
16 there, circled, is the area that we selected. As part
17 of this process, we looked at over 30 different sites
18 and alternative technologies.

19 This is a rendering of what the site will look
20 like once the mine is in operation, and what you see
21 right in the middle of the picture there is what the
22 dry stack facility will look like.

23 Dry stack tailings is often called filtered
24 tailings, and it's also called dewatered tailings. The
25 best way to visualize this is sand. If you go outside
26 on the street, the gravel and sand that you see in the

1 road, that is very similar to what these tailings will
2 look like.

3 If you remember, I told you that the tailings
4 consist of crushed rock, and what we do is we take that
5 crushed rock, after we've removed the gold, we send it
6 through a filter press, which presses out all the
7 water, that leaves us with just a dry sand. That dry
8 sand we can load into trucks and build a pile -- to
9 build a dry stack. This is a technology that is well
10 used in the tailings industry throughout the world. It
11 is also used in an Arctic environment. The Raglan in
12 Canada is one of the northernmost areas where this dry
13 stack is used, it's also used in the Yukon, and it's
14 also used at Fort Knox and Pogo in Alaska. Therefore,
15 this technology has been proven to work very well in an
16 Arctic setting.

17 I'm going to come back to my pictograms of how
18 tailings work, because I think it's important for us to
19 understand the differences between the tailings
20 impoundment area at Doris, which is a slurry tailings,
21 and the dry stack.

22 We start with a product which is the crushed rock.
23 At Doris and Madrid, the conventional tailings
24 technology, which is a slurry, how we do that is we add
25 water to the crushed rock, and we pump that out to the
26 tailings impoundment area, and that's why we have these

1 big beaches develop in front of the dams and why we've
2 got a reclaim pond.

3 At Boston, because we're dry stacking, we're
4 taking the rock that comes out of the mill, and any
5 water that's in it, we remove that water by sending it
6 through a filter press. The filter press effectively
7 removes all the water, which gets recirculated back
8 into the processing plant right at the processing plant
9 itself, so there's no need to pump that water to the
10 facility and then back again.

11 What's left after the filter press is basically a
12 stockpile of dry sand or dry tailings. We then load
13 that into trucks, and we transport that to the tailings
14 management area where we build the dry stack by placing
15 it in lifts and compacting it.

16 This is an illustration of what the facility will
17 look like when it's built out to its full capacity.
18 It's not a big facility. It's about 500 metres in
19 length and width, and it's about 25 metres high. If
20 you were to imagine this in a 3D vision, this is a bit
21 like a pyramid that we're building with a big flat top.

22 The areas in grey around the facility are
23 containment berms, and the purpose of those containment
24 berms is to ensure that any runoff that falls on this
25 facility during operations gets collected so that we
26 can test it, and if it does not meet discharge

1 criteria, we pump that to the surge pond, which is
2 located at the Boston site. Once we're ready to close
3 this facility, we can take that water away, and we can
4 place the closure cover.

5 The engineering of a dry stack tailings facility
6 goes through the same amount of technical detail and
7 rigour as any dam in the tailings impoundment area. On
8 the slide, there is a whole list of different technical
9 analyses that's been completed and which will be
10 advanced as detailed engineering advances.

11 But in principle, what gets done is we built the
12 containment berms around the facility, which allows us
13 certain zones of lined ponds to collect the runoff. We
14 then start building the dry stack by placing this
15 material in thin lifts. Every lift is compacted, and
16 that compaction ensures that the stability remains
17 stable. That compaction also helps that we get freeze
18 back into the facility, which further enhances its
19 environmental containment in the long-term. As we
20 build this facility in lifts, we can progressively
21 reclaim by placing the cover on the exposed slopes.
22 Once the facility is done, it will be about 25 metres
23 in height, and it will be completely covered and become
24 part of the landscape. Ultimately when we're ready, we
25 can remove the containment berms because the cover will
26 serve to protect the environment from any runoff.

1 This table provides you a summary of some of the
2 key design information. What's important here is that
3 we'll build this facility over a period of about ten
4 years, and we'll place -- we'll place tailings on this
5 facility at a rate of about 2,400 tonnes per day. In
6 total, this facility will contain 5.1 million tonnes,
7 which, as a point of reference, is about one-third of
8 the volume of tailings that goes into the tailings
9 impoundment area.

10 One of the questions that's always asked about dry
11 stack tailings facility is what about dust. It's a
12 good question to ask because dry stack tailings can
13 generate dust, and for that reason, there's multiple
14 mitigations strategies that's been put in place in the
15 management plans to manage this dust. This can be done
16 by simple methods, such as irrigation with water, it
17 can be through progressive reclamation, and a multitude
18 of other technologies. So this can very easily be
19 managed throughout the life of the facility prior to
20 final closure.

21 This material is geochemically different than the
22 tailings at Doris. The difference here is that this
23 tailings is, in fact, acid-generating. For that
24 reason, when we close this facility, we need to make
25 sure that there is no direct contact between the
26 environment and the tailings so that we can have clean

1 runoff from the facility.

2 In order to do that, we need to place a low
3 infiltration cover on it. We're going to do that by
4 placing a liner on it and covering that liner with
5 different layers of crushed rock to protect it in the
6 long term. So on the bottom right there, you'll see
7 the configuration of the cover, and we'll cover the
8 entire pile so that it becomes a land form consistent
9 with the surrounding environment.

10 All of the work that I've explained to you in
11 terms of the tailings impoundment area at Doris as well
12 as the tailings management area is subject to
13 additional geotechnical investigations and additional
14 detailed engineering as the project advances beyond
15 this stage. This is consistent with the work that's
16 always done at a mine site.

17 Another important thing for the Board to note is
18 that all the designs related to both the tailings
19 impoundment area and the tailings management area has
20 taken climate change into consideration from all the
21 aspects that it may affect so that we know that the
22 facility will perform throughout its design life and
23 its closure period.

24 I now want to move on to the waste rock of the
25 site. As I explained last night at the community
26 meeting, a unique thing about the Doris project or

1 about the Hope Bay Project is that the mining method
2 allows us to put all our waste rock back underground.
3 We need that for structural integrity of our mine.
4 It's called mine backfill. Because of that, by the
5 time we're finished mining here, we will have no
6 surface expressions of waste rock. We do, however,
7 need temporary waste rock stockpiles during the life of
8 the mine as we develop these void spaces and extract
9 the ore.

10 We're going to develop three different waste rock
11 piles -- temporary waste rock piles throughout the life
12 of this facility. The first one is going to be at the
13 Madrid North site, the second one is going to be at
14 Madrid South, and the third one is going to be at the
15 Boston site. There's the Madrid North pile, the Madrid
16 South pile, and the Boston pile over there.

17 What's important to note here is that these are
18 very small waste rock piles relative to most mine sites
19 that people may be familiar with. Each of these
20 contain about half a million tonnes of tailings, and
21 typically for a larger open-pit mine, waste rock piles
22 are about ten times that size, if not greater. So
23 these are really small, and for anybody that's been to
24 the project site, this is the same size as the
25 stockpiles that you will see on the site today.

26 A couple of important features related to all the

1 temporary waste rock piles is that all of them have
2 complete environmental containment. So all of these
3 waste rock piles have containment ponds, lined
4 containment ponds, which ensures that all the runoff
5 that flows from them will be collected into them. That
6 allows us to collect that water, test it, and if it
7 meets discharge criteria, we can discharge, and if it
8 does not, we can send it to the tailings impoundment
9 area or to the surge pond before it gets released or
10 treated.

11 This is the facility at Madrid South, at this
12 facility, again, you can see this is the waste rock
13 pile, and its containment pond. This is the facility
14 at Boston, and again the same thing, we've got a waste
15 rock pile and a containment pond.

16 Another important feature of these temporary waste
17 rock piles is how we build them. What you see on the
18 figure there, the line is an imagination of what the
19 tundra ground surface may look like. The first thing
20 we do before we extract any waste rock is we build a
21 lift at least 1 metre thick of clean quarry rock. This
22 is similar to the roads and the pads that we're
23 building on the site. This is to ensure that we've got
24 a separation layer between the waste rock and the
25 tundra to protect the tundra. We also build a
26 containment pond downstream of the waste rock pile. We

1 can then start building the waste rock pile, and any
2 runoff is collected and contained in the containment
3 pond. This waste rock pile will grow and shrink over
4 the life of the mine, and the designs that's been
5 presented on these figures represent the largest size
6 that it will get throughout the life of the project.

7 When we're done, all of this waste rock will have
8 been hauled back underground as structural backfill;
9 therefore, the only thing that we'll have left is the
10 clean waste rock pad.

11 This is the schedule, and I don't mean to go
12 through the schedule. What's important for you to note
13 is that the areas on -- the bars on the right that's
14 depicted in black is the closure phase of the project.
15 All the coloured bars are the phases of different waste
16 rock being placed on surface. The reason there's no
17 coloured bars to the right of any of the black bars is
18 because all of that waste rock will have been hauled
19 back underground prior to the closure phase being
20 implemented.

21 So, Mr. Chairman, to conclude this section on
22 tailings management and waste rock management, what's
23 been presented is state of practice tailings management
24 activities for both the tailings impoundment area, as
25 well as the Boston tailings management area. It
26 demonstrates that the best available technology and

1 best available practices has been employed to ensure
2 good environmental containment of the facilities. And,
3 secondly, a very important feature of this mine site is
4 the fact that there will be no waste rock left on
5 surface at the time of closure.

6 Mr. Chairman, we'll now move into the water
7 management section of the presentation. The important
8 thing to note in terms of the overall hydrological
9 setting of the project is that the two projects drain
10 into two different overall catchments. All the area to
11 the top of your slide there in blue is the drainage
12 area for the Doris and the Madrid mines. They all
13 drain into Roberts Bay, which is the same drainage
14 catchment as where the current Doris project drains.
15 The larger area in red depicts the drainage area
16 associated with Boston. That drains into Hope Bay,
17 which is a little bit west of Roberts Bay. It is,
18 therefore, a separate water catchment system.

19 The first thing to note is that, for Phase 2, the
20 water management at Doris stays effectively unchanged.
21 The two important features of the water management
22 system for Phase 1 and Phase 2 is the fact that we have
23 the Doris tailings impoundment area and any water that
24 gets discharged from the site gets discharged to
25 Roberts Bay, so there's no freshwater discharge
26 involved in this project.

1 I'm now going to step you through the different
2 steps of water management for each of the three
3 different mine sites. Before I do that, it's important
4 to understand that one of the fundamental principles --
5 or a couple of the fundamental principles of water
6 management as part of this project is, firstly, to
7 minimize the use of freshwater. So for that reason,
8 we're recycling and reusing as much as practical any of
9 the waters that we have on site.

10 The second important fundamental principle is that
11 we try and minimize contact water. What I mean with
12 "contact water" is water that comes into contact with
13 tailings or any of the surface infrastructure that may
14 have contaminants on it. So we're trying to keep clean
15 water clean. Also any of the contact water that we may
16 have, we ensure that we collect and contain that.

17 So I'll step you now through the different
18 processes. The first part of the water management is
19 our clean water. For the project, we draw all our
20 clean, potable water from Windy Lake. Any water that
21 gets used in our grey water system or in our sewage
22 system goes to a sewage treatment plant, and if -- that
23 sewage treatment effluent can then either be directed
24 to the tundra, typically during the construction phase,
25 or it can get directed to the tailings impoundment area
26 during the operations phase.

1 The next important component of our water
2 management strategy is our processing plant. Any
3 freshwater make-up that we need to support our
4 processing plant comes from Doris Lake. Any water that
5 gets discharged from the processing plant, including
6 the water that goes with the tailings, gets discharged
7 to the Doris tailings impoundment area, and we recycle
8 water back from that area for reuse in the plant,
9 thereby minimizing the amount of freshwater need.

10 The next important part of the water management
11 system is our contact water. We have waste rock piles
12 and ore stockpiles on site. All of those have contact
13 water ponds, and the water drains to those ponds. Once
14 water reaches that pond, we've got the ability to send
15 the water to the tundra if it meets discharge criteria,
16 and if it does not meet discharge criteria, we'll send
17 that water to the tailings impoundment area.

18 We also have other ancillary or extra features on
19 the site. For example, quarries and landfills and
20 landfarms. All of those facilities have collection
21 sumps, and water drains to these collection sumps where
22 we can test it, and if the water meets discharge
23 criteria, we send it to the tundra; if not, we send it
24 to the Doris tailings impoundment area.

25 Finally, now that we've got most of the water in
26 the tailings impoundment area, if we have excess water

1 that we need to discharge, we do that via a marine
2 mixing box. That's just the terminology we use to name
3 our pumphouse that pumps the water from the tailings
4 impoundment area to Roberts Bay. If the water quality
5 in the Doris tailings impoundment area does not meet
6 discharge criteria to pump it to the ocean, it will go
7 through a treatment plant before we discharge to the
8 ocean.

9 The final component of the water management is the
10 mine water. We have an underground mine, and we mine
11 underground both in permafrost and in talik. The talik
12 is the unfrozen portions of the ground. We have
13 unfrozen ground because we mine underneath lakes, and
14 we mine deeper than the 500-metre-thick layer of
15 permafrost.

16 When we enter that talik zone, we expect
17 groundwater inflows. When we encounter that
18 groundwater inflow, we'll send that to the marine
19 mixing box, and we'll pump that to the ocean. If for
20 any reason we can't do that, we also have the ability
21 to send that mine water to the tailings impoundment
22 area. And, ultimately, any water that enters from
23 either the mine or the tailings impoundment area can be
24 sent to Roberts Bay. So if we put all of that
25 together, that is what makes up our water management
26 plan.

1 At Madrid North and Madrid South, we've got two
2 additional mines. Each of these two additional mines
3 has got water management associated with them. This
4 slide depicts the entire cycle of all the water
5 management. I'm not going to step through all the
6 details as I've just explained for Doris for the Doris
7 site. All the principles that I've just walked you
8 through in terms of collecting contact water, of
9 diverting clean water, and recycling freshwater applies
10 to the Madrid site, and all the water, ultimately, from
11 both the Madrid North mine and the Madrid South mine
12 that does not meet discharge criteria will go to the
13 tailings impoundment area and then to Roberts Bay.

14 Similarly both the Madrid North mine and the
15 Madrid South mine will encounter groundwater, and both
16 of those mines' groundwater will be pumped to the TIA
17 or the marine mix box and discharged to the ocean. So
18 exactly the same water management strategy as the
19 existing Phase 1 strategy.

20 Next we go to Aimaokatalok Lake -- sorry, to the
21 Boston site. The Boston site sits on the shores of
22 Aimaokatalok Lake, and the water management strategy
23 here is different in the sense that there's no
24 discharge to the marine environment, but the discharge
25 is to Aimaokatalok Lake.

26 This is a slide that shows all the different water

1 features in the water management plan. All the
2 principles that I've talked about at Doris and Madrid
3 apply to this site. The only difference is that the
4 water ultimately gets discharged to Aimaokatalok Lake,
5 and all the water here goes through a treatment plant
6 before it gets discharged.

7 These water management plans helps inform a water
8 and load balance for the project. The water load
9 balance is critical in terms of determining the effects
10 of the project and making sure that we've got the
11 appropriate mitigation and management features in
12 place.

13 In order to develop a model such as this, it
14 requires two key inputs: Information on quantity, and
15 all the things on the slide there are the things that
16 gets fed into the model. So basically all the things
17 that I've just explained to you, all the physical
18 features gets fed into the model so we can quantify how
19 much water we use and transfer in different areas.

20 The second important part of a water and load
21 balance model is quality. All the different quality
22 elements for the different projects, whether it's waste
23 rock, tailings, or simply the roads, any runoff from
24 them, gets quantified and put into the model.
25 Collectively, that allows us the ability to predict
26 what the effects of the project would be both from a

1 volume perspective and a quality perspective.

2 The results of this is extensive. Mike Henry is
3 going to talk very shortly on what these results
4 actually all mean in terms of environmental effects.
5 The key things I want to point out to the Board here is
6 the water use, because that's the key driver in this
7 Water Licence application. So based on the water load
8 balance modelling and the project design, we determine
9 what the maximum water use is for the project site, and
10 that's the number that we apply for in our Water
11 Licence.

12 I've got to point out that this slide may be a
13 little bit misleading because the number that we've
14 asked for in the Water Licence application is a total
15 number of 1.94 million cubic metres per year from Doris
16 Lake and 44,000 cubic metres per year from Windy Lake.
17 That number does not add up to the number you see on
18 this slide, and the reason for that is that there is
19 different periods of time, and the number that we've
20 asked for in the Water Licence is a peak water use, as
21 described in the project description. So just to avoid
22 any confusion when somebody looks at this slide.

23 For Boston, we have the same thing; we quantify
24 the amount of water that we need, and this water all
25 gets drawn from Aimaokatalok Lake. Similarly, you'll
26 see from one of the first slides that Oliver presented,

1 he has the total amount of about 483,000 cubic metres
2 per year that is being asked for.

3 So with that, I'll hand it over to Mike.

4 DR. HENRY: Thank you, Mr. Chairman.

5 In this presentation, I'll provide a quick
6 overview of the potential effects to the freshwater
7 environment as assessed using the water quality
8 predictions and Phase 2 project activities just
9 described by Dr. Rykaart.

10 I will then present the comprehensive monitoring
11 that will be carried out by TMAC under applicable Type
12 "A" Water Licences and as required under Federal
13 regulations.

14 The Phase 2 activities were assessed against five
15 valued ecosystem components as part of the approved
16 Phase 2 final environmental impact statement, and these
17 include surface hydrology, surface water quality,
18 sediment quality, fish that include the fish community
19 and their habitat. With the applicable extensive
20 mitigation measures that have proven successful as part
21 of the Doris project, there were no significant effects
22 predicted in the freshwater environment due to Phase 2
23 activities.

24 To show that TMAC's mitigation measures are
25 effectively protective of the freshwater environment
26 during Phase 2 activities and to validate predictions

1 made during the final environmental impact statement,
2 extensive monitoring will be conducted in the
3 freshwater receiving environment under the requirements
4 of the Type "A" Water Licences and Federal regulations.
5 These include an aquatic effects monitoring program,
6 the environmental effects monitoring under the metal
7 and diamond mining effluent regulations, monitoring
8 under the Type "A" Water Licences, and Fisheries Act
9 authorizations and offsetting.

10 These programs are designed to assess potential
11 project effects on water quantity, quality, sediment
12 quality, primary producers, secondary producers, and
13 fish. These programs are designed to trigger
14 management actions if potential project effects are
15 identified in the freshwater environment.

16 TMAC is well positioned to evaluate potential
17 effects to the freshwater environment resulting from
18 the Phase 2 project. We have more than 20 years of
19 baseline data collected on the belt. This is
20 unprecedented for other Nunavut mining projects. This
21 includes all lakes and streams in the project area, and
22 it also includes 10 consecutive years of monitoring in
23 a reference area that will not be affected by project
24 activities.

25 So in the right -- or in the left-hand upper panel
26 is the Boston -- or is the Doris and Madrid area, and

1 all of these sampling points in the various lakes and
2 streams or dots represent sampling points that we've
3 collected data over the last 20 years. As you can see,
4 there is many, many sampling points, and in each lake,
5 there are many sampling points in a lake. So these
6 lakes in the Doris and Madrid area have been
7 comprehensively monitored and characterized over the
8 last 20 years.

9 In the lower left-hand panel, this is Aimaokatalok
10 Lake in the Boston area, and, again, you can see, over
11 time, there are many, many sampling sites that we
12 visited in the freshwater environment.

13 At these sampling sites, we've collected
14 information on the hydrology and streams and lake
15 levels, water quality in winter and summer, sediment
16 quality, primary producers including periphyton in
17 streams, algae in streams, and also phytoplankton,
18 which is algae in lakes; secondary producers including
19 zooplankton in lakes and benthic invertebrates in both
20 streams and lakes, as well as fish and their habitat
21 that also include the metals in their tissues as well.

22 TMAC has continued to collect baseline information
23 during the Phase 2 regulatory process based on
24 predicted project interactions with the freshwater
25 environment, as well as in response to intervenor
26 comments. This data set on the Hope Bay Belt also

1 includes ten consecutive years of monitoring the
2 effectiveness of mitigations associated with the Doris
3 Project. To date, no significant effects to the
4 freshwater environment resulting from the Doris Project
5 have been observed, proving the mitigations have been
6 effective.

7 The aquatic effects monitoring program that is
8 required under Type "A" Licences will evaluate
9 potential aquatic effects from point, source, and
10 non-point source -- project sources following
11 mitigation. Point source inputs include direct
12 discharge to lakes and as Dr. Rykaart said, into
13 Aimaokatalok Lake, as well as non-point source, which
14 are things like runoff and dust.

15 There is currently an approved Doris aquatic
16 effects monitoring program under the Doris Water
17 Licence that has been ongoing since 2010. TMAC has
18 engaged with interested parties through comments and
19 discussions during the Phase 2 assessment and water
20 licensing phases, and this has resulted to the
21 following improvements in the Phase 2 AEMP: We've
22 incorporated the aquatic effects monitoring program
23 into a belt-wide program. That is, we'll integrate the
24 Doris aquatic effects monitoring program into the
25 Madrid and Boston areas as well to have a belt-wide
26 aquatic effects monitoring program. The aquatic

1 effects monitoring program will also include an aquatic
2 response framework with quantitative triggers designed
3 to be an early warning sign if things increase, then
4 management actions can be triggered.

5 We've also enhanced the harmonization of the
6 aquatic effects monitoring program with the Federal
7 metal and diamond mine effluent regulations. We've
8 included water level and stream flow data at the
9 project lakes and streams to support fisheries
10 offsetting. Also at the request of the Kitikmeot Inuit
11 Association, we will now conduct water quality sampling
12 in Windy Lake, as well as at -- or have additional
13 cyanide analyses in the water quality program.

14 So the aquatic effects monitoring program, the
15 left-hand panel is the north belt in the Doris and the
16 Madrid areas. As I just mentioned, that these will
17 assess potential effects from non-point sources, and
18 these are primarily result -- will -- are predicted to
19 result from water withdrawal from mine inflows and
20 from -- for site use as well as runoff and dust.

21 Eight lakes will be monitored overall: Doris,
22 Patch, and Wolverine Lakes will be sampled for water
23 quantity, quality, sediment quality, and aquatic
24 biology. As mentioned, at the request of the Kitikmeot
25 Inuit Association, Windy Lake will be sampled for water
26 quality through construction and early operations to

1 test environmental assessment predictions.

2 Ogama, Po, Glenn, and Little Roberts Lakes will be
3 monitored for water quantity associated with potential
4 water infiltration into the Doris and Madrid mines, and
5 this will support potential fisheries offsetting.

6 In the south belt, the AEMP, the aquatic effects
7 monitoring program, is designed to assess point source,
8 that is discharge to Aimaokatalok Lake, as well as
9 non-point source inputs such as runoff and dust.

10 There's three sites that will be monitored in
11 Aimaokatalok Lake, with one site nearest the discharge,
12 and if we look on the left-hand panel, three sites on
13 Aimaokatalok Lake; this one site here are sites
14 directly surrounding the outfall that treated water
15 will be discharged into the lake. Additional sampling
16 will also be conducted at Stickleback Lake due to its
17 proximity to the Boston infrastructure.

18 Also sampling will be conducted at a reference
19 lake called the Reference Lake B, which is about 15
20 kilometres east of both the Doris -- of all of the
21 deposit areas of Madrid, Doris, and Boston areas.
22 Again, this reference lake has been sampled for ten
23 consecutive years, so it is well characterized, and the
24 other project lakes -- trends in the other lakes will
25 be compared to trends in this lake to see if there's a
26 potential effect.

1 Because there will be treated water discharge into
2 Aimaokatalok Lake, TMAC is required to carry out
3 monitoring under the metal and diamond mining effluent
4 regulations. From an effluent perspective, that they
5 have to monitor the quality of the water that is
6 discharged into the lake. It will have to pass
7 multiple toxicity tests, the effluent, before it's
8 discharged, and once the water is discharged, then it
9 must be monitored in the receiving environment of
10 Aimaokatalok Lake. We can see in the receiving
11 environment that we will sample water, and if the water
12 meets certain criteria, then we may have to sample
13 sediment, benthic invertebrates, and fish.

14 On the left-hand side in the upper panel, in this
15 area, are the sampling sites that are around -- oh, I
16 think I hit this by -- okay, sorry, I think my fat
17 thumb is pressing all the buttons -- so as we can see
18 in this area blown up here, these sampling sites are
19 directly around the outfall. These sites were selected
20 in consultation and conversation with Environment and
21 Climate Change Canada. The sites -- the sighting of
22 these sites was driven by the three dimensional
23 effluent dispersion modelling that we did. This area
24 here has the most potential for effects to water. And
25 so we're -- we have our sites around here. We also
26 have comparative sites at the Reference Lake B, as I

1 just showed you before. So what this sets up is is
2 what's called a BACI design, a before, after, control,
3 impact design, to test for potential effects. The
4 impact sites are around the diffuser, the control sites
5 are in Reference Lake B, and we will monitor trends
6 before and after at both sites to see if there's
7 parallelism or non-parallelism in potential effects.

8 Now, for fish monitoring, fish and their habitat
9 are protected under the Fisheries Act. Fisheries Act
10 authorizations are required if a project is determined
11 to result in a loss of fish habitat and/or
12 productivity. For the Phase 2 project, potential
13 activities that could affect fish include water
14 withdrawal from lakes and streams, stream culvert
15 crossings as well as the placing of water pipes on lake
16 beds.

17 There are currently two authorizations on the Hope
18 Bay Belt, one for the Tail Lake outflow and one for the
19 Roberts Bay jetty. Authorizations for the Phase 2
20 project are currently being developed, as they must be
21 in place prior to any potential loss to fish habitat or
22 productivity from project activities. The
23 authorizations will include monitoring to ensure
24 project mitigations are effective, and the requirement
25 for offsetting if harm to fish and fish habitat are
26 unavoidable.

1 Losses to fish habitat and productivity due to
2 project activities must be offset or counterbalanced to
3 support and enhance the sustainability and ongoing
4 productivity of fish. TMAC has considered information
5 from the Inuit, from the Nunavut boards, and the
6 Federal regulatory family in the development of an
7 offsetting plan to compensate for anticipated fisheries
8 losses due to the Phase 2 activities.

9 This has included a workshop with the Inuit
10 Environmental Advisory Committee attended by Fisheries
11 and Oceans Canada and technical comments and
12 information requests through the environmental impact
13 statement and water licensing processes.

14 TMAC has investigated mine site and
15 community-based productivity enhancements. These
16 offset -- potential offset enhancements considered
17 tradition knowledge with intensive baseline work to
18 support the offsetting being conducted in 2018. TMAC
19 will continue to work with Inuit and other interested
20 parties through the Phase 2 offsetting process.

21 Overall, there are multiple sources of monitoring
22 to ensure fish and their habitat are protected during
23 Phase 2 activities and, if not, that they are
24 compensated for. This is -- includes monitoring under
25 the metal and diamond mine effluent regulations,
26 applicable Fisheries authorizations, Fisheries

1 offsetting programs, and other management plans on the
2 belt, for example, the stream crossing management
3 monitoring plan.

4 TMAC has put extensive effort to understand and
5 mitigate potential effects to the freshwater
6 environment related to the Phase 2 and overall Hope Bay
7 project. These include comprehensive baseline
8 characterization, predictive water quality, quantity,
9 and effluent dispersion modelling, development of
10 comprehensive monitoring programs, as well as
11 consultation with Inuit communities, the Kitikmeot
12 Inuit Association, and the Federal regulatory family,
13 that also includes the consideration of technical
14 comments and recommendations.

15 TMAC is engaged with the Inuit Environmental
16 Advisory Committee in initial offsetting program
17 development and will continue to engage with the
18 committee in a future workshop to discuss the overall
19 freshwater monitoring that will be conducted.

20 TMAC is committed to working cooperatively with
21 Inuit, the Nunavut boards, and the Federal regulatory
22 family through the water licensing process to ensure
23 the activities of the Hope Bay Belt are protective of
24 the freshwater environment.

25 Thank you. And I'll turn this over to Dr. Rykaart
26 to continue.

1 DR. RYKAART: Thank you, Mr. Chair.

2 I'll now talk about the closure planning and the
3 financial security for the projects. Essentially, I'll
4 walk you through the process of the closure planning
5 and then walk you through the procedure we follow to
6 determine the security estimate.

7 In these number of slides, effectively what I'm
8 going to do is take you step-by-step through how we go
9 from developing a closure plan to coming up with a
10 security estimate.

11 The first thing we do is we have a project design.
12 The project design is what we've just described to you
13 over the last hour in terms of where all the things are
14 and what all the things do, so tells us where we have
15 roads, where we have buildings, where we have ponds,
16 where we have tailings facilities, et cetera.

17 Understanding that allows us to develop a closure plan.

18 The idea behind developing a closure plan is to
19 determine, once mining is complete, what remains on the
20 land and how do we need to make sure that we mitigate
21 that to have a walk-away situation.

22 For example, the tailings areas, we know that
23 those areas need to stay in place, so we need to
24 understand what are the drivers that'll make us make
25 the right decisions as to how to close them. I, for
26 example, explained to you that the tailings management

1 area at Boston, we need to put a low permeability cover
2 on the tailings to ensure that we do not impact the
3 waters.

4 So we develop this strategy for each and every
5 element of the project. For the roads, we may
6 determine that if there's a culvert, we need to remove
7 the culvert as it could block in future. For a bridge,
8 we may conclude that we need to take the bridge away.
9 For a building, we may conclude that we have to
10 demolish the building, take any hazardous materials
11 offsite, and any non-hazardous materials, dispose of
12 that in a landfill. So that's the strategy we followed
13 to determine for every single element on the project
14 how would we close it.

15 Once we understand what every single element is
16 that we need to close and how we need to close it, we
17 need to determine what is the work we need to do in
18 order to do that. So if we're going to remove a
19 culvert, we want to understand what's involved in that.
20 To remove a culvert, we'll need an excavator to dig out
21 the culvert, we'll need a truck to load the culvert,
22 we'll need a dozer to flatten the culvert to put it in
23 the landfill, and then we'll need rock to cover that
24 landfill. So that's the step -- those are the steps
25 and the thinking we go through to determine the closure
26 activities.

1 The reason we need to do that is we need to put a
2 cost to it, and we need to understand what's all the
3 pieces of work we need to do in order to put a price on
4 it. That brings us to the next step in the process and
5 that's to determine the quantities.

6 So for my example of a cover on the Boston
7 tailings area, we've concluded that we need to reshape
8 the land, so we need a surface area. We need to buy
9 some liner, so we need a surface area so we can buy the
10 right amount of liner. We need to quarry some rock to
11 place on top of that, so we need a volume of rock. So
12 we quantify each of these elements for each of the
13 facilities and each of the activities.

14 The next thing we do is we develop unit rates. So
15 this is now where we start putting a price together.
16 So we determine what the work is we need to do, we've
17 determined what all the quantities are, and now we need
18 to put prices together. When you price something like
19 this, there's two fundamental ways to do it: There's
20 the unit rate approach, and the unit rate approach is
21 where you say to yourself, Typically, it costs \$5 a
22 cubic metres to haul rock 2 kilometres in a 30-tonne
23 rock truck. That is the philosophy that, for example,
24 the reclaimed cost estimate, which the Board is
25 familiar with, uses. It uses standard rates which gets
26 checked every so often to provide a fair bracket. That

1 is a good approach if you verify and check all those
2 quantities.

3 A better approach to develop unit rates is to
4 develop unit rates from first principles, because the
5 way a unit rate is built up is all the components in
6 it. For example, to determine whether the rate of \$5
7 per cubic metre is appropriate, you need to first ask
8 yourself what type of truck are you using, because
9 every truck has got a different price to operate it.
10 Every different truck has got a different price of the
11 type of operator you need for it. Fuel cost is
12 variable. If your distance that you need to haul the
13 materials is 1 kilometre or 10 kilometres, it affects
14 that unit rate.

15 So the way we developed the unit cost is by
16 developing the first principles. So for every activity
17 we have, we determine what's the best truck to use, we
18 determine what's the best excavator to use, we
19 determine what's the best operator to use, we calculate
20 what's the whole distance, we calculate how much uphill
21 and downhill there is, we calculate the productivity
22 because maybe there could be a white-out condition.
23 And based on that, we build up and develop unit rates
24 which are very site-specific and very good and very
25 reliable.

26 The next thing we do is we can now develop the

1 total cost. We've developed the activities, we've
2 developed the quantities, and we've developed rates.
3 By multiplying the quantities with the rates and
4 summing all of those numbers up, we can calculate the
5 total cost of the project.

6 There's two important cost elements to any closure
7 cost estimate: There is the direct costs, and there's
8 indirect costs. Direct costs is the easy cost to
9 calculate. That's the physical cost of loading
10 material into a truck, transporting it, and using that
11 material. So that's the actual hard cost. Indirect
12 costs are all the costs that are peripheral to that
13 cost. For example, the person that's driving the truck
14 needs to be flown to site, he needs to be put up in a
15 camp, he needs to be fed. Somebody needs to cook for
16 those people. Somebody needs to maintain the truck, so
17 we need a mechanic. All of those different things are
18 calculated as indirects.

19 There's two ways to calculate indirects: The
20 simple way is to calculate indirects as a simple
21 percentage of direct costs. So you say, Well,
22 typically indirects could be 50 percent of the direct
23 costs. Again, there's a better way to do that. The
24 better way to do that is by calculating it on first
25 principles. You do that by determining, for each of
26 these activities, how long would it take to do the

1 work, so you build up a rigorous schedule. You
2 determine for each of these activities how many people
3 you need, and, therefore, you can determine how big a
4 camp you need. And by having all of that level of
5 detail, you can actually quantify the indirect costs
6 very accurately. And that's the philosophy and the
7 approach that TMAC has used.

8 The next thing, now that you've got a total cost
9 for the project, is to develop the structure of the
10 project in the security bond. The structure of the
11 project has got two components to it. The first
12 component is what's called the land or water split, and
13 that's probably not good language to use. The better
14 language to use here is what proportion will be secured
15 with the Minister and what proportion will be secured
16 with the landowner, the Kitikmeot Inuit Association.

17 In order to determine that, we followed what we
18 believe is a very logical strategy in terms of what is
19 the likely -- biggest impact that any of these closure
20 activities may have on the surrounding environment.
21 The two simplest way to illustrate how we use that
22 philosophy is by describing the difference between the
23 Doris tailings impoundment area closure and the Doris
24 tail -- and the Boston tailings management area.

25 If you'll recall, the Doris tailings impoundment
26 closure strategy is to put a rock cover on the tailings

1 to prevent dust and avoid contact with animals. That
2 is called an isolation or a terrestrial cover, because
3 the primary function of that cover is to protect the
4 land. There is no concerns about water because the
5 tailings is not of a chemical nature that causes
6 concern. For that reason, we would assign, in our
7 allocations between the Minister and the KIA, we would
8 assign a hundred percent of that closure cost of that
9 cover to the land, because the function of that cover
10 is to protect the land.

11 Conversely, if we go to the Doris or to the Boston
12 tailings management area, if you'll recall, that
13 tailings is geochemically sensitive in that it is
14 potentially acid-generating; therefore, the function of
15 that cover is to protect water, because we want to make
16 sure that any runoff from that facility does not impact
17 water. For that reason, a hundred percent of the cost
18 associated with the closure of that cover is associated
19 with the proportion to the Minister because it's going
20 to affect water.

21 So fundamentally, that is the logic that we
22 followed in order to come up with the differentiation
23 between what should be assigned to the Minister and
24 what should be assigned to the Kitikmeot Inuit
25 Association.

26 Saying this, we do recognize that, ultimately,

1 this is all the Board's decision. We're just
2 explaining what we've done.

3 In this regard, we have come to an agreement
4 between TMAC, KIA, Kitikmeot Inuit Association, and
5 Crown-Indigenous Affairs [sic] on that split, and I'll
6 quote those numbers to you shortly.

7 The next important part of the structure of the
8 closure cost estimate is what we call staging. Staging
9 has also been called phased bonding. The idea behind
10 this is to structure the closure estimate such that the
11 entire bond amount that gets agreed upon does not have
12 to be posted immediately after approval of the licence,
13 should the licence be approved. The idea behind that
14 is to divide that up into logical pots of money that
15 can be posted prior to implementing certain activities
16 on the ground.

17 So for each of these stages or tranches, which is
18 the language we've used in our application, for each of
19 these tranches, there's a trigger. The trigger states
20 explicitly when and how that stage will be triggered.
21 The intent behind this is that should the licence be
22 approved and should the Water Board agree with this
23 philosophy, that those triggers will be written into
24 the licence. And again, in a moment, I will explain to
25 you some of the triggers that we are proposing and that
26 we will see.

1 Again, in principle, both TMAC, the Kitikmeot
2 Inuit Association, and -- I'm not allowed to use
3 abbreviations -- and Crown-Indigenous Affairs have
4 agreed on the different tranches for the project.

5 Before I give you a bit more detail on the quantum
6 and the tranches and the split, on this slide is the
7 current security postings for the project under
8 Phase 1. I'm not going to go through the detail of
9 this, but currently for the project for the different
10 organizations a total of almost 38 million has been
11 posted to the different organizations.

12 For Phase 2, we don't have any slides because we
13 have been actively talking to the different parties,
14 but for the benefit of the Board, I will quote some of
15 the numbers that we have agreed to and some of the
16 principles.

17 TMAC, Kitikmeot Inuit Association, and CIRNAC have
18 agreed on the quantum for both the Doris-Madrid
19 security amount as well as the Boston security amount.
20 For the Doris-Madrid security amount the quantum that
21 we've agreed to collectively is approximately 62.1
22 million. And from a procedural point of view, I
23 believe that an exhibit will be filed shortly that
24 provides the details of all of these numbers to be
25 exact, but we just have to discuss that with CIRNAC.

26 The amount that's been agreed to by the three

1 parties for the Boston Water Licence is an amount of
2 approximately 37.5 million.

3 The split that's been agreed to in principle by
4 all three parties for the Doris-Madrid would recommend
5 an amount of 85 percent of that 62.1 million be
6 proportioned to the Kitikmeot Inuit Association and 15
7 percent of that amount to the Minister.

8 For Boston, the proportionality between the two
9 would be an amount of 24 percent of the 37.5 million
10 being proportioned to the Kitikmeot Inuit Association
11 and the remaining 75 percent being proportioned to the
12 Minister.

13 I talked about the different tranches or the
14 different stages. For the Doris-Madrid Project, which
15 has a total security amount of 62.1 million, there is
16 nine tranches proposed. The nine tranches consists of
17 the, first one, which is the existing Phase 1 tranche;
18 Phase 1 and Phase 2 are part of the same project.
19 There's currently \$31.7 million posted under Phase 1
20 bond, and that's the first tranche. So that's already
21 been posted. The remaining eight tranches are being
22 posted as we develop the project.

23 I'll give you an example of how these tranches
24 work. One of the tranches is the wind turbines. We
25 have six wind turbines proposed for the project. The
26 six wind turbines will be built in clusters of two.

1 One of the clusters will be near the Doris mine site,
2 so the tranche is called the Doris wind turbines. So
3 the trigger for this tranche would be that 60 days
4 before erecting any of the pair of wind turbines near
5 the Doris site, this tranche will be triggered.

6 The similar logic applies to all the other eight
7 tranches is that there's a physical trigger that allows
8 the company to advise the Board and provide the
9 notification 60 days in advance and post the money 60
10 days in advance to any of that activity being able to
11 occur.

12 At Boston, there's a total of six tranches being
13 proposed. Those six tranches will follow the same
14 logic. For example, there is a tranche associated with
15 tailings, and the first tailings tranche, the logic
16 behind that would be that the trigger would be that 60
17 days before commissioning the processing plant and
18 producing any filtered tailings, including the
19 precommissioning period, that tranche needs to be
20 posted. This ensures that the money is always posted
21 to the Minister or the Kitikmeot Inuit Association
22 prior to any activities taking place.

23 Thank you. Think I'll end there.

24 MR. CURRAN: Thanks, Maritz. Thank you,
25 Mr. Chair. It's Oliver Curran.

26 I have about six slides left. It will probably

1 take a half hour, so if you wanted to take a break
2 before I start the next part or the concluding part of
3 the presentation, I'll let you advise us.

4 THE CHAIR: Yeah, we'll take that break
5 for now, a 15-minute break. Thank you.

6 (ADJOURNMENT)

7 THE CHAIR: Okay, thank you for getting
8 back from the break.

9 So continue with your presentation, Applicant. Go
10 ahead.

11 MR. CURRAN: Thank you, Mr. Chair. Oliver
12 Curran with TMAC. I'll just wait for Derek to bring up
13 the presentation.

14 Okay, so continuing on, I just have a couple
15 slides on our management approach, a slide summarizing
16 the final intervention comments from parties, and then
17 I will summarize a few slides -- or describe a summary
18 of the pertinent changes made to the Doris licence and
19 the proposed Boston licence.

20 So as you've already heard, the Madrid-Boston
21 project will have a number of interactions with the
22 environment, and TMAC's existing environmental
23 management approach controls and monitors these
24 interactions. Some of the key aims of our
25 environmental management are shown on this slide and
26 include all of these steps.

1 So the first step in our management approach is to
2 identify all the requirements within our Project
3 Certificate, our Water Licences, our IIBAs, any
4 regulatory requirements, and then we include any of
5 those requirements in protection measures to avoid or
6 minimize those impacts.

7 We also have a process within our IIBA where we
8 incorporate Inuit perspectives and knowledge into the
9 plans that we do on the ground, and then we establish
10 those monitoring programs in the form of plans. And
11 then on an annual -- or during the activities at our
12 site, we continue to monitor, and then on an annual
13 basis, we report to the Water Board, and the Water
14 Board circulates the results of that monitoring to all
15 parties for their comment.

16 The other thing we do at our site is we orientate
17 our employees so that they have full awareness of all
18 of the requirements that we have to meet at site. This
19 includes everything from ensuring proper waste
20 management so that wildlife is not attracted to our
21 site, just as one example.

22 And then the last step in our environmental
23 management is to adapt and monitor based on what we are
24 seeing from the results of our monitoring. So all of
25 our management plans that are approved, for instance,
26 under this licence have the ability to be adapted based

1 on the results we see in the environment, so measuring
2 water quality, sampling of fish, and anything that we
3 are doing on the ground.

4 So this slide is a complete list of all of the
5 management plans we have for the project through our
6 various water licences and Project Certificate. And
7 the vision that TMAC has is that all of these plans
8 through the Phase 2 process have been adapted to be
9 reflective of requirements that we would do not just at
10 Doris but also at Madrid and Boston. So our view is
11 that separate management plans are not required for
12 every new development on the belt, as activities at
13 each new site will largely duplicate activities and
14 management requirements already in place for the Doris
15 Project and associated infrastructure.

16 So, for example, we already manage our
17 non-hazardous and hazardous waste at site at Doris. We
18 already have a process for that, and that process will
19 also work at Boston. So we don't need two different
20 plans; we just have one plan that covers requirements
21 across the belt, and that should streamline the process
22 for our workers at site but also streamline the process
23 for all the people reviewing our project.

24 And so you can see all of our management plans are
25 grouped in three main categories, so we have
26 biophysical plans, we have socio-economic management

1 plans, which obviously don't pertain to this licence
2 application, and we also have closure and reclamation
3 plans.

4 So moving on to the final written submissions, so
5 we had a total of 11 submissions, final submissions,
6 from CIRNAC and Environment Canada. However, we also
7 had -- we received numerous technical comments
8 throughout the NIRB and Water Board technical review
9 process that relate to water use and waste discharge,
10 and through these technical review stages, significant
11 progress was made to arrive at consensus.

12 And all of the topics of final intervention
13 comments are described here, and TMAC is pleased to
14 report that most of these items are resolved, and we
15 look forward to further discussions at today's
16 hearings.

17 So I just have three more slides here to summarize
18 for the Board and for intervening parties the changes
19 that were made to our Doris-Madrid and Boston Water
20 Licences.

21 So starting with Type "B", the general
22 conditions --

23 MS. MEADOWS: Mr. Chair, Teresa Meadows,
24 legal counsel for the Nunavut Water Board.

25 It's my understanding that these slides were
26 additional slides that were added to your original

1 presentation, and so we have hard copies of those
2 slides, but I would like to now mark that additional
3 material as the next exhibit in the public hearing so
4 that we have it in front of the Panel Members. Thank
5 you, Mr. Chair.

6 THE CHAIR: Thank you.

7 MS. KOWBEL: Thank you, Mr. Chair.

8 Christine Kowbel for TMAC.

9 Yes, please do mark them as an exhibit, and my
10 apologies for not flagging it for the Board. Thank
11 you.

12 EXHIBIT 34 - TMAC Resources Inc. (English) hard
13 copy PowerPoint slides (1-3) Summary of Draft
14 Doris-Madrid and Boston [Draft Water Licence
15 Framework]

16 MR. CURRAN: Okay, thank you, Mr. Chair,
17 Oliver Curran with TMAC.

18 So as discussed, as everyone is aware, there's
19 been a process where we provided to parties, on
20 September 4th, an original black line of suggested
21 changes to the existing Doris Licence but also for
22 issuance of a new licence at Boston. It's been a bit
23 of an iterative process.

24 Yesterday, Christine circulated a revised black
25 line of the licence to parties, taking into
26 consideration their comments to date, and so for the

1 benefit of the Board and for parties, I just wanted to
2 summarize, at a high level, for each section of the
3 licence where the changes are.

4 So for Part B, general conditions of our licence,
5 TMAC is of the view that exploration licences should
6 not be integrated into Type "A" Water Licences and
7 cancelled, as exploration is distinct from commercial
8 mining.

9 The second item was requesting Board approval of
10 all plans required to proceed with construction and
11 operations of the project and requesting deemed
12 approval of plans after 60 days of submission.

13 So those were the three main changes that were
14 made to Part B of the licence.

15 For Part C, as Maritz indicated in his
16 presentation, the Kitikmeot Inuit Association, TMAC,
17 and Crown-Indigenous Relations and Northern Affairs
18 Canada have agreed on not only the quantum of the
19 security estimate but also the staging of tranches and
20 the split. So we've made significant process [sic] on
21 this, and we're very pleased to report that all parties
22 are in agreement. And as Maritz indicated, as an
23 exhibit, we will file the details of what this looks
24 like.

25 The other change we made was to changes to
26 security amounts may be made on Board approval, and

1 this should not require an amendment in every case, so
2 we've added a term in the licence for that.

3 Moving on to Part D of construction and operations
4 part of the licence, we just made minor updates to this
5 portion to reflect completed obligations under the
6 Doris Licence.

7 For Part E on water use, for the Doris-Madrid
8 Licence, we're requesting a total amount of
9 approximately 1.9 cubic metres annually plus variable
10 amounts for winter road or winter track construction.
11 At Boston, we're requesting a total of around 480,000
12 metres cubed plus annual variable amounts for winter
13 road or track construction.

14 For Part F of the licence, a bit of a -- this
15 should be bolded -- on water management, we made minor
16 updates throughout to reflect completed obligations.
17 An example of this would be updates to the water
18 management plan required under Amendment 1 have already
19 been completed, so we've just revised that term and
20 condition to reflect the reality of where we are today.

21 And so there's numerous of those smaller updates
22 in Part E.

23 And we've also added a clause for a mechanism to
24 prevent water through winter track road construction as
25 per the applications that was submitted to the Board in
26 December 2017.

1 So Part G of the licence, we have included
2 discharge criteria for discharge to tundra for contact
3 water ponds, sumps, fuel storage facilities, landfills
4 and landfarm facilities. So, of course, because we're
5 adding the Madrid mines as part of the Doris Licence,
6 we had to add suggested monitoring locations and
7 discharge criteria, and we made those as consistent as
8 possible with our existing licence.

9 We have a clause, a revision to the required TA
10 water quality assessment, and also we included, for the
11 Boston licence, the reality that there's going to be a
12 Boston water treatment plan. So we've included clauses
13 related to that.

14 For Part H, we've made no changes to modifications
15 in the licence.

16 On Part I, for contingency planning, we made an
17 update to spill plan reporting to align with the
18 Nunavut spill planning and reporting requirements, and
19 CIRNAC -- this was in response to comments from CIRNAC,
20 and they've -- presumably support that change.

21 Under Part J, for aquatic effects monitoring, we
22 made minor updates to reflect facility changes
23 associated with the project proposed to the Board.

24 Under Part K, for aquatic effects monitoring
25 plans, we made minor updates there with no substantive
26 changes to the licence. However, as Mike Henry

1 presented earlier, the aquatic effects monitoring plan
2 itself has been updated in consultation mainly with
3 Environment and Climate Change Canada.

4 For Part L of the licence on abandonment and
5 reclamation and closure, we have included a clause for
6 a requirement to update the interim closure plan and
7 estimate at least every five years, and this was based
8 on a comment from Crown-Indigenous Relations and
9 Northern Affairs Canada. We've included minor wording
10 changes to specified reclamation requirements for
11 clarity, and we've also included a clause for a
12 requirement to update the interim closure and
13 reclamation plan with a layout to illustrate how the
14 tranche triggers will be monitored on land at the TIA
15 and the tailings management area. And this was in
16 response to Crown-Indigenous Relations and Northern
17 Affairs' comments.

18 For Schedule A definitions, so we've provided a
19 definition for what a tranche trigger is to make that
20 clear. We've updated the schedule for Doris and Madrid
21 infrastructure that is proposed and also included
22 amendments triggered by the metal and diamond mine
23 effluent regulation.

24 And my final slide, for Schedule B and D, we
25 provided an update to reflect what's proposed under the
26 Madrid and Boston project.

1 And, finally, for Schedule J, we filed this with
2 the Nunavut Water Board on October 23rd for the
3 Doris-Madrid Licence specifically, as mentioned, we had
4 to suggest monitoring locations associated with our
5 water containment features for Madrid. And, more
6 specifically, for the Doris Licence, we've adjusted
7 TL-7 and TL-8 to speak to the need to analyze
8 detoxified tailings and filtrate respectively. So TL-7
9 now speaks to analyzing the solids of the detoxified
10 tailings, and TL-8 has been adjusted to speak to the
11 analyzing of the filtrate, so the water component.

12 And under the Boston Licence, we've described and
13 submitted to the Board monitoring locations and
14 descriptors. So essentially for all of the water
15 containment features that Maritz has shown in his
16 presentation, we've described -- we've given a number
17 on a map to where that location would be, and we've
18 also described discharge criteria within the licence
19 itself.

20 So, Mr. Chair, that concludes TMAC's presentation
21 for this hearing.

22 THE CHAIR: Thank you for your
23 presentation, Applicants.

24 Now, I'd like to open up the questioning about
25 their presentation. So I'd like to start with KIA,
26 let's start with them.

1 MR. ROESCH: Hello, Mr. Chair. This is
2 John Roesch for the Kitikmeot Inuit Association.

3 I'll turn it over to our legal counsel, John
4 Donihee. He may have some comments or questions.
5 Thank you.

6 He's just told me he has none. Thank you. And I
7 have no questions either. Thank you.

8 THE CHAIR: Thank you, KIA.

9 I'd like to ask the Crown-Indigenous Relations and
10 Northern Affairs Canada. Go ahead.

11 MR. DEWAR: Koana, Mr. Chair. Spencer
12 Dewar, Crown-Indigenous Relations and Northern Affairs
13 Canada.

14 We have no questions.

15 THE CHAIR: Okay, thank you.

16 I'd like to ask the Environment and Climate Change
17 Canada.

18 MR. SUMMERFIELD: Thank you, Mr. Chair. Bradley
19 Summerfield with Environment and Climate Change Canada.

20 We have no questions.

21 THE CHAIR: Thank you.

22 And then Fisheries and Oceans Canada.

23 MS. McLELLAN: Koana, Mr. Chair. This is
24 Angie McLellan.

25 We have no questions for Fisheries and Oceans
26 Canada. Thanks.

1 THE CHAIR: Thank you.

2 Water Board Staff?

3 Nunavut Water Board Staff Question TMAC Resources Inc.

4 MS. AUTUT: Thank you, Mr. Chair.

5 Stephanie Autut for the Board.

6 We do have a couple of questions, and I will hand
7 the mic over to Karén.

8 MR. KHARATYAN: Thank you, Stephanie. Karén
9 Kharatyan, Water Board.

10 Mr. Chair, a few question for TMAC, and starting
11 with a general question maybe to Dr. Rykaart. For the
12 benefit of everyone, I think it would be appreciated if
13 you explain the crown pillar recovery.

14 DR. RYKAART: Maritz Rykaart, Mr. Chairman.

15 The crown pillar recovery is a method to extract
16 some of the near-surface ore. The ore at the Hope Bay
17 site, at both the Doris-Madrid as well as at Boston
18 extends all the way up to surface in some areas.
19 That's, in fact, how the deposit was discovered.

20 The primary mining method at the site is
21 underground mining, because it's a narrow vein gold,
22 that you've got to chase the vein underground.

23 To do mining safely, you've got to keep a crown
24 pillar between the surface of the ground and the
25 minimum depth of the mine underground. In accordance
26 with the mine's inspector, the crown pillar should

1 always be at least a hundred metres so that you're
2 always at least a hundred metres below the surface of
3 the ground where you're actually extracting ore.

4 If the ground is stable and strong, you can ask
5 for a variance from the mine's inspector to reduce that
6 crown pillar height, and the crown pillar is just the
7 name for that zone between the ground surface and the
8 mine.

9 So in some locations, the company has -- is
10 applying for an exemption from the mine's inspector to
11 reduce that crown pillar. There's no surface
12 expression when they do that. You don't see anything
13 on the surface differently, and the mine's inspector
14 only improves that if the ground is stable, and there's
15 a geotechnical assessment for that.

16 The Crown pillar recovery that TMAC is proposing
17 to do involves when we come right up near to the
18 surface, when the ore is almost exposing at surface.
19 So what they do is they actually develop a stope, which
20 is a tunnel underground, underneath the last bit of
21 ore. In order to then extract that last bit of ore,
22 which is typically about 20 metres below surface, so
23 they want to extract the remaining crown pillar, which
24 is between the ground and about 20 metres below where
25 the tunnel is. In order to do that, they can no longer
26 do it from underground because the ground will cave in.

1 So they extract that by surface. So they come to the
2 surface, they expose the surface through a trench, and
3 then they go underground, drill up into this crown
4 pillar, and drop that remaining ore into the ground
5 underground, and haul it back out under the portal.
6 That leaves a surface expression where they drop the
7 crown pillar, which then gets backfilled with waste
8 rock and, ultimately, an overburden cover.

9 So that's what the crown pillar recovery is. This
10 is being done at Doris, and there's proposed crown
11 pillars at both Madrid and at Boston.

12 MR. KHARATYAN: Thank you, Karén Kharatyan,
13 Water Board, Mr. Chair.

14 Another general question related to potential
15 overlapping of two "B" "B" Licences and Type "A"
16 Licence if a licence is issued. Can you please advise
17 whether, under two "B" "B" licences, you have any
18 infrastructure that could potentially be used under
19 Type "A" Water Licence or associated with Type "A"
20 activities if a Type "A" is issued?

21 MR. CURRAN: Thank you, Mr. Chair. Thanks,
22 Karén, for the question. Oliver Curran with TMAC.

23 So, yes, I can confirm that the layouts for -- at
24 Madrid -- I'll speak to Madrid first and then at
25 Boston -- at Madrid, all of the pad for waste rock or
26 storage contact water ponds, all of that that is

1 currently authorized under our "B" Licence would be
2 utilized under the Type "A" Licence as well, so the --
3 there is, essentially, a hundred percent overlap of
4 that infrastructure. The only difference being -- the
5 only substantial infrastructure that's different under
6 the "A" is that we've proposed the concentrator to
7 process the ore at Madrid, but all of the laydown areas
8 for the storage of ore and waste rock and where that
9 water reports is the same as what's authorized under
10 the "B".

11 And similarly at Boston, we have an existing camp
12 at Boston, and the Phase 2 infrastructure or the
13 infrastructure that's proposed under this Type "A"
14 Licence will supersede or overlap the Boston project.
15 So all of the water will report to new contact ponds.
16 The tailings facility is different as you saw it in
17 those layouts.

18 So I hope that answers your question.

19 MR. KHARATYAN: Thank you. Mr. Chair, Karén
20 Kharatyan with Water Board.

21 A follow-up question, Oliver, that means if
22 Type "B" Licences are cancelled, potentially, this is
23 assumption, yes. The security of Type "A" Licence if a
24 licence is issued should be amended as well to include
25 this, or maybe you can clarify whether these
26 overlapping infrastructure are already captured within

1 the security assessment provided for Type "A"s.

2 MR. CURRAN: Thanks, Mr. Chair. Thanks
3 Karén.

4 Yeah, if I understand you correctly, if we were to
5 execute under the Type "B" Licence, we would have to
6 post all of the money for that infrastructure, all the
7 pads, the buildings to be built. For this discussion,
8 it's about \$4 million.

9 Under the Type "A", the estimate is around \$4.8
10 million, and that 800,000 is associated with the
11 concentrator. So if we were to -- if the Type "A"
12 Licence at Madrid were to be authorized, and we were to
13 build under the Type "A" in advance of a Type "B", then
14 all of the security would be held under the Type "A"
15 Licence.

16 If we were to build under the Type "B" and bond
17 that \$4 million, and then the "A" was subsequently
18 issued to TMAC, and we were to build that concentrator,
19 then we would have to bond the additional money for
20 that. And so our thinking is that the money that was
21 already bonded under the "B", the 4 million, would be
22 released. So that we wouldn't be double-bonded. So
23 the only difference in the security is really tied to
24 the concentrator.

25 So it's really a scenario of if we were to build
26 under the "A" and not the "B", then it's 4.8 million,

1 and everything's fine. If we've already bonded 4
2 million under the "B" and then have to bond a further
3 4.8 million under the "A", then we need that mechanism
4 to amend the "B" to get that \$4 million back, so that
5 we're not double-bonded.

6 MR. KHARATYAN: Karén Kharatyan, Water Board.
7 What about Boston site, Oliver?

8 MR. CURRAN: Thank you, Mr. Chair. Thanks
9 Karén.

10 At Boston, it's a, I guess you could say, simpler
11 situation in that there's no overlap. So the bond
12 under the "A", the estimate that we've all agreed on,
13 that would be an additional bond, so the process there
14 is quite simple.

15 MR. KHARATYAN: Thank you. Karén Kharatyan,
16 Water Board.

17 Oliver, can you go, please, the first slide of
18 this additional presentation?

19 MR. CURRAN: The very first slide?

20 MR. KHARATYAN: Yes, please. Yes, this one.

21 Karén Kharatyan Nunavut Water Board, Mr. Chair.

22 Oliver, maybe make comments starting with the
23 point bullet 3, requesting deemed approval of plans
24 after 60 days. Just clarifying for TMAC that general
25 standard conditional 60 days, it's at least 60 days.
26 If a company wants to expedite the process, they can

1 submit the plan a hundred days, yes, that means that
2 sometimes the approval process -- review approval
3 process takes more than 60 days. So it should be
4 understood that very often or sometimes approval within
5 60 days wouldn't be granted; that doesn't mean that the
6 plans should be deemed approved, because discussion
7 between the company, Water Board, and Proponent may be
8 ongoing this plan. And for the next bullet, I think
9 second bullet under Part C "Security", I will be
10 looking at maybe CIRNAC position on this.

11 MR. DEWAR: Thank you, Mr. Chair. Spencer
12 Dewar, Crown-Indigenous Relations and Northern Affairs
13 Canada.

14 About the quantum of security or?

15 MR. KHARATYAN: Change to security amount may
16 be made on Board approval, should not require amendment
17 in every case.

18 MR. DEWAR: Yeah, you've just revealed my
19 secret that I need glasses.

20 I think I would state that CIRNAC's preference
21 would be that adjustments to security would require an
22 amendment.

23 MR. KHARATYAN: Karén Kharatyan, Water Board.
24 Thank you.

25 One general question again regarding security.
26 TMAC circulated yesterday and did speak about potential

1 agreement about the numbers. We know that the first
2 numbers provided by TMAC and cost estimate provided by
3 CIRNAC was maybe different, with up to 10 percent
4 different, yes, and this difference was related to, I
5 guess, post-closure monitoring, if I remember, and care
6 and maintenance planning. However, a number was
7 provided now that is in between, a little closer to
8 TMAC number, so I would like to have an explanation
9 about difference or agreement.

10 DR. RYKAART: Maritz Rykaart.

11 The initial cost estimate that CIRNAC produced
12 was, as you stated, different than TMAC. The --
13 subsequent to that, that first estimate was produced in
14 November 2017. The reason, the primary reason for that
15 difference was some misunderstandings on some of the
16 technical closure components, as I described, for the
17 process. We quickly clarified those.

18 That left with the key difference, based on the
19 final submission that CIRNAC made to the Water Board as
20 part of this process, where the difference was about 10
21 percent. At that point in time, the primary reasons
22 for the difference was associated with the interim care
23 and maintenance. The difference there was that CIRNAC
24 would prefer, as a policy decision, to standardize the
25 duration of interim care and maintenance on all
26 projects. So they requested that rather than the

1 one-and-a-half years of interim care and maintenance,
2 that TMAC would adopt a period of three years. In
3 discussions, TMAC agreed to three years, but the thing
4 that TMAC changed is they lowered the amount of money
5 that was within the component of interim care and
6 maintenance.

7 The key thing here was that as part of TMAC's
8 development of the interim care and maintenance period,
9 they had assumed that complete mobilization of a new
10 fleet of equipment during interim care and maintenance;
11 that is not a standard practice in other Water
12 Licences. Interim care and maintenance, it is normally
13 assumed that the equipment on site is available to take
14 care of that.

15 In addition to that, there was some reduction and
16 alignment of the camp costs for the interim care and
17 maintenance with the final closure costs.

18 So making those two changes and coming up to the
19 number of 3, meant that we reached alignment on the
20 interim care and maintenance differential.

21 The second place where there was substantial
22 differences was associated with the post-closure
23 monitoring. Again, as a matter of policy, CIRNAC is
24 trying to standardize how they approach security bonds,
25 and they would prefer a monitoring period of 25 years.
26 TMAC had proposed a monitoring period of 10 years. The

1 difference here is not so much the difference between
2 10 years and 25 years, because the cost is actually
3 accounted for based on a discrete amount of monitoring
4 events. So within the 10-year period, the discrete
5 amount of monitoring events was the same as what CIRNAC
6 had, but because they monitored for an additional 15
7 years beyond that, there was additional discrete
8 monitoring events that was added.

9 Ultimately, TMAC agreed to do exactly what CIRNAC
10 had asked, so we changed it to a 25-year period and
11 matched CIRNAC's discrete monitoring events, which
12 raised the number.

13 The third element where there was substantial
14 differences related to how project management is
15 accounted for. Project management is in the cost
16 estimate. The purpose of that is recognized that with
17 any project, such as a closure project, there's a
18 substantial amount of effort involved to just manage
19 the project both technically and logistically.

20 CIRNAC followed a blanket percentage approach like
21 I discussed, and their philosophy was to just assume 5
22 percent of direct costs. TMAC did not follow that
23 approach. TMAC calculated it based on first principles
24 by developing a schedule and the loading of manpower
25 and camp, and for that reason, TMAC's cost estimate was
26 lower than the percentage. However, in the end, TMAC

1 agreed to follow CIRNAC's approach in order to resolve
2 that.

3 The remaining differences that was associated with
4 the cost estimate was related to a few technical
5 inconsistencies in the closure activities and some
6 rounding areas associated with quantities and volumes.
7 Those technical issues were resolved between CIRNAC and
8 TMAC in a discussion between the different consultants.
9 There was simply a misunderstanding on both sides in
10 exactly what the cost estimates were accounted for.

11 So because there were differences in interim care
12 and maintenance, which is part of the direct cost
13 allowance, that also resulted in additional costs
14 associated with any of the indirect costs that was
15 calculated as percentages. For example, contingency is
16 20 percent. So if there's a difference in interim care
17 and maintenance, there's an additional loading of that,
18 of 20 percent, because of the indirect cost. So once
19 we resolved that, all of those other percentage
20 differentials also went away.

21 So I hope that explains to you what the
22 differences were

23 MR. KHARATYAN: Karén Kharatyan, Nunavut Water
24 Board. Thank you, Mr. Chair.

25 Yes, thank you. One small follow-up question, how
26 the indirect costs will be applied; proportionately to

1 every stage or provided upfront?

2 DR. RYKAART: Maritz Rykaart.

3 This different approach, depending on the type of
4 tranche, essentially the contingency, the engineering
5 costs, and the project management costs are added
6 proportionately to the size of the tranche.

7 The interim care and maintenance and the
8 post-closure monitoring, and the -- I always forget the
9 third one -- and the mobilization, which pays for the
10 equipment and the camp, that is front-end loaded
11 towards the activities that will require the biggest
12 resources.

13 So, for example, for the Doris Project,
14 mobilization and interim care and maintenance and
15 post-closure monitoring is completely front-end loaded
16 because that bond has actually already been posted.
17 There's a very small component of that mobilization
18 cost which gets posted when the next tailings tranche
19 gets triggered, so that the bond covers all of those
20 activities already.

21 For Boston, the same applies. For Boston, it's
22 front-end loaded in terms of the first activity that's
23 triggered, and it's front-end loaded in terms of the
24 activities that carries the biggest closure liability
25 and risk.

26 MR. KHARATYAN: Thank you, Mr. Chair. Karén

1 Kharatyan, Water Board.

2 Because we are speaking about these tranches and
3 because we are -- we were told in everything that an
4 exhibit will be provided with potential updated draft,
5 so just for your information, this trigger or tranches
6 should be defined very well within definition; while
7 for Boston, we did see, for example, Tailings 1, 2, 3
8 were defined, but for Doris North, I didn't find KIA
9 Phase 2(a), KIA Phase 2(b), so these should be
10 defined or definition should be included within draft,
11 and I think Derek found some missing definition for
12 Boston.

13 And, again, one thing related to definition, while
14 I stated that Boston has this -- Boston draft has these
15 triggers defined, I didn't see definition for general
16 tailings storage facility in Boston.

17 So, please, take into consideration when you
18 finalize this exhibit.

19 And now, I believe, Derek, if he has question, to
20 continue. Thank you, Mr. Chair.

21 MR. DEWAR: Thank you, Mr. -- sorry, I
22 want to thank TMAC for the summary of how we've come to
23 the conclusion of security and how we worked it out.
24 It was well stated.

25 I just wanted to include that the Kitikmeot Inuit
26 Association was part of those discussions, right, so it

1 was a tri-party sort of discussion, and it was based
2 on, you know, technical expertise, and I think the
3 three of us are in support of the quantum.

4 MR. DONALD: Derek Donald, Nunavut Water
5 Board. Thank you, Mr. Chair.

6 My first question here, just to follow-up on
7 Karén's, with respect to the Doris tailing impoundment
8 area and the staged or phased security, and so how
9 exactly will the various stages be defined? I think
10 you had three in the last three different stages, and
11 so how will those be defined so we know exactly how
12 security -- or when it will be posted?

13 DR. RYKAART: Maritz Rykaart.

14 So the trigger will be defined by two things: A
15 tonnage of tailings as well as a surface area. So I'm
16 not -- I don't think the version of the black line that
17 you have currently includes this, and CIRNAC has also
18 not seen this, so not stating this as fact, it's just
19 where we currently stand.

20 For the first phase, for the Doris TIA Phase 2(a),
21 the trigger is -- or the definition is it means the
22 total amount of tailings in the Doris TIA exceeds 2.5
23 million tonnes or 440,000 square metres of total
24 surface area. And for the TIA Phase 2(b), it means the
25 total amount of tailings in the Doris TIA exceeds 7.7
26 million tonnes or 1.15 million square metres of surface

1 area.

2 Would you like the equivalent triggers for the
3 Boston as well?

4 MR. DONALD: Yes, please.

5 DR. RYKAART: Maritz Rykaart.

6 So for Boston, we have three tranches. They're
7 called Tailings 1, Tailings 2, and Tailings 3. So for
8 Tailings 1, it means the commissioning, the processing
9 plant, and producing filtered tailings, including the
10 precommissioning period, so that's any tailings;
11 Tailings 2 means the total amount of tailings in the
12 Boston TMA [sic] exceeds 1.7 million tonnes or a total
13 surface area of 80,000 square metres; Tailings 3 means
14 the total amount of tailings in the Boston TMA exceeds
15 3.4 million tonnes or a total surface area of 141,000
16 square metres.

17 MR. DONALD: Thank you. My next
18 question -- Derek Donald, Nunavut Water Board -- again,
19 coming back to those definitions Karén had mentioned,
20 and this is in the draft framework for the Boston
21 Licence, some of those tranches, the -- I guess the
22 first one, for example, for mining, 60 days prior to
23 commencement of construction, and mining is defined as
24 any mining activities; do you guys mean sort of
25 commercial mining or because there is exploration
26 mining going on there right now? Does that make sense?

1 MR. CURRAN: Thank you, Mr. Chair. Oliver
2 Curran with TMAC.

3 Yeah, that's correct, Derek. For the Boston
4 Licence, we are speaking about commercial mining
5 authorized under the "A", because, as you correctly
6 state, there is already advanced exploration authorized
7 under our Type "B".

8 MR. DONALD: Derek Donald, Nunavut Water
9 Board. Thank you.

10 My next question here I guess just in terms of the
11 conditions applying to waste disposal and management,
12 again referring to the draft licence and draft licence
13 framework, the discharge parameters that have been
14 proposed, has that been discussed with the intervening
15 parties, specifically Environment and Climate Change
16 Canada?

17 For example, I noticed that Radium-226 was
18 included in the industrial water treatment discharge,
19 and that seems a little bit out of place, but it's from
20 the metal and diamond mine effluent regulations. So
21 the question is have those, I guess, been discussed
22 with intervening parties, and everyone's in agreement?

23 MR. CURRAN: Thank you, Mr. Chair. Oliver
24 Curran with TMAC. Thanks for the question, Derek.

25 So we drafted the criteria for the Doris-Madrid
26 Licence and Boston. We discussed it with the Kitikmeot

1 Inuit Association and with Environment Canada, but I do
2 caveat that, of course, it was a preliminary
3 discussion, and we, of course, rely on their input. So
4 they have the draft criteria, and, of course, through
5 this process, we, you know, would value their input.
6 But you are correct in that we did, in drafting a
7 criteria, consider the MDMER regulations specifically
8 at Boston, because that's a discharge to the freshwater
9 environment.

10 MR. DONALD: Thank you. Derek Donald,
11 Nunavut Water Board.

12 So just to follow up, I guess, with Environment
13 and Climate Change Canada, are you guys happy with the
14 monitoring, I guess, the discharge parameters that
15 they've proposed? Do you specifically want the
16 Radium-226 included, or is that just -- sort of came in
17 from the metal and diamond mine effluent regulations?

18 MS. TOBIN: Meagan Tobin, Environment and
19 Climate Change Canada.

20 The Radium-226 is a regulated parameter under the
21 metal and diamond mining effluent regulations. It's
22 applied to all mines that are captured under that, and
23 that's why that parameter is there.

24 MR. DONALD: Derek Donald, Nunavut Water
25 Board. Thank you for that.

26 And my next question I guess is in relation to the

1 monitoring programs, the surveillance network program
2 and an aquatic effects monitoring program. Have these
3 also been, I guess, thoroughly discussed with
4 intervening parties particularly I believe it was
5 Environment Canada and CIRNAC that had questions about
6 the aquatic effects monitoring program? And so I
7 suppose, TMAC, you can sort of answer first just if
8 this has been discussed and everyone is sort of in
9 agreement, and then, CIRNAC, as well, just I know in
10 your presentation, you never really specifically stated
11 if you were happy with the most recently provided
12 version of the aquatic effects monitoring program.

13 MR. CURRAN: Thank you, Mr. Chair. Oliver
14 Curran with TMAC.

15 Yes, Derek, the aquatic effects monitoring plan is
16 a plan, as you know, has been in existence for quite
17 some time under our existing project, so it's not a
18 brand-new plan to any of the reviewers, and through
19 the -- and it was obviously submitted through the NIRB
20 process and Water Board process, so it's been in
21 discussions all this year through the technical review
22 period, so we have received numerous comments on the
23 aquatic effects monitoring plan through the technical
24 review.

25 And then more recently there have been comments
26 provided on it for final intervention comments, and

1 I'll let Mike Henry speak to this in a bit more detail
2 just to provide you with a general understanding of the
3 back-and-forth that has been done with Environment
4 Canada more specifically on the AEMP, because I know
5 that there has been a lot of discussions and input more
6 recently with Environment Canada.

7 DR. HENRY: Thank you, Mr. Chair.

8 Yes, I would say that we've had extensive
9 conversations with Environment and Climate Change
10 Canada going back and forth on, particularly, study
11 design around the discharge to Aimaokatalok Lake.

12 We've also responded to the most recent written
13 comments from CIRNAC as well, and we had conversations
14 yesterday where they were in agreement with our
15 responses to those, and so to my understanding, that
16 we've resolved all issues with all parties.

17 These technical comments, information requests
18 began, as Oliver said, during the NIRB process through
19 the draft environmental impact statement, the final
20 impact statement, right through up until yesterday, so
21 the issues are resolved. The plan is solid. Thank
22 you.

23 MR. DONALD: Thank you, Mike. Derek
24 Donald, Nunavut Water Board.

25 And, CIRNAC, can you just confirm for the record
26 that you are, indeed, satisfied with the latest plan?

1 MR. DEWAR: Thank you, Mr. Chair. Spencer
2 Dewar, Crown-Indigenous Relations and Northern Affairs
3 Canada.

4 Yeah, we have had discussions, and we're happy
5 with the aquatic effects monitoring program -- or plan.

6 Although, I think your question also asked about
7 the surveillance network program, and I don't know if
8 we've seen the proposed sites for the additional
9 monitoring. I don't know if TMAC has those, but our
10 expectation is that we will see something.

11 MR. DONALD: Derek Donald, Nunavut Water
12 Board. Thank you.

13 Yes, I believe TMAC provided those just very
14 recently on the 23rd, so I suspect they'll be coming
15 as -- or being submitted as an exhibit. Okay.

16 And then lastly -- Derek Donald, Nunavut Water
17 Board -- the last question that I have, just for the
18 monitoring program at Boston, there weren't sort of
19 specific parameters necessarily mentioned, and so I
20 guess just the discharge criteria at Boston and --
21 sorry, I'm going to actually retract this question, I
22 think I've got it. Thank you.

23 MR. KHARATYAN: Mr. Chair, Karén Kharatyan,
24 Water Board.

25 One more question, because we have slide open, I
26 had this question, so I will ask right now. Under

1 water use, Unit 1 and 2, we have annually and variable
2 amounts for winter road. Winter road, same winter
3 road, you mean winter ice road, yes?

4 MR. CURRAN: Thank you, Mr. Chair. Oliver
5 Curran with TMAC.

6 Yeah, that's correct, we are talking about winter
7 ice road or a winter track. So, commonly, what TMAC
8 has been doing under our exploration licences is we
9 build tracks over top of lakes that don't actually
10 require necessarily water use or ice, and similarly
11 over the tundra, it's often adequate to just compact
12 the snow, and we call that a track. But in some cases,
13 yes, we would need to use water for -- to create ice
14 for the road. So we've used the language of an "ice
15 road", but in reality, it may require -- it may not
16 require water use.

17 MR. KHARATYAN: Karén Kharatyan, Nunavut Water
18 Board. Mr. Chair, thank you.

19 Thank you TMAC for clarification. However, I will
20 advise TMAC to provide an estimate of water use. I
21 understand and acknowledge that in some -- or along of
22 many kilometres of winter ice road not always will
23 water diversion will be required for building ice, and
24 I acknowledge, we acknowledge, that this is not a
25 consumptive use.

26 However, like any other non-consumptive use, like

1 dewatering of lake, the number is generally included
2 within the licence. So we will appreciate if an
3 estimated number is provided. We could include, yes,
4 maximum, estimated maximum number. Thank you.

5 MR. CURRAN: Yeah, thank you, Mr. Chair.
6 Oliver Curran with TMAC.

7 Thanks for the comment, Karén, so we'll endeavour
8 to get back to you on an estimate of water use.

9 THE CHAIR: Stephanie?

10 MS. AUTUT: Thank you, Mr. Chair.
11 Stephanie Autut for the Board.

12 We have no further questions from the Staff.

13 THE CHAIR: Thank you. According to my
14 notes here, I was supposed to have asked members of the
15 public whether they have questions to the application,
16 so before we go any further, I'd like to ask members of
17 the public. Joanni?

18 Public Questions TMAC Resources Inc.

19 MR. SALLERINA: Joanni Sallerina, Gjoa Haven.

20 For TMAC, I like to ask the question, how long is
21 a lifespan for the liner? I know everything that --
22 has a lifespan. So what's the lifespan for the liner
23 for when you're doing the berm and the cover? And have
24 you taken into consideration of the extreme climate,
25 because rubber, in extreme climate, tends to crack
26 when -- and it's brittle; have you taken that into

1 consideration?

2 And my other question is that you've been doing
3 surveys for fish. I didn't see any numbers for
4 results. Have you given that to the parties? Thank
5 you.

6 THE CHAIR: Go ahead, Applicant.

7 DR. RYKAART: Maritz Rykaart. Joanni, thank
8 you for your question.

9 I'll answer the first part of your question
10 relating to the liner. So that's a good question,
11 because it's a question that everybody asks. There's
12 been extensive testing on the use of liners over the
13 last three decades that liners has been in use.

14 Based on the most current research that all the
15 parties agree on, it's agreed that if a liner is
16 adequately protected from the environment, in other
17 words, if they cover it with material so it's not
18 exposed to sunlight or any of the outer elements, then
19 liners can easily last 500 years or more. However,
20 they won't continue to perform the same duty as they
21 did the day you installed them.

22 Their integrity diminishes over time. So
23 depending on the environment that you construct them
24 in, the usefulness of them to perform their duty of
25 reducing infiltration will change over time, and it's
26 got what they call a half-life. And what the half-life

1 means is if it was originally intended to have a
2 hydraulic conductivity that would only allow one drop
3 of water per square metre when you install it, then
4 after it reaches half-life, it will allow 2 drops of
5 water per square metre after a certain period of time.

6 In actual fact in cold climates like the Arctic,
7 the half-life of these liners are the longest. So the
8 half-life of a liner here is in the order of 200 years.
9 Which means that if you add one drop in the first year,
10 then after 200 years, you can have two drops if you've
11 done nothing to the liner. It's still very, very
12 lower, and it's still very effective.

13 The place that these liners are -- the half-life
14 is the shortest is actually in very hot climates like
15 in the Amazon and areas like that. Sunlight is
16 actually much more damaging and heat is much more
17 damaging to these liners than cold.

18 You also asked a question in terms of have they
19 considered the fact that in a harsh environment like
20 this the rubbers get brittle. Absolutely. That is a
21 huge problem, but there's huge advances in this area,
22 and there's polymers added to these liners specifically
23 to deal with this issue. And there's actually specific
24 products made for cold climates, which is called Arctic
25 liners, and they have the right polymers to ensure that
26 it does not become brittle.

1 Obviously, anything would ultimately become
2 brittle, but to ensure that that doesn't cause cracks
3 in the long term, you need to make sure that you shape
4 the land form or the dry stack properly so you don't
5 have sharp kinks in your liner where it would crack
6 when it becomes brittle.

7 So I hope that answers your question.

8 DR. HENRY: Thank you for your question.
9 I can speak to the Fisheries question you had. TMAC
10 has collected Fisheries tissue metals for more than 20
11 years all throughout the Hope Bay Belt. These results
12 were reported as part of the NIRB process in the
13 draft -- in the final environmental impact statements
14 collectively as a whole but also in all of the
15 individual reports that were appended to the impact
16 statements.

17 TMAC has continued to collect fish tissue data.
18 In fact, they were out this year at many, many lakes
19 collecting that data, and the monitoring programs going
20 forward will also have provisions to collect that data
21 as well, as needed. Thank you.

22 THE CHAIR: Thank you. Now, I would like
23 to ask the Panel Members? Ross?

24 MR. MRAZEK: No.

25 THE CHAIR: Makabe, do you have questions?

26 MR. NARTOK: No.

1 THE CHAIR: Okay, thank you. Okay, so
2 we're done with your presentation now and the
3 questioning of your application -- on your application.

4 So we like to have at least two hours I guess will
5 be enough for -- to meet with the -- meet your groups
6 there. Is two hours good enough for you, have a break
7 from this? CIRNAC?

8 MR. DEWAR: Thank you, Mr. Chair, two
9 hours works.

10 THE CHAIR: Okay, we'll come back here
11 let's say 2:00 should be all right. So we have an
12 extra long lunch break for now.

13 (LUNCHEON ADJOURNMENT AT 11:40 AM)

14 (PROCEEDINGS RECOMMENCED AT 2:09 PM)

15 THE CHAIR: Good afternoon, welcome back
16 to this afternoon sitting. According to our agenda
17 this afternoon, we are starting now our presentation
18 and questioning of the interveners. So we'll start
19 with Kitikmeot Inuit Association. Teresa?

20 MS. MEADOWS: Thank you, Mr. Chair. Teresa
21 Meadows, legal counsel for the Nunavut Water Board.

22 Mr. Chairman, I have two copies of the
23 presentation for the Kitikmeot Inuit Association in
24 English and Inuinnaqtun, and I will file those as the
25 next exhibits in this public hearing. And those are my
26 procedural matters, Mr. Chair. As you'll recall, the

1 witnesses were sworn in yesterday.

2 EXHIBIT 35 - Kitikmeot Inuit Association (English)

3 hard copy PowerPoint Final Submission on Hope Bay

4 Project Phase 2 Type "A" Water Licence Application

5 EXHIBIT 36 - Kitikmeot Inuit Association

6 (Inuinnaqtun) hard copy PowerPoint Final

7 Submission on Hope Bay Project Phase 2 Type "A"

8 Water Licence Application

9 THE CHAIR: Okay, go ahead now,
10 presentation KIA.

11 Presentation by Kitikmeot Inuit Association

12 MR. ROESCH: Thank you, Mr. Chairman, this
13 is John Roesch for the Kitikmeot Inuit Association.

14 I am the Senior Hope Bay Project Officer for the
15 Department of Lands and Environment for the Kitikmeot
16 Inuit Association. I am responsible for the project
17 oversight for KIA and provide input into the regulatory
18 process on the Hope Bay Project to both the Nunavut
19 Water Board and to NIRB. In performing this role, I
20 make use of KIA's consultants, who are subject matter
21 experts in the areas of hydrology, hydro-geology,
22 fisheries, aquatic environments, and geotechnical
23 engineering.

24 The purpose of this presentation is to provide a
25 brief summary of our final submission on the Hope Bay
26 Project Type 2(a) Water Licence applications. Our

1 review has covered hydrology, hydro-geology, fisheries,
2 aquatic environment, water quality and monitoring. KIA
3 conducted their review in a collaborative manner with
4 TMAC Resources, out of which, we brought forward eight
5 issues which were resolved prior and at the technical
6 meeting in May 2018.

7 And also I just want to state, just as yesterday,
8 that this presentation is out of date as of yesterday,
9 so I'll speak to what's changed.

10 Originally, KIA had agreed with TMAC on an overall
11 amount of 61.2 million for the Doris-Madrid security
12 with an 85 percent and 15 percent split for Inuit-owned
13 land and Crown land and water respectively. KIA also
14 agreed with TMAC on an overall amount of 36.7 million
15 for Boston security with a split of 23 percent and 77
16 percent for land and water.

17 Our review of reclamation security was conducted
18 by our geotechnical engineering consultant, and the
19 split of land and water was based on 100 percent
20 allocation of specified mine site components to either
21 land or water as per TMAC's request to facilitate
22 execution of reclamation work.

23 The KIA is open to the receipt of staged security
24 from TMAC subject to particular water licence
25 conditions. TMAC has provided both KIA and CIRNAC with
26 a proposed staged split of security for the Hope Bay

1 Project Phase 2. KIA has had discussions with TMAC and
2 CIRNAC on the overall reclamation security for
3 Doris-Madrid and Boston. The split in land and water
4 for each of these licensing and staging of security, as
5 of yesterday, we have brought this to resolution.

6 Originally, CIRNAC had a proposal of 65.8 million
7 in total security for Doris-Madrid and 40.5 million for
8 Boston. And, originally, CIRNAC had a land/water split
9 of 56.2 percent and 43.8 percent for Doris-Madrid and
10 50.2 percent and 49 percent for Boston. And we
11 provided CIRNAC, in our ongoing discussions with our
12 calculations from BDC Engineering, with the 100 percent
13 calculation, and they have made similar calculations.
14 This has been resolved and is subject to the
15 development of a management agreement between KIA and
16 CIRNAC on the execution of any reclamation security.

17 So currently, Doris-Madrid is about 83 percent
18 land and 17 percent water, for a total quantum of 62.2
19 million. Boston is around 27 percent land and 73
20 percent water, for a total amount of 37.8 million in
21 security.

22 Depicted here is KIA's original staged security
23 for Doris-Madrid, which was provided both to TMAC and
24 CIRNAC. The tailing tranches requires the greatest
25 amount of security for reclamation work. The costs of
26 tailings reclamation is driven by the amount of cover

1 required for the tailing surface area.

2 TMAC has proposed to provide tailings security in
3 two letters of credit, one being 60 days prior to
4 reaching 2.5 million tonnes of tailings deposited into
5 the TIA, indicating the start of Phase 2. The second
6 is to provide, 60 days prior to the deposition of 7.7
7 million tonnes of tailings into the TIA.

8 TMAC has provided sufficient information on the
9 planned expansion of tailings and surface area
10 justifying the receipt of KIA tranches secured in two
11 letters of credit. The KIA believes that the staged
12 security is equitable and will meet KIA and TMAC's
13 security requirements, given the relevant risks in each
14 of the construction and operation stages. This has
15 been revised and some tranches consolidated, which will
16 be provided as a submission to you.

17 Depicted here is KIA's original proposed staged
18 security for Boston, which too was provided to both
19 TMAC and CIRNAC. The tailings tranches requires the
20 greatest amount of security for the Boston tailings
21 management area. The Boston tailings management area
22 is a dry stack tailings requiring both lining and
23 closure cover. The cost is driven by the amount of
24 lining and cover required by the tailings surface area,
25 which can be controlled by building the tailings
26 management area in three cells.

1 Given this, tailings transfer security can be
2 provided in three installments as proposed by TMAC.
3 The first letter of credit would be provided 60 days
4 prior to the commissioning of the processing -- process
5 plant and production of tailings; the second letter of
6 credit would be provided 60 days prior to 1.7 million
7 tonnes of tailings disposition into the tailings
8 management area; the third letter of credit would be
9 provided 60 days prior to the disposition of 3.4
10 million tonnes of tailing into the tailings management
11 area.

12 KIA believes that the staged security is equitable
13 in meeting both KIA's and TMAC's security requirements,
14 given the relevant risk exposure in each of the
15 construction operational stages. This has been revised
16 and will be provided to you.

17 As stated previously, the KIA is open to receiving
18 security using the proposed staged split under
19 particular water licence conditions. The KIA must
20 receive security 60 days prior to the construction for
21 each phase of construction for a defined set of major
22 mine site components and infrastructure on a
23 geographical basis.

24 The receipt of staged security is subject to the
25 Nunavut Water Board process where TMAC is required to
26 provide proof of security being issued. The

1 reclamation costs must be updated periodically and
2 reviewed by KIA and CIRNAC and be provided to the NWB.

3 If additional security is determined to be
4 required by the Nunavut Water Board, TMAC must provide
5 it within 60 days of determination. The KIA has
6 discussed these conditions with TMAC, and TMAC has
7 responded to KIA's conditions to our satisfaction,
8 which is reflected in the Water Licence framework.

9 All technical issues have been successfully
10 resolved. The final issue of staged security is also
11 now resolved. Given this, the substantial benefits
12 that will be obtained for Inuit from the Hope Bay
13 Project Phase 2 and its IIBA, we believe that the
14 issuing of the Type "A" Water Licences for Doris-Madrid
15 and Boston is warranted, and in the best interests of
16 the Inuit people.

17 We thank you for listening, and we are open to any
18 questions.

19 THE CHAIR: Thank you, KIA. Now open to
20 the questions.

21 I'd like to start with the Crown-Indigenous and
22 Northern -- sorry, CIRNAC, go ahead.

23 MR. DEWAR: Thank you, Mr. Chair. Spencer
24 Dewar, Crown-Indigenous Relations and Northern Affairs
25 Canada.

26 We have no questions.

1 THE CHAIR: Thank you. And then
2 Environment and Climate Change Canada?

3 MR. SUMMERFIELD: Thank you, Mr. Chair. Bradley
4 Summerfield with Environment and Climate Change Canada.

5 We have no questions.

6 THE CHAIR: Thank you. Fisheries and
7 Oceans Canada?

8 MS. MCLELLAN: Koana, Mr. Chair. Angie
9 McLellan with Fisheries and Oceans Canada.

10 We have no questions.

11 THE CHAIR: Thank you. Does TMAC
12 Resources Inc. have any questions for the Kitikmeot
13 Inuit Association?

14 MR. CURRAN: Thank you, Mr. Chair. Oliver
15 Curran with TMAC.

16 We have no questions.

17 THE CHAIR: Thank you. Is there any
18 member of public wish to ask questions? I think that
19 there's none, so if the Water Board Staff have got a
20 question?

21 Nunavut Water Board Staff Question Kitikmeot Inuit
22 Association

23 MS. AUTUT: Thank you, Mr. Chair.
24 Stephanie Autut with the Board.

25 We do have a couple questions, so I'm going to
26 begin with Karén.

1 MR. KHARATYAN: Thank you, Stephanie. Thank
2 you, Mr. Chair. Karén Kharatyan, Water Board.

3 John, if we can go to the previous slide, the
4 "Reclamation costs be updated periodically and
5 reviewed", so the question is how KIA looks -- or
6 imagine this periodic review?

7 MR. ROESCH: Well, what's under the Water
8 Licence is that CIRNAC wanted it every five years.
9 However, between on our framework agreement with TMAC,
10 we are obliged to review it annually and to select a
11 third party. So we will always be ready for a review,
12 and then when CIRNAC is ready, at a five-year date,
13 we're already ready, KIA and TMAC, and so we're
14 constantly reviewing the security under our framework
15 agreement. But under the Water Licence, periodically
16 at a five-year interval, which was in their submitted
17 framework agreement, is adequate because that brings in
18 CIRNAC for any comments. Okay.

19 MR. KHARATYAN: Thank you. Karén Kharatyan,
20 Water Board. Thank you, Mr. Chair.

21 Maybe following up with INAC -- CIRNAC, sorry,
22 whether these five years periodical review, if you
23 think five years is adequate for licence, whether this
24 will result to an amendment if it regularly shows that
25 the numbers are different?

26 MR. DEWAR: Thank you, Mr. Chair.

1 CIRNAC's request to review at five years I think
2 was more than just a review of the security; it was a
3 review of the abandonment restoration plan every five
4 years, so that was sort of the milestone date that we
5 thought there would be enough change in the project
6 that it would be, you know, a more fulsome exercise.

7 MR. KHARATYAN: Karén Kharatyan, Nunavut Water
8 Board. Thank you.

9 Maybe again following up or clarifying with John,
10 John you stated that this annual review will be between
11 KIA and company, that means that it will be outside of
12 Water Licence?

13 MR. ROESCH: That is correct. That is a
14 contractual obligation between the KIA and TMAC as part
15 of the overall framework agreement and the commercial
16 lease, so it's outside of the Water Licence, but I
17 wanted it periodic, and it's up to what's agreeable for
18 bringing CIRNAC in, so I was very flexible on it. But
19 I'm just pointing out that KIA and TMAC are committed
20 to annual review and updating of security, and so at a
21 certain date under the water licence, when CIRNAC wants
22 to look at it and look at everything in detail, we're
23 prepared for that.

24 MR. KHARATYAN: Thank you, Mr. Chair.

25 MS. AUTUT: Okay, Mr. Chair, I have --
26 it's Stephanie Autut with the Board.

1 John, can the Kitikmeot Inuit Association confirm
2 for the Board that issues of water user compensation
3 have been addressed to your satisfaction?

4 MR. ROESCH: John Roesch for the Kitikmeot
5 Inuit Association.

6 Yes, we have, under our framework agreement, which
7 expires in 2035, we have a water compensation agreement
8 under that, and it continues on into Phase 2. So the
9 Water Licence expires they said, in their framework,
10 2035, so everything meets our requirements, and, yes,
11 we are satisfied.

12 MS. AUTUT: Thank you, John. That's all
13 the questions from the Board Staff, Mr. Chair.

14 THE CHAIR: Thank you. Is there a
15 question from the Panel Members? Ross?

16 MR. MRAZEK: No

17 MR. NARTOK: No.

18 THE CHAIR: Okay, we did that, no more
19 questions from us.

20 Thank you, KIA. The next intervener will be
21 CIRNAC.

22 Teresa?

23 MS. MEADOWS: Thank you, Mr. Chair. Teresa
24 Meadows, legal counsel for the Nunavut Water Board.

25 Mr. Chair, it's my understanding that the
26 presentation materials that we have received previously

1 from the parties has not changed, and so the
2 presentation materials that we received yesterday and
3 marked as exhibits will remain as the exhibits for
4 these presentations, and also that the parties
5 indicated they would not be presenting again those same
6 materials, and so we can move into questioning unless
7 there is something that, additionally, that you wanted
8 to present.

9 MR. DEWAR: Thank you, Mr. Chair. Spencer
10 Dewar, Crown-Indigenous Relations and Northern Affairs
11 Canada.

12 You're correct, we're good with the presentation
13 we provided yesterday, and we're available for
14 questions.

15 THE CHAIR: Okay, let me look on my
16 agenda. Okay, open for questions. Start with
17 Kitikmeot Inuit Association, you have a question to
18 CIRNAC?

19 MR. ROESCH: This is John Roesch for the
20 Kitikmeot Inuit Association.

21 No, I have no questions for CIRNAC. Thank you.

22 THE CHAIR: Thank you. Environment and
23 Climate Change Canada?

24 MR. SUMMERFIELD: Thank you, Mr. Chair. Bradley
25 Summerfield with Environment and Climate Change Canada.

26 We have no questions.

1 THE CHAIR: Fisheries and Oceans Canada?

2 MS. McLELLAN: Koana, Mr. Chair. Angie

3 McLellan with Fisheries and Oceans.

4 We have no questions.

5 THE CHAIR: Does TMAC have any questions
6 to CIRNAC?

7 MS. KOWBEL: Thank you, Mr. Chair, can I
8 just have one moment to confer with TMAC?

9 THE CHAIR: Yeah, go ahead. TMAC, go
10 ahead.

11 MS. KOWBEL: Thank you, Mr. Chair,
12 Christine Kowbel from TMAC.

13 Mr. Chair, we had a clarification question for
14 Crown-Indigenous Relations, but we are going to have --
15 I think we're still talking about that with the Crown,
16 and we'd like to ask that we be allowed to defer that
17 issue until -- defer those questions until just before
18 closing statements.

19 THE CHAIR: Thank you. Teresa?

20 MS. MEADOWS: Thank you, Mr. Chair. Teresa
21 Meadows, legal counsel for the Nunavut Water Board.

22 I am reminded that we are rapidly coming to the
23 end of the public hearing, so we do also have a
24 deferred question from TMAC from before lunch, which
25 was with respect to water volumes along the ice road,
26 so if you want to defer that question and the response

1 to this question as well, we can perhaps defer those
2 until just before closing statements.

3 THE CHAIR: Thank you. Go ahead,
4 Applicant.

5 MS. KOWBEL: Thank you, Mr. Chair,
6 Christine Kowbel counsel for TMAC.

7 TMAC's actually prepared to answer the question on
8 the water use now but would be happy to provide that
9 information after you're finished with questions for
10 the interveners if you prefer.

11 THE CHAIR: Teresa?

12 MS. MEADOWS: Thank you, Mr. Chair. Teresa
13 Meadows, legal counsel to the Nunavut Water Board.

14 Yeah, my apologies, we forgot that there was a
15 deferred question. We should have dealt with it right
16 when we first came back after lunch, so if you're
17 willing to provide us with that information, we would
18 appreciate it. If you could proceed with that right
19 now.

20 THE CHAIR: Thank you. Go ahead TMAC.

21 MR. CURRAN: Thank you, Mr. Chair. Oliver
22 Curran with TMAC.

23 So in response to your question, Karén, for the
24 Doris-Madrid Water Licence, we would estimate that, on
25 any given year for the construction of winter ice
26 roads, that 60,000 cubic metres would be required,

1 mainly driven by construction of the all-weather road,
2 which is captured under the Doris-Madrid licence, and
3 for Boston, the estimated water use would be
4 substantially less, at 20,000 cubic metres of water to
5 be held under the "B" for the construction of winter
6 ice roads. Thank you.

7 THE CHAIR: Okay.

8 MR. KHARATYAN: Karén Kharatyan, Water Board,
9 Mr. Chairman.

10 I just wanted to clarify that the amount is per
11 year.

12 MR. CURRAN: Per year.

13 THE CHAIR: Okay, thank you. So that's
14 done.

15 Now, move on to next interveners -- oh, okay.
16 Continue.

17 MS. AUTUT: Thank you, Mr. Chair,
18 Stephanie Autut with the Water Board.

19 The Staff do have a question of CIRNAC.
20 Nunavut Water Board Staff Question Crown-Indigenous
21 Relations and Northern Affairs Canada

22 MR. KHARATYAN: Karén Kharatyan. Thank you,
23 Stephanie; thank you, Mr. Chair.

24 I may be repeating, but I wanted to clarify once
25 again about the five years review of security. Like
26 CIRNAC mentioned that this review will be part of a

1 review of closure reclamation. Does it mean that
2 CIRNAC would like to see a closure reclamation plan for
3 both sides to be updated every five years?

4 MR. DEWAR: Koana, Mr. Chair. Spencer
5 Dewar, Crown-Indigenous Relations and Northern Affairs
6 Canada.

7 That's correct. I think our perspective on this
8 was where we already have the power to request that a
9 security review occur at any time, I believe that power
10 is shared with the Kitikmeot Inuit Association and
11 other interested parties, that we didn't feel an annual
12 security review was required or necessary. So we're
13 looking to move to a model where maybe we have some
14 milestones when we would do this. And I think the
15 five-year marker just makes sense, but we don't
16 necessarily just want to make it in relation to the
17 security estimates we held, but we'd like to, you know,
18 reevaluate the abandonment and restoration plans at
19 that time. Is that clear?

20 MR. KHARATYAN: Karén Kharatyan, Water Board.

21 Yes, thank you.

22 THE CHAIR: Thank you, go ahead, Teresa.

23 MS. AUTUT: Thank you, Mr. Chair.

24 Stephanie Autut with the Water Board.

25 So for understanding this exchange properly,
26 CIRNAC is hereby then essentially proposing an

1 amendment to the licence every five years, so I'm
2 looking for confirmation from CIRNAC that that's, in
3 fact, what you're requesting, and then a confirmation
4 from TMAC that you're accepting that.

5 MR. DEWAR: Koana, Mr. Chair. Spencer
6 Dewar, Crown-Indigenous Relations and Northern Affairs
7 Canada.

8 What we're requesting is a review of the security
9 amount and a review of the abandonment and restoration
10 plan. In the event that there's a material change or a
11 material difference, you know, we'd request that those
12 be incorporated. So the process to do that would be an
13 amendment. Then there's the potential for an amendment
14 every five years, but, ultimately, an amendment may not
15 be required.

16 MS. AUTUT: Okay, thanks for that. And
17 Oliver?

18 MR. CURRAN: Thank you, Mr. Chair.

19 So I agree with Spencer's statement there that,
20 because we're doing an evaluation on any given year or
21 every five years, that doesn't necessarily mean that it
22 would result in an amendment to the quantum. But I
23 take your point, it could.

24 So to alleviate that, and obviously we wouldn't
25 want to go through an amendment if we don't have to, so
26 we would propose a term and condition in the licence

1 that states that if all parties are in agreement, if,
2 on year five, we all meet and reevaluate the security,
3 and we all agree that it needs to change in some way,
4 shape, or form, then if we all agree and write to the
5 Board, then could we have a term and condition that
6 would give the Board that authorizations to update the
7 security without an amendment to the licence.

8 THE CHAIR: Okay, go ahead, Teresa.

9 MS. MEADOWS: Thank you, Mr. Chair. Teresa
10 Meadows, legal counsel for the Nunavut Water Board.

11 I feel compelled to point out that actually the
12 Ministry and the decisions of the Minister in respect
13 of the Mary River file indicated very clearly that, in
14 all circumstances, the Ministry would consider an
15 amendment to the quantum of security after the grant of
16 the licence to be an amendment and to be dealt with as
17 an amendment. So the Board is just trying to ensure
18 that TMAC is aware that if the outcome of a periodic
19 review is that there would be an amendment or a change
20 to the quantum of security fixed under the licence
21 that, potentially, that would trigger an amendment.

22 MR. CURRAN: Thank you, Mr. Chair. Oliver
23 with TMAC.

24 So in response to that, Teresa, when you say it
25 would, potentially, result in amendment, because I
26 think Mary River does an annual security review, and

1 I'm not up to date on the file, but I don't believe
2 that their Type "A" Water Licence is amended on an
3 annual basis.

4 THE CHAIR: Teresa?

5 MS. MEADOWS: Thank you, Mr. Chair. Teresa
6 Meadows, legal counsel for the Nunavut Water Board.

7 That is a correct in terms of the Mary River
8 Licence. However, even in the approval of that
9 licence, the Minister made it very clear that that is
10 not a practice that was acceptable to the Ministry, and
11 so subsequent, you'll see, in all of the subsequent
12 licences that have been issued, that any time there's a
13 change to the quantum, it is actually an amendment,
14 required to be dealt with as an amendment under the
15 licence.

16 So the Board is just preparing you for the fact
17 that if there is a periodic review, whether it's set
18 out as annual, whether it's set out as some other
19 cycle, that there's a potential in the event that that
20 quantum changes that that would be dealt with as an
21 amendment under the licence, given the position that
22 the Minister's office has taken in respect of
23 amendments to security.

24 THE CHAIR: Thank you. Go ahead, TMAC.

25 MS. KOWBEL: Thank you, Mr. Chair.

26 Christine Kowbel for TMAC.

1 Thank you, Ms. Meadows. I think TMAC is very
2 clear on what you said, that there is potential for an
3 amendment. We just wanted to note that those comments
4 on the Mary River Licence were made, you know, several
5 years ago. It's possible that CIRNAC has a different
6 position in relation to this project and in relation to
7 situations where Crown-Indigenous Northern
8 Affairs [sic], the Kitikmeot Inuit Association, and
9 TMAC all agree on an amount that perhaps they would be
10 open to a different process, something other than an
11 amendment in those scenarios.

12 Thank you, Mr. Chair.

13 MS. AUTUT: Thank you, Mr. Chair.

14 Stephanie Autut with the Board.

15 The Board is looking to CIRNAC to have comments on
16 the record to that comment, please.

17 MR. DEWAR: Koana, Mr. Chair. Spencer
18 Dewar, Crown-Indigenous Relations and Northern Affairs
19 Canada.

20 You know, the Minister's authority to hold
21 security, it's something that we don't take lightly.
22 You know, periodic review I think is healthy to make
23 sure that we're secured, and there's not a liability to
24 the Canadian public. Therefore, we think a five-year
25 review is fair, and if this requires a water licence
26 periodic -- an amendment, we don't see that as

1 something that shouldn't be done. So I think, you
2 know, in the event that there is material change that
3 needs to be addressed, an amendment to the water
4 licence should occur.

5 THE CHAIR: Thank you. Stephanie?

6 MS. AUTUT: Stephanie Autut with the
7 Board. Thank you, Mr. Chair. We have no further
8 questions.

9 THE CHAIR: Okay, thank you. I was
10 jumping too way ahead, sorry about that. Little bit of
11 confusion, that jumping over to -- from a few years
12 from this morning.

13 And now the Board is already done?

14 MS. AUTUT: It is.

15 THE CHAIR: So, Panel Members. Okay,
16 there is none, okay. Okay, thank you, CIRNAC for that,
17 thank you for your presentation.

18 Now, I'd like to call on Environment and Climate
19 Change Canada to have your presentation. So,
20 Stephanie?

21 MS. MEADOWS: Thank you, Mr. Chair. Teresa
22 Meadows, legal counsel for the Nunavut Water Board.

23 Mr. Chair, it's my understanding that Environment
24 and Climate Change Canada also, similar to
25 Crown-Indigenous Relations and Northern Affairs Canada,
26 has already presented the same presentation that they

1 would present in the community session last night, and
2 so they have -- they are available, subject to them
3 having anything additional to present now, they're
4 subject to questioning by the parties here and by the
5 Board but will not be doing a sort of revisiting of
6 their presentation from last night.

7 THE CHAIR: Thank you. Environment and
8 Climate Change Canada, go ahead.

9 Presentation by Environment and Climate Change Canada

10 MR. SUMMERFIELD: Thank you, Mr. Chair, it's
11 Bradley Summerfield with Environment and Climate Change
12 Canada.

13 That is correct. We just have two brief updates
14 to share, based on discussions that occurred after we
15 presented last night.

16 The first one is just more details with respect to
17 our first concern regarding the aquatic -- the AEMP,
18 the plume delineation study. So that -- as we said
19 last night, that TMAC has committed to -- that data
20 will be provided to Environment Canada to our
21 satisfaction.

22 The other discussion that we had was with respect
23 to the environmental protection plan, and, again, this
24 morning, TMAC has committed to provide that to -- the
25 specific part that we're interested in to Environment
26 and Climate Change Canada prior to any waterworks.

1 So with that our issues remain resolved in more
2 clarity now, and we are happy to take any questions.

3 THE CHAIR: Thank you. So I like to start
4 with Kitikmeot Inuit Association, if you have any
5 questions.

6 MR. ROESCH: Thank you, Mr. Chair. This is
7 John Roesch for the Kitikmeot Inuit Association.

8 We have no questions, thank you.

9 THE CHAIR: Thank you. CIRNAC?

10 MR. DEWAR: Koana, Mr. Chair. Spencer
11 Dewar, Crown-Indigenous Relations and Northern Affairs
12 Canada.

13 No questions.

14 THE CHAIR: Fisheries and Oceans Canada?

15 MS. MCLELLAN: Koana, Mr. Chair. Angie
16 McLellan, Fisheries and Oceans Canada.

17 We have no questions.

18 THE CHAIR: Thank you. TMAC, do you have
19 any questions to ECCC?

20 TMAC Resources Questions Environment and Climate Change
21 Canada

22 MR. CURRAN: Thank you, Mr. Chair. Oliver
23 Curran with TMAC Resources.

24 So just in response to Environment Canada, just
25 for clarity, you know, so relating to the aquatic
26 effects monitoring program, a plume delineation study

1 would not be required, and, as we stated last night,
2 TMAC committed to provide that data to our
3 satisfaction, and with respect to the EPP, the
4 environmental protection plan, I think Environment
5 Canada has stated that that is not a matter for the
6 Water Board Licence.

7 MR. SUMMERFIELD: Bradley Summerfield with
8 Environment and Climate Change Canada, yeah, those are
9 correct; we're in agreement.

10 THE CHAIR: Okay, thank you. Go ahead,
11 TMAC?

12 MR. CURRAN: Thank you, Mr. Chair.

13 So with respect to radium, I think you guys have
14 also clarified that any discharge point that falls
15 under MMER would, obviously, be subject to that
16 criteria under the regulation; however, other discharge
17 points on the belt that do not pertain to MMER, radium
18 would not be a criteria that Environment Canada would
19 suggest be in the water licence?

20 THE CHAIR: Go ahead.

21 MR. SUMMERFIELD: Thanks, Mr. Chair. Bradley
22 Summerfield with Environment and Climate Change Canada.

23 Yeah, that's correct that the radium we would
24 expect to see in any of the points that are included in
25 the MDMER modelling sites. The other monitoring
26 points, that would be the Board could decide, but we

1 don't see that they'd necessarily be required in those
2 places.

3 THE CHAIR: Thank you. So is there any
4 questions from members of the public -- oh, sorry, go
5 ahead, I didn't see you. Go ahead.

6 MR. CURRAN: Thank you, Mr. Chair, Oliver
7 Curran with TMAC not to belabour this topic, but just
8 to add to Environment Canada's statement there and for
9 consideration of the Board, we're recommending, of
10 course, that radium not be included for non-MMER
11 discharge points on the belt. But if the Board felt
12 that that needed to be a criteria, for whatever reason,
13 of course, we would not want to be subjected to a
14 monthly frequency, as that is an extremely expensive
15 and onerous test to do and also considering the fact
16 that, even under the MMER, if you can demonstrate,
17 through whatever frequency of monitoring, that you
18 are -- is it less than 10 percent?

19 DR. HENRY: Less than 10 percent of
20 Schedule 4.

21 MR. CURRAN: Yeah, less than 10 percent of
22 Schedule 4 levels, then that monitoring no longer has
23 to be undertaken. So the point is, even under the
24 MMER, if you're below the thresholds, you no longer
25 have to report on that, and that's a very important
26 consideration for TMAC.

1 THE CHAIR: Okay, thank you. Okay, the
2 Water Board Staff, any questions?

3 MS. AUTUT: Thank you, Mr. Chair.
4 Stephanie Autut with the Board.

5 Yes, Mr. Chair, the Board Staff do have a couple
6 of questions. We'll start with Derek.

7 Nunavut Water Board Staff Question TMAC Resources Inc.

8 MR. DONALD: Thank you, Stephanie. Thank
9 you, Mr. Chair. Derek Donald, Nunavut Water Board.

10 My question is relating to the aquatic effects
11 monitoring plan. Will the plume delineation study be
12 included as part of that plan, or would it sort of be
13 submitted as a separate document with separate
14 timelines? So would it be sort of as a revision to the
15 aquatic effects monitoring plan or a separate document?

16 DR. HENRY: Mike Henry. Thank you for
17 that question, Mr. Chair.

18 The plume delineation happens as part of the first
19 study design under the MDMER, so it will be reported
20 there. The results will also be included in the AEMP,
21 but it won't be as a specific plume delineation model.
22 We'll just put the results in there, and part of that
23 will be part of the annual reporting as well, but so,
24 specifically, it's meant for the MDMER under the first
25 study design.

26 MR. CURRAN: It's Oliver Curran with TMAC.

1 So, yeah, to be clear to your question, Derek,
2 Environment Canada is not suggesting that a further
3 update to the aquatic effects monitoring plan is
4 required, because that delineation study would be
5 addressed under the MDMER regulation.

6 MR. DONALD: Thank you.

7 MR. KHARATYAN: Karén Kharatyan, Water Board.
8 Thank you, Mr. Chair.

9 Just to confirm what Oliver was saying about
10 radium, I can confirm that, yes, within the last maybe
11 a few Type "A" licences, the radium wasn't included as
12 a criteria for MMER or MDMER final discharge point as
13 agreed by Environment and Climate Change Canada.

14 MS. AUTUT: Thank you, Mr. Chair.
15 Stephanie Autut with the Board.

16 We have no further questions.

17 THE CHAIR: Thank you, Panel Members, do
18 you have questions?

19 MR. MRAZEK: (NO VERBAL RESPONSE)

20 MR. NARTOK: (NO VERBAL RESPONSE)

21 THE CHAIR: Okay, thank you. I take it
22 that we don't have a question. Thank you for your
23 presentation.

24 Next presenter on intervention is the DFO.
25 Teresa?

26 MS. MEADOWS: Thank you, Mr. Chair. Teresa

1 Meadows, legal counsel for the Nunavut Water Board.

2 Mr. Chair, it's my understanding that, the same as
3 the other federal interveners, that Fisheries and
4 Oceans Canada has filed their materials that they
5 intend to rely on at the public hearing yesterday.
6 They have made their presentation yesterday, and that
7 what remains, subject to any additional comments that
8 they wish to put forward right now, it is just
9 questions from the other parties for this intervener.

10 Thank you, Mr. Chair.

11 THE CHAIR: Go ahead, DFO.

12 MS. MCLELLAN: Thank you, Mr. Chair. Angie
13 McLellan, Fisheries and Oceans Canada.

14 We have nothing further to add from yesterday, and
15 we welcome any questions.

16 THE CHAIR: Thank you. Start with
17 Kitikmeot Inuit Association.

18 MR. ROESCH: Thank you, Mr. Chair. This is
19 John Roesch for the Kitikmeot Inuit Association.

20 We have no questions for DFO. Thank you.

21 THE CHAIR: Thank you. Crown-Indigenous
22 Relations and Northern Affairs Canada?

23 MR. DEWAR: Koana, Mr. Chair. Spencer
24 Dewar, Crown-Indigenous Relations and Northern Affairs
25 Canada.

26 We have no questions.

1 THE CHAIR: Thank you. And, TMAC, do you
2 have any questions?

3 MR. CURRAN: Thank you, Mr. Chair. Oliver
4 Curran with TMAC.

5 We have no questions.

6 THE CHAIR: Thank you. Any questions from
7 the public? Okay, there's none.

8 Okay, next Water Board Staff?

9 MS. AUTUT: Thank you, Mr. Chair, before
10 the -- at this point, the Staff have no questions, but
11 I will ask that we get confirmation on the record from
12 Environment and Climate Change Canada that they have
13 questions or not, thank you.

14 MR. SUMMERFIELD: Thank you, Mr. Chair.

15 THE CHAIR: Oh, I skipped you guys, sorry
16 about that.

17 MR. SUMMERFIELD: It's okay, no worries.

18 THE CHAIR: I didn't realize that.

19 MR. SUMMERFIELD: It's okay. Bradley
20 Summerfield with Environment and Climate Change Canada.

21 I can confirm that we do not have any questions
22 for DFO.

23 THE CHAIR: Yeah, okay, thank you. I
24 think that's -- my brain is starting to move around,
25 back and forth somewhere.

26 Okay, thank you. And then the Panel Members?

1 Okay, we take that there's none.

2 Let's have a short break for a moment, at least 5
3 minutes or so. I will review my agenda before we go
4 any further. Take a 5-minute break.

5 (ADJOURNMENT)

6 THE CHAIR: Okay, thank you. Thank you
7 for coming back.

8 I'll pass the microphone to Teresa, so she will do
9 the housekeeping at the moment.

10 MS. MEADOWS: Thank you, Mr. Chair. Teresa
11 Meadows, legal counsel for the Nunavut Water Board.

12 So parties will have either received or be
13 awaiting the transmission of some updated security
14 documents. The Board requests that parties review
15 those documents over the next hour-and-a-half. We'll
16 take a brief adjournment until 4:30. We'll reconvene
17 at 4:30 and talk about filing of that document and then
18 any questions associated with the updated security
19 amounts, and then we will go into deferred questions
20 and final closing statements for the public hearing.

21 So that is the plan, and we appreciate you
22 reviewing that document and being able to come back to
23 the Board with questioning on that document, and we'll
24 also have some updated filings of the Water Licence
25 framework when we come back from the break as well.
26 Thank you, Mr. Chair.

1 THE CHAIR: Okay, thank you, Teresa. So
2 we take a break now until 4:30. We'll come back here
3 at 4:30.

4 (ADJOURNMENT COMMENCED AT 3:04 PM)

5 (PROCEEDINGS RECOMMENCED AT 4:38 PM)

6 THE CHAIR: Welcome back to the sitting.
7 So we are on the final stages now. Before we go on to
8 that, I'd like to call upon the Water Board Staff to
9 take care of the issue right now. Stephanie?
10 Nunavut Water Board Further Question TMAC Resources
11 Inc.

12 MS. AUTUT: Thank you, Mr. Chair.
13 Stephanie Autut with the Water Board.

14 Just seeking some clarification from the
15 Applicant, TMAC, we'd like confirmation of the term of
16 licence being sought for both of the licences. If you
17 could just stipulate that for the record, please.

18 MR. CURRAN: Thank you, Mr. Chair. Oliver
19 Curran with TMAC Resources.

20 So we confirm that the term of the licence both at
21 the Doris-Madrid Licence and the Boston Licence would
22 expire in 2035, and that is to align with the water
23 compensation agreement we have with the Kitikmeot Inuit
24 Association.

25 MS. MEADOWS: Thank you, Mr. Chair. Teresa
26 Meadows, legal counsel for the Nunavut Water Board.

1 So, Mr. Chair, that concludes the questioning
2 component of the public hearing agenda, and we do have
3 some additional filing materials, and there is a
4 deferred question from TMAC to Crown-Indigenous
5 Relations and Northern Affairs Canada, but that's all
6 the questions from the Board Staff. Thank you,
7 Mr. Chair.

8 THE CHAIR: Thank you. TMAC?
9 TMAC Resources Inc. Questions Crown-Indigenous
10 Relations and Northern Affairs Canada
11 MR. CURRAN: Thank you, Mr. Chair. Oliver
12 Curran with TMAC.

13 So just -- I think this is a small point for
14 clarification. On Slide 9 of CIRNAC's presentation on
15 management plans, they indicated that a -- the
16 Doris-Madrid water management plan for process water
17 treatment would need to be updated for an
18 acknowledgment of potential water treatment at -- from
19 the Doris TIA.

20 So there's two things at play here that I just
21 want to have CIRNAC confirm. The first is it is
22 explicit and understood that if water treatment was
23 required from the TIA to meet the metal mine effluent
24 regulations [sic], that would obviously be done,
25 because if we can't meet compliance for discharge under
26 the metal diamond mine effluent regulations, we don't

1 have a mine. So we don't think that there is any
2 requirement or commitment or anything in the water
3 licence that we have to state that that would be done.

4 With respect to modelling over the life of the
5 mine, the water quality in the TIA, the geochemistry of
6 the tailings, and a number of other things, Term and
7 Condition Number 5 of the recently approved Doris -- or
8 Madrid-Boston Project Certificate that the NIRB
9 recommended to the Minister, Term and Condition Number
10 5 of that requires us to have a management plan that
11 explicitly describes contingency measures that may be
12 implemented if required, including measures to address
13 the potential for leaching of arsenic from waste rock
14 and ore stockpiles and tailings under neutral pH
15 conditions; it further requires us to include model
16 predictions, which is the water load balance that we do
17 every year that we submit to the Water Board as well,
18 and an identification of thresholds that will trigger
19 specific management actions, including active water
20 treatment if trends analysis indicate water quality
21 objectives may be exceeded.

22 So we think that all of the mechanisms to address
23 CIRNAC's concern in Number 4 be acknowledged by CIRNAC,
24 so that we are not required to specifically update the
25 Doris-Madrid water management plan as a condition of
26 this licence. I just want to confirm that with CIRNAC.

1 MR. DEWAR: Koana, Mr. Chair. Spencer
2 Dewar, Crown-Indigenous Relations and Northern Affairs
3 Canada.

4 Yeah, we discussed it with TMAC. Originally, we
5 would have liked to have seen that under the
6 Doris-Madrid water management plan, but we recognize
7 under the NIRB Project Certificate Number 5, we
8 understand that the information that we were seeking
9 will be included in another plan. We understand that
10 will be determined after the post-Project Certificate
11 workshop, so we're satisfied with that.

12 THE CHAIR: Okay, thank you. Stephanie --
13 sorry, Teresa?

14 MS. MEADOWS: Thank you, Mr. Chair. Teresa
15 Meadows, legal counsel for the Nunavut Water Board.

16 Mr. Chair, it's my understanding that there are a
17 number of exhibits that TMAC proposes to file before we
18 go into closing statements. So if I can, with your
19 indulgence, go through a number of these with
20 Ms. Kowbel.

21 MS. KOWBEL: Thank you, Mr. Chair.

22 MS. MEADOWS: So, Mr. Chair, Teresa Meadows,
23 legal counsel for the Nunavut Water Board, so I have
24 before me several documents that are -- make up a
25 proposed Schedule J to the Water Licence framework,
26 draft Water Licence framework, being a document

1 entitled "Monitoring locations", "Water monitoring at
2 Madrid sites", and "Proposed water monitoring at Boston
3 mining area", and I propose to file those as the next
4 three exhibits in the public hearing.

5 And then I also have an updated reclamation
6 security table that is an Excel spreadsheet that
7 includes updated security amounts for various
8 components of the proposed projects. So with
9 Ms. Kowbel's confirmation, those are the four documents
10 that I currently have before me in hard copy to file.

11 EXHIBIT 37 - TMAC Resources Inc. (English) hard
12 copy, Table 1-1 Water Monitoring at Madrid Sites

13 EXHIBIT 38 - TMAC Resources Inc. (English) hard
14 copy Proposed Water Monitoring at Boston Mining
15 Area

16 EXHIBIT 39 - TMAC Resources Inc. (English) hard
17 copy Monitoring Locations

18 EXHIBIT 40 - TMAC Resources Inc. (English) hard
19 copy Doris-Madrid Overall Summary

20 THE CHAIR: Thank you. TMAC?

21 MS. KOWBEL: Thank you, Mr. Chair. That is
22 correct; those are the hard copy documents. And I
23 would like to speak to an electronic filing and a
24 filing to come at the correct time. Thank you.

25 THE CHAIR: Thank you. Teresa?

26 MS. MEADOWS: Thank you, Mr. Chair. So

1 Ms. Kowbel, perhaps if you can describe what the
2 document is and your request in terms of keeping the
3 record open till this evening when a revised copy of
4 that document would be filed.

5 THE CHAIR: Thank you. Go ahead, TMAC.

6 MS. KOWBEL: Thank you, Mr. Chair.

7 Christine Kowbel for TMAC. Thank you.

8 So the document that I propose to file
9 electronically is an updated version of the Doris North
10 Licence. We haven't been able to print a copy, and I
11 apologize for not having a copy for you here,
12 Mr. Chair. I have provided an electronic copy of that
13 document to Teresa Meadows, to Karén, and Spencer Dewar
14 and John Donihee, and so that's -- that's an update of
15 the framework document that we've been referring to in
16 these hearings we haven't filed as an exhibit yet, and
17 I ask the Board accept that as an exhibit.

18 THE CHAIR: Thank you. Teresa?

19 MS. MEADOWS: Thank you, Mr. Chair. Teresa
20 Meadows, legal counsel for the Nunavut Water Board.

21 So, Mr. Chair, I can confirm that I have received
22 that in electronic form, and perhaps if I can just ask
23 the parties to confirm that they have also either
24 received it or, if they have not yet received it, if
25 they have an objection to filing this material in
26 electronic form, to please advise me now.

1 So perhaps the Kitikmeot Inuit Association
2 association?

3 MR. DONIHEE: Thank you, Mr. Chair. John
4 Donihee, counsel for KIA.

5 We do have an electronic version of that document
6 provided to us moments ago, and we have no objection to
7 that document being filed in electronic form only.

8 MS. MEADOWS: Thank you, Mr. Chair. Teresa
9 Meadows, legal counsel for the Nunavut Water Board.

10 So perhaps if I can ask Crown-Indigenous Relations
11 and Northern Affairs Canada if they have received the
12 document and/or if they have any objections to filing
13 the electronic copy of this document.

14 MR. DEWAR: Koana, Mr. Chair. Spencer
15 Dewar, Crown-Indigenous Relations and Northern Affairs
16 Canada.

17 We have received the document, and we have no
18 objections with filing it electronically.

19 MS. MEADOWS: Thank you, Mr. Chair. Teresa
20 Meadows, legal counsel for the Nunavut Water Board.

21 And perhaps I'll just ask whether or not
22 Environment and Climate Change Canada have any
23 objections to filing it. I realize that you probably
24 have not received a copy of it but have been in
25 discussions with the parties with respect to the
26 contents of that document, and if you would like to

1 receive an electronic copy, certainly I'm sure that we
2 can make one available to you.

3 MR. SUMMERFIELD: Bradley Summerfield with
4 Environment and Climate Change Canada.

5 That's correct, we haven't received it, but we
6 would defer to our colleagues at CIRNAC to handle
7 matters related to security.

8 MS. MEADOWS: Thank you, Mr. Chair. Teresa
9 Meadows, legal counsel for the Nunavut Water Board.

10 And if I can just confirm with Fisheries and
11 Oceans Canada whether or not they have any objections
12 to receiving the electronic copy of this document.

13 MS. MCLELLAN: Angie McLellan, Fisheries and
14 Oceans Canada.

15 We have no objection to receiving the document
16 electronically. Thank you.

17 EXHIBIT 41 - TMAC Resources Inc. (English)
18 electronic copy Updated Draft Water Licence
19 Framework Doris-Madrid

20 EXHIBIT 42 - TMAC Resources Inc. (English)
21 electronic copy Updated Draft Water Licence
22 Framework Boston site

23 MS. MEADOWS: Thank you, Mr. Chair. Teresa.
24 Meadows, legal counsel for the Nunavut Water Board.

25 So if I can now turn to the next matter, which is
26 a final document that is yet to come in and ask

1 Ms. Kowbel if she can explain to the parties here and
2 to the Board what the request -- the nature of the
3 request to keep the record open is.

4 THE CHAIR: Thank you. Go ahead,
5 Applicant.

6 MS. KOWBEL: Thank you, Mr. Chair.
7 Christine Kowbel for TMAC.

8 My request is with respect to the Boston --
9 proposed Boston Water Licence framework. Similar to
10 the Doris Licence framework, TMAC has updated that
11 document over the course of these hearings, and we
12 discovered just moments before recommencing proceedings
13 this afternoon that there was a technical computer
14 problem, and so we -- we're confident we can deal with
15 that in very short order, but we're requesting that the
16 Board keep the record open only for the purpose of TMAC
17 filing that Boston draft framework electronically
18 tonight. Thank you, Mr. Chair.

19 THE CHAIR: Thank you. Teresa?

20 MS. MEADOWS: Thank you, Mr. Chair. So now
21 I'll poll the parties again whether or not there are
22 any objections to keeping the record open solely for
23 the purposes of filing the draft Water Licence
24 framework for the Boston site. Kitikmeot Inuit
25 Association?

26 MR. DONIHEE: Thank you, Mr. Chairman. John

1 Donihee, counsel for KIA.

2 We have no objections. We would like to see a
3 copy of it as well though when it's circulated. Thank
4 you.

5 MS. MEADOWS: Thank you, Mr. Chair. Teresa
6 Meadows, legal counsel for the Nunavut Water Board.

7 And if I can ask Crown-Indigenous Relations and
8 Northern Affairs Canada.

9 MR. DEWAR: Koana, Mr. Chair. Spencer
10 Dewar, Crown-Indigenous Relations and Northern Affairs
11 Canada.

12 We have no objections.

13 MS. MEADOWS: Environment and Climate Change
14 Canada?

15 MR. SUMMERFIELD: Bradley Summerfield,
16 Environment and Climate Change Canada.

17 We have no objections to that.

18 MS. MEADOWS: Thank you, Mr. Chair. Teresa
19 Meadows, legal counsel for the Nunavut Water Board.

20 And Fisheries and Oceans Canada?

21 MS. McLELLAN: Koana, Mr. Chair. Angie
22 McLellan with Fisheries and Oceans.

23 We have no objections.

24 MS. MEADOWS: Thank you, Mr. Chair. Teresa
25 Meadows, legal counsel for the Nunavut Water Board.

26 So, Ms. Kowbel, if we can request to that, at the

1 same time as you provide the electronic copy to the
2 Board and file it, the public hearing record will
3 close, but also we ask that you circulate it to the
4 parties who are present as well, to representatives
5 from the parties who are here at the same time as you
6 send it to me.

7 THE CHAIR: Thank you. Applicant, go
8 ahead.

9 MS. KOWBEL: Thank you, Mr. Chair.

10 Yes, when TMAC submits that document, we will copy
11 at least one individual from every intervener. Thank
12 you, Mr. Chair.

13 THE CHAIR: Thank you. Teresa?

14 MS. MEADOWS: So thank you, Mr. Chair, and
15 recognizing that there may have been and we talked
16 about the possibility of questions arising out of these
17 additional documents that have been filed, now perhaps
18 it's an opportunity for, before we go into closing
19 statements, to have, around the table again, just to
20 allow parties to ask questions in respect of the
21 documents that have just been filed. Thank you,
22 Mr. Chair.

23 THE CHAIR: Thank you. KIA?

24 MR. ROESCH: This is John Roesch for the
25 Kitikmeot Inuit Association.

26 We have no further questions concerning the

1 submitted documents, either physically or
2 electronically. Thank you.

3 THE CHAIR: Thank you. CIRNAC?
4 Crown-Indigenous Relations and Northern Affairs Canada
5 Comments

6 MR. PARSONS: Thank you, Mr. Chairman. Ian
7 Parsons, Crown-Indigenous Relations and Northern
8 Affairs Canada.

9 No questions, but we just have a couple of, I
10 guess, edits with regards to the Doris Licence
11 framework that we were talking to TMAC with, but they
12 basically told us that they could make no more edits at
13 this time. So in talking with the Water Board, I was
14 requested to put it on the record. So just bear with
15 me, and I'll -- it's only probably four or five minor
16 edits, but ...

17 So our first comment is with regards to the scope,
18 and under the "additional scope based on the amendment
19 application number 2, which includes". So with regards
20 to all the items that TMAC has listed, we would also
21 like added the industrial process water treatment plant
22 or the industrial wastewater plant, I'm not quite sure
23 of the exact wording, but we would like that item added
24 to the scope.

25 With regards to Part C, Item 1, "Conditions
26 applying to security", so with Item 1, we would like

1 this item to capture the specific amount that the
2 Minister would be holding and then, following that,
3 would be the tables and all the descriptors for each of
4 the tranches.

5 Under the same part, so Part C, Item 15, and that
6 part basically lists all of the triggers of the
7 tranches, and rather than grouping them all the
8 together like this, we'd like to see that each one has
9 its own individual item; that way there's no confusion,
10 and things are -- has its own item.

11 The next one has to do with just some inconsistent
12 wording, and there's a number of places, and I haven't
13 captured them all, but one place is under Part D, Item
14 27, and it talks about contact water control ponds.
15 They have pollution cancelled out, but we found
16 pollution control ponds mentioned in other place, as
17 well as sedimentation ponds. And in talking with TMAC,
18 they said that they've captured most of these in the
19 updated one that's been filed with the board, so we
20 just wanted to put that out there as well, that we'd
21 seen some inconsistency when it comes to the wording of
22 the control ponds.

23 The next one is Part E, Item Number 1, "Conditions
24 applying to the use of water", and in talks with TMAC,
25 they have confirmed that the updated version has
26 included the 60,000 cubic metres of water for ice road

1 construction. In this version I have, it wasn't there,
2 so -- but they've confirmed that it is there in the
3 updated version.

4 Under Part G, conditions applying to waste
5 management and waste management plans, Item 5 lists a
6 landfill management plan. In talks with TMAC, they
7 confirm that it's not the same as the nonhazardous
8 landfill management plan, and this management plan is
9 actually going to be an addendum to that nonhazardous
10 management plan. So we just want to make sure that
11 there's no confusion, and the wording surrounding that
12 is appropriate.

13 Still under Part G, Item 23 talks about: (as
14 read)

15 The licensee shall submit to the Board for
16 approval in writing at least three months
17 prior to the anticipated use of de-icing
18 fluid a plan to manage aircraft de-icing
19 fluid used as the all-weather airstrip.

20 We feel that this has been already -- been submitted
21 with a prior licence, and it should be taken out. It's
22 already in place. It's redundant.

23 And that's all my comments on the Doris-Madrid
24 Water Licence draft framework. Thank you.

25 THE CHAIR: Yeah, thank you. Then
26 Environment and Climate Change Canada?

1 MR. SUMMERFIELD: Thank you, Mr. Chair. It's
2 Bradley Summerfield with Environment and Climate Change
3 Canada.

4 We have no further questions.

5 THE CHAIR: Thank you. And then DFO?

6 MS. MCLELLAN: Koana, Mr. Chair. Angie
7 McLellan with Fisheries and Oceans Canada.

8 We have no further questions. Thanks.

9 THE CHAIR: Thank you. Staff?

10 MS. AUTUT: Thank you, Mr. Chair.
11 Stephanie Autut with the Board.

12 We have some questions.

13 Nunavut Water Board Further Questions TMAC Resources
14 Inc.

15 MR. DONALD: This is Derek Donald with the
16 Nunavut Water Board. My question is with respect to
17 the proposed monitoring programs for looks like at
18 Boston and then at Madrid, I just want to clarify
19 that -- or have TMAC clarify that the proposed suite of
20 monitoring parameters would be the same for Boston as
21 the Doris site.

22 THE CHAIR: Thank you, go ahead,
23 Applicant.

24 MR. CURRAN: Thank you, Mr. Chair. Oliver
25 Curran with TMAC.

26 Yeah, that's correct, Derek, for the most part.

1 So, for example, contact water ponds across the belt
2 should have the same criteria. Fuel tank farms, for
3 example, the criteria for that, for discharge should be
4 similar across the belt.

5 The one exception is the pond at Boston, the surge
6 pond, so that pond is designed for offspec. water for
7 contact water ponds at Boston for the water -- for the
8 process plant at Boston or the mill. So it's basically
9 that one has a larger suite of parameters only because
10 it has -- it's receiving waters from many sources. So
11 we've proposed more criteria for those, but, for
12 example, the limits, the criteria would be similar to
13 other water sources on the belt.

14 MR. DONALD: Thank you. Derek Donald,
15 Nunavut Water Board.

16 One final question, could you, I guess, just
17 briefly go over the changes to security that -- from
18 the previous version to this final version that you
19 mentioned or that you've submitted just to clarify, I
20 guess, what aspects of security specifically changed so
21 that you came to the agreement with CIRNAC?

22 DR. RYKAART: Maritz Rykaart.

23 I guess the key differences that's been reached
24 over these last few days is in the tranches and in the
25 land and water split.

26 Prior to the table that's been submitted to the

1 Board today, there was initially more tranches proposed
2 by TMAC, and CIRNAC had suggested less tranches. So
3 there was a consolidation of tranches. The key thing
4 there for the Boston site was we had initially proposed
5 more tailing sub-tranches, and we had proposed a
6 greater separation of earth works and other facilities,
7 so we consolidated.

8 The -- at the Doris and Madrid sites, again, TMAC
9 had originally proposed more tranches. We had
10 Madrid -- for example, Madrid North earth works as a
11 tranche, Madrid North buildings as a tranche, and
12 Madrid North mining as a tranche, but we consolidated
13 that to just Madrid North.

14 And, similarly, for Madrid South, TMAC also
15 proposed four sub-tranches for tailings, which has now
16 been consolidated into just two. And TMAC had proposed
17 six sub-tranches for the wind turbines, which has now
18 been reduced to three. So that's the primary
19 difference as far as tranches goes.

20 As far as the land/water split goes, the key
21 difference was there was agreement quite some time ago
22 between TMAC and the Kitikmeot Inuit Association on the
23 proposed split as it is on the table today. Initially,
24 CIRNAC was more towards a 50/50 split, but in
25 discussions, they ultimately agreed to the proposal by
26 Kitikmeot Inuit Association and TMAC, which leads to

1 the split that's on the table today.

2 So those are the key differences, and I've -- in
3 my response to Karén earlier in questioning, I
4 explained the financial differences, and I'm happy to
5 go through those again if it's of value to you.

6 MR. DONALD: Thank you.

7 THE CHAIR: Thank you. So we are done
8 with the questioning?

9 MS. AUTUT: (NO VERBAL RESPONSE)

10 MS. MEADOWS: (NO VERBAL RESPONSE)

11 THE CHAIR: Now, we can move on to closing
12 remarks of the applicants and parties. I'd like to
13 start with Kitikmeot Inuit Association.

14 Closing Remarks by Kitikmeot Inuit Association

15 MR. ROESCH: Thank you, Mr. Chairman. This
16 is John Roesch for the Kitikmeot Inuit Association.

17 I wish to thank the Nunavut Water Board for
18 hosting this public hearing. Also wish to thank TMAC
19 Resources for its cooperation throughout the
20 development of Phase 2 in resolving all technical
21 issues, and I also wish to thank TMAC and CIRNAC for
22 resolving the final issue concerning overall security
23 for Phase 2 for both Madrid, Doris-Madrid, and Boston,
24 and to resolve the land/water split as well.

25 We're very grateful for this. We consider this a
26 great success. We have eliminated potential

1 overbonding for this project, which financially helps
2 out the company. The KIA has always strongly supported
3 the development of the Hope Bay Belt right from Phase 1
4 right into Phase 2. We have our framework agreement
5 with TMAC Resources; we have our IIBA; we expect to
6 work with TMAC in employing Inuit within this reason,
7 have them trained, and the financial security of the
8 company is also our concern, since we have our
9 shareholders, and we receive net smelter royalties from
10 the company. So we strongly support the project, and
11 we thank everyone for their participation. Thank you.

12 THE CHAIR: Thank you. Can I ask CIRNAC
13 for closing remarks?

14 Closing Remarks by Crown-Indigenous Relations and
15 Northern Affairs Canada

16 MR. DEWAR: Koana, Mr. Chair. Spencer
17 Dewar, Crown-Indigenous Relations and Northern Affairs
18 Canada.

19 Thank you Board, thank you Staff, thank you
20 community of Cambridge Bay, thank you to TMAC, and all
21 the fellow interveners that are here, and thank you to
22 the translators, and a special thank you to Henry's
23 daughter for that bannock; I think it was
24 life-changing.

25 The department has no outstanding concerns with
26 this project at this time. The department is in

1 agreement with Kitikmeot Inuit Association and TMAC
2 regarding the overall security quantum. Further, we
3 have agreement on how the security is held and when it
4 is required to be posted by TMAC.

5 In closing, we thank the Board for its work to
6 date, and we wish you success in your deliberations.

7 Koana.

8 THE CHAIR: Yeah, thank you. Thank you,
9 CIRNAC.

10 Next I'd like to call the Environment and Climate
11 Change Canada for closing remarks.

12 Closing Remarks by Environment and Climate Change
13 Canada

14 MR. SUMMERFIELD: Thank you, Mr. Chair. Bradley
15 Summerfield with Environment and Climate Change Canada.

16 We'll keep it brief. We'd just like to thank the
17 Board for running a good hearing here, the community of
18 Cambridge Bay for having us, TMAC for always being
19 willing to meet with us and discuss our issues, the
20 translators, and our fellow interveners. Thank you.

21 THE CHAIR: Thank you. The last
22 interveners, DFO, closing remarks?

23 Closing Remarks by Fisheries and Oceans Canada

24 MS. McLELLAN: What can I say that hasn't
25 been said? Koana, Mr. Chair, Angie McLellan with
26 Fisheries and Oceans.

1 On behalf of our department, I wish to sincerely
2 thank you, the Panel, the Nunavut Water Board Staff,
3 and for the opportunity to present Fisheries and Oceans
4 Canada's technical issues and recommendations at this
5 public hearing, which were resolved collaboratively
6 with the Proponent ahead of time.

7 I'd also like to acknowledge the ongoing input
8 from the Kitikmeot Inuit Association, and I'd also like
9 to thank my fellow interveners, and to the community of
10 Cambridge Bay for hosting us, and for their community
11 questions. Koana, thank you.

12 THE CHAIR: Thank you. And then I'd like
13 to call the Applicant, TMAC, to have closing remarks.
14 Closing Remarks by TMAC Resources Inc.

15 MR. CURRAN: Thank you, Mr. Chair. Oliver
16 Curran with TMAC.

17 Although it has been a short hearing, I know this
18 has been a long week for everyone, so I'll try to keep
19 it brief, although I am taking some notes and
20 encouragement from my lawyer, so it may not be as brief
21 as we all want.

22 So we first want to thank John Roesch and the
23 Kitikmeot Inuit Association who participated in these
24 hearings and have provided leadership and clear advice
25 regarding the licensing matters.

26 I also want to thank Crown-Indigenous Affairs

1 [sic], Fisheries and Oceans Canada, Environment and
2 Climate Change Canada for their participation in the
3 process, and, of course, I would like to thank the
4 Board Members and the Staff of the Nunavut Water Board
5 for running an efficient hearing on the compressed
6 timeline that we had this week.

7 For the Board's consideration, we have filed or
8 will be filing an updated draft amendment for the Doris
9 water licence and a draft Boston water licence
10 framework. We hope the drafts provide helpful guidance
11 as you determine what licence terms and conditions are
12 appropriate for the project.

13 In closing, TMAC would like to emphasize four key
14 topics for the Board: TMAC requests that the Board
15 adopt CIRNAC, TMAC's, and the Kitikmeot Inuit
16 Association's recommended approach to tranche or staged
17 security bonding. TMAC requests that the Board adopt
18 CIRNAC's, TMAC's, and KIA's recommended approach to the
19 division of security between the Minister and KIA.
20 TMAC needs to maintain Type "B" Water Licences for
21 exploration purposes at the same time as the Type "A"
22 Water Licences are in use for production mining. TMAC
23 requests that the Board adopt the discharge criteria
24 set out in the draft water licences filed as exhibits
25 in these hearings.

26 We are very pleased that TMAC, the KIA, and CIRNAC

1 have come to an agreement on the global reclamation
2 security quantum, staged bonding, and the amounts to be
3 held by each party. This agreement comes after
4 numerous meetings and represents significant work by
5 all parties.

6 TMAC recognizes and supports that the reclamation
7 bond fully accounted for the closure of the project in
8 the unlikely event that TMAC fails to complete its
9 obligations. However, as TMAC has also emphasized, it
10 is also important that the reclamation security posted
11 with the Minister and the KIA must not significantly
12 exceed the reclamation liability at site at any point
13 in time.

14 Letters of credit are very expensive for the
15 company to maintain, and if TMAC was required to post
16 the entire global reclamation security amount at
17 Doris-Madrid and at Boston upon issuance of the water
18 licences, it would significantly constrain our ability
19 to operate. Overbonding is a significant concern for
20 those investing in Nunavut and mining projects in
21 Nunavut.

22 We are preventing overbonding in two ways. The
23 first way we are preventing overbonding is similar to
24 the Back River project, where TMAC has proposed posting
25 of security in tranches or stages so that TMAC is not
26 required to post the full reclamation bond for

1 infrastructure or tailings deposition years in advance.

2 TMAC, the KIA, and CIRNAC have all agreed that a
3 staged bonding approach is appropriate. TMAC, CIRNAC,
4 and the KIA are asking that the Board adopt our agreed
5 staging approach in the amended Doris and the new
6 Boston Water Licence.

7 The second way we are preventing overbonding is
8 ensuring that the appropriate allocation to the
9 Minister and the KIA is correct. With respect to
10 discharge criteria, we've designed our project to be
11 protective of water quality. We have suggested
12 discharge criteria to the Board that are consistent
13 with the existing criteria under the Doris Type "A"
14 Water Licence, and we note that we will also be
15 required to follow the metal and diamond mine effluent
16 regulations, which were just updated to include more
17 stringent standards in June of 2018.

18 TMAC is very confident that following the existing
19 criteria set by the Board for the Doris Project as well
20 as the recently updated metal and diamond mining
21 regulations discharge criteria will be protective of
22 the environment.

23 Finally, as we have emphasized throughout this
24 process, TMAC is of the view that it is important for
25 us to maintain all of its current Type "B" Water
26 Licences which permit surface and advanced exploration

1 when the amended Doris Type "A" and Boston Type "A"
2 Water Licences are issued. All exploration activities
3 would remain under the thresholds for Type "B" Water
4 Licences set out in the Nunavut waters regulations, and
5 production mining activities would take place under the
6 Type "A" Water Licences only. We view this as an
7 important -- we view this as important as exploration
8 activities are inherently subject to more frequent
9 changes and so trigger amendments to the water licence,
10 and the administrative flexibility offered by the "B"
11 Water Licences is designed to better suit exploration
12 activities.

13 TMAC should not be required to operate under a
14 Type "A" Water Licence for exploration activities that
15 are below the water use and waste thresholds set out in
16 the regulations.

17 In conclusion, we are confident that this project
18 meets the very high standards of the Nunavut Water
19 Board. TMAC, the Kitikmeot Inuit Association, and the
20 regulatory authorities have taken a very collaborative
21 approach, and we believe the results are mines that
22 will operate in a way that is protective of Inuit and
23 the Nunavut lands and waters. Our project will have
24 stringent standards for monitoring and mitigation, and
25 we are very pleased at the very high degree of
26 consensus we have reached for this project.

1 I would like to thank everyone in this room for
2 their willingness to engage and share advice,
3 knowledge, and feedback, which we have incorporated.

4 The Phase 2 project was first proposed in 2011,
5 and we are now near the end of a three-year intensive
6 environmental assessment and water licensing process.
7 However, we recognize much of the work of the Nunavut
8 Water Board is just beginning, and we look forward to
9 reading your decision in the coming weeks. Thank you.

10 THE CHAIR: Thank you. Thank you, TMAC,
11 for your closing remarks.

12 Closing Remarks by the Chair

13 THE CHAIR: As we bring this public
14 hearing to a close, on behalf of the Board and my
15 fellow Panel Members, I would like to thank all the
16 parties who contributed to making this public hearing
17 and community session a success, especially the
18 Applicant, TMAC Resources Incorporated; the
19 interveners, Kitikmeot Inuit Association,
20 Crown-Indigenous Relations and Northern Affairs Canada,
21 Environment and Climate Change Canada, Fisheries and
22 Oceans Canada; and Staff, NWB Staff and legal counsel;
23 interpreters, Ben Kogvik, and Henry Ohokannoak; court
24 reporter, Karoline Schumann; audio facilitator from the
25 NIRB, William Nicoll; all the community members and
26 Elders for their valued participation in this hearing.

1 Thanks also to the caterers from The Northern
2 Store of Cambridge Bay for their outstanding
3 hospitality and patience with the Board.

4 As we are at the end of the hearing, I will now
5 make some comments to let parties know what happens
6 next for the applications.

7 The public hearing record will remain open only
8 until the revised draft water licence framework for the
9 Boston site is provided by TMAC tonight. Once that
10 document is received tonight, the public hearing record
11 will close, and no further evidence will be received by
12 the Panel.

13 Once records are closed, the Board will remit the
14 file to the Panel to decide whether or not to grant the
15 TMAC's request for a new Type "A" Water Licence and
16 amendment to the existing Type "A" Water Licence.

17 Within 30 days to 45 days after the public hearing
18 record closes, the NWB will issue its record of
19 proceedings and decision to the Minister of Minister of
20 Intergovernmental Affairs, Northern Affairs, and
21 Internal Trade. If the Board's decision is to grant
22 the applications, a draft of the new Type "A" Water
23 Licence and an amendment to a Type "A" Water Licence
24 would be attached for the Minister's consideration.

25 That concludes the public hearing component of the
26 Nunavut Water Board's consideration of the Type "A"

1 Water Licence applications for the development of
2 Phase 2 Hope Bay Belt Project.

3 The Board and I wish you all a good evening, and,
4 to all visitors to Cambridge Bay, we wish you safe
5 travels returning home.

6 Thank you, and I'd like to call once again Henry
7 Ohokannoak to have a closing prayer. Let us stand.

8 (CLOSING PRAYER)

9

10 PROCEEDINGS CONCLUDED

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

1 CERTIFICATE OF TRANSCRIPT:
2

3 I, Karoline Schumann, certify that the foregoing
4 pages are a complete and accurate transcript of the
5 proceedings, taken down by me in shorthand and
6 transcribed from my shorthand notes to the best of my
7 skill and ability.

8 Dated at the City of Calgary, Province of Alberta,
9 this 4th day of November, 2018.

10

11

12

13

Karoline Schumann

14

Karoline Schumann, CSR(A)

15

Official Court Reporter

16

17

18

19

20

21

22

23

24

25

26



1	EXHIBITS ENTERED	
2	OCTOBER 25, 2018	
3		PAGE NUMBER:
4	EXHIBIT 34 - TMAC Resources Inc.	186
5	(English) hard copy PowerPoint slides	
6	(1-3) Summary of Draft Doris-Madrid and	
7	Boston [Draft Water Licence Framework]	
8		
9	EXHIBIT 35 - Kitikmeot Inuit Association	219
10	(English) hard copy PowerPoint Final	
11	Submission on Hope Bay Project Phase 2	
12	Type "A" Water Licence Application	
13		
14	EXHIBIT 36 - Kitikmeot Inuit Association	219
15	(Inuinnaqtun) hard copy PowerPoint Final	
16	Submission on Hope Bay Project Phase 2	
17	Type "A" Water Licence Application	
18		
19	EXHIBIT 37 - TMAC Resources Inc.	252
20	(English) hard copy, Table 1-1 Water	
21	Monitoring at Madrid Sites	
22		
23	EXHIBIT 38 - TMAC Resources Inc.	252
24	(English) hard copy Proposed Water	
25	Monitoring at Boston Mining Area	
26		

1	EXHIBIT 39 - TMAC Resources Inc.	252
2	(English) hard copy Monitoring Locations	
3		
4	EXHIBIT 40 - TMAC Resources Inc.	252
5	(English) hard copy Doris-Madrid Overall	
6	Summary	
7		
8	EXHIBIT 41 - TMAC Resources Inc.	255
9	(English) electronic copy Updated Draft	
10	Water Licence Framework Doris-Madrid	
11		
12	EXHIBIT 42 - TMAC Resources Inc.	255
13	(English) electronic copy Updated Draft	
14	Water Licence Framework Boston site	
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		

A	161:23,26	address (2)	Affairs (40)	210:9 211:14
A"s (1) 197:1	162:24 168:13	250:12,22	139:15,25 140:1	221:15 226:9,15
abandonment (4)	168:22 169:2,8	addressed (3)	140:7 141:21	226:17 227:15
190:4 227:3	169:23 170:23	228:3 238:3	142:5 178:5	228:6,7 235:1
233:18 234:9	172:26 173:13	244:5	179:3 187:17	241:9 248:23
abbreviations (1)	175:1,26 176:2	adequate (3)	190:9 192:10,12	263:21 264:21
179:3	176:20 178:15	213:11 226:17	199:12 212:2	266:4 267:1,3
ability (6) 156:14	181:22 183:11	226:23	224:24 229:10	270:1,3
157:20 159:25	184:12,13	adequately (1)	232:21 233:5	ahead (26) 143:5
183:26 270:18	195:20 203:5	215:16	234:6 237:8,18	143:7 182:10
276:7	204:11,20,24	adjournment (5)	238:25 240:11	192:10 215:6
able (3) 181:10	207:24 272:2,5	182:6 218:13	245:22,24 249:5	219:9 224:22
247:22 253:10	272:8,12,14	247:5,16 248:4	249:10 251:2	230:9,10 231:3
Absolutely (1)	activity (3)	adjusted (2)	254:11,15 257:8	231:20 233:22
216:20	174:16 181:10	191:6,10	257:10 259:4,8	235:8 236:24
accept (1) 253:17	204:22	adjustments (1)	266:15,17	238:10 239:8
acceptable (1)	actual (2) 175:11	199:21	268:26 273:20	241:10,20 242:5
236:10	216:6	Administration...	274:20,20	242:5 245:11
accepting (1)	adapt (1) 183:23	141:13	Affairs' (1)	253:5 256:4
234:4	adapted (2)	administrative ...	190:17	258:8 262:22
accounted (4)	183:26 184:8	272:10	affect (3) 150:21	268:6
202:3,15 203:10	add (6) 146:24	Administrator (...)	168:13 177:20	Aimaokatalok (...)
270:7	160:17 189:6	141:15	afternoon (4)	158:20,22,25
accurate (1)	216:9 242:8	adopt (5) 201:2	218:15,16,17	159:4 160:25
276:4	245:14	269:15,17,23	256:13	163:9 164:13
accurately (1)	added (8) 185:26	271:4	agenda (4) 218:16	166:8,11,13
176:6	188:2,23 202:8	advance (4) 181:9	229:16 247:3	167:2,10 211:11
acid-generating...	204:5 216:22	181:10 197:13	249:2	aims (1) 182:24
143:25 149:23	259:21,23	271:1	ago (3) 237:5	aircraft (1)
177:14	addendum (1)	advanced (3)	254:6 264:21	261:18
acknowledge (4)	261:9	148:10 208:6	agree (6) 178:22	airstrip (1)
213:21,24,24	adding (1) 189:5	271:26	215:15 234:19	261:19
268:7	addition (1)	advances (3)	235:3,4 237:9	Alaska (1) 146:14
acknowledged (1)	201:15	148:10 150:14	agreeable (1)	Alberta (1) 276:8
250:23	additional (22)	216:21	227:17	algae (2) 163:17
acknowledgme...	150:13,13 158:2	advice (2) 268:24	agreed (19)	163:18
249:18	158:2 165:12	273:2	178:11 179:4,15	align (2) 189:17
Act (3) 162:8	166:15 185:26	advise (5) 181:8	179:18,21,26	248:22
168:9,9	186:2 197:19	182:3 195:16	180:3 187:18	alignment (2)
actions (3) 162:14	198:13,18 202:6	213:20 253:26	198:12 201:3	201:16,19
165:4 250:19	202:7 203:13,17	Advisor (1)	202:9 203:1	all-weather (2)
active (1) 250:19	212:8 224:3	141:14	215:15 220:10	232:1 261:19
actively (1)	239:3 245:7	Advisory (2)	220:14 244:13	alleviate (1)
179:13	249:3 258:17	169:10 170:16	264:25 271:2,4	234:24
activities (34)	259:18	AEMP (5) 164:21	agreement (24)	allocation (2)
153:24 161:8,14	additionally (1)	166:6 211:4	178:3 187:22	220:20 271:8
	229:7	239:17 243:20	200:1,9 208:22	allocations (1)

177:7	221:25,26	apologize (1)	201:24 202:20	157:22,23
allow (3) 216:2,4	222:20,23	253:11	202:23 203:1	158:13 162:21
258:20	232:10 234:9	appended (1)	204:3 269:16,18	162:23,26 163:6
allowance (1)	237:9 260:1	217:15	271:3,5 272:21	163:10 167:15
203:13	270:16	applicable (3)	appropriate (6)	167:18,23 172:1
allowed (2) 179:2	amounts (7)	161:11,19	159:11 174:7	173:7,8,9
230:16	187:26 188:10	169:26	261:12 269:12	176:23,24
allows (6) 148:12	188:12 213:2	Applicant (11)	271:3,8	177:12 190:15
151:2 152:6	247:19 252:7	141:19 143:6	approval (11)	206:8,15,24
159:25 171:17	270:2	182:9 215:6	178:12 187:9,12	207:1,13,15
181:7	analyses (2) 148:9	231:4 248:15	187:26 198:23	216:21 222:1,9
alternative (1)	165:13	256:5 258:7	199:2,2,4,16	222:21,21,24,26
145:18	analysis (1)	262:23 268:13	236:8 261:16	223:8,11 252:3
alternatives (1)	250:20	273:18	approved (7)	252:15 277:25
145:3	analyze (1) 191:7	Applicant's (1)	161:15 164:15	areas (15) 146:12
Amazon (1)	analyzing (2)	143:5	178:13,22	147:22 153:13
216:15	191:9,11	applicants (2)	183:25 199:6	159:19 164:25
amend (1) 198:4	ancillary (1)	191:23 265:12	250:7	165:16 166:21
amended (4)	156:18	application (15)	approximately ...	166:21 171:22
196:24 236:2	and/or (2) 168:11	138:11,12 143:4	179:21 180:2	171:23 193:18
271:5 272:1	254:12	160:7,14 178:18	188:9	196:7 203:6
amendment (30)	Angie (9) 192:24	185:2 214:15	aquatic (29)	216:15 219:21
138:12 188:1,18	225:8 230:2	218:3,3 219:4,8	162:5 164:7,9	arising (1) 258:16
199:16,22	240:15 245:12	259:19 277:12	164:15,22,24,26	arrive (1) 185:11
226:24 234:1,13	255:13 257:21	277:17	164:26 165:1,6	arsenic (1) 250:13
234:13,14,22,25	262:6 267:25	applications (5)	165:14,23 166:6	asked (8) 149:10
235:7,15,16,17	animals (2)	188:25 219:26	189:21,24 190:1	160:14,20 161:2
235:19,21,25	143:23 177:1	274:6,22 275:1	210:2,6,12,15	202:10 212:6
236:13,14,21	annual (10)	applied (2)	210:23 212:5	214:14 216:18
237:3,11,26	183:11,12	203:26 209:22	219:22 220:2	asking (1) 271:4
238:3 259:18	188:12 227:10	applies (3) 158:9	239:17 240:25	asks (1) 215:11
269:8 274:16,23	227:20 233:11	181:6 204:21	243:10,15 244:3	aspects (2) 150:21
amendments (3)	235:26 236:3,18	apply (2) 159:3	Arctic (4) 146:11	263:20
190:22 236:23	243:23	160:10	146:16 216:6,24	assess (3) 162:10
272:9	annually (3)	applying (5)	area (73) 143:12	165:17 166:7
amount (37)	188:9 213:1	194:10 208:11	143:14,16,18	assessed (2) 161:7
148:6 156:9	226:10	259:26 260:24	144:16,25,26	161:14
160:24 161:1	answer (3) 210:7	261:4	145:2,8,15,16	assessment (10)
173:10 178:11	215:9 231:7	appreciate (3)	146:20,26	142:10 145:4,7
179:19,19,20,26	answers (2)	214:2 231:18	147:14 148:7	145:9 164:19
180:1,5,7,9,15	196:18 217:7	247:21	149:9 150:11,12	166:1 189:10
188:8 199:15	anticipated (2)	appreciated (1)	150:19,19 152:9	194:15 197:1
201:4 202:3,5	169:7 261:17	193:12	153:24,25	273:6
202:18 206:22	anybody (1)	approach (18)	154:10,12,15,15	assign (2) 177:6,8
206:25 207:11	151:23	173:20,20 174:1	154:23 155:25	assigned (2)
207:14 220:11	apologies (2)	174:3 176:7	156:7,8,17,24	177:23,24
220:14 221:20	186:10 231:14	182:15,23 183:1	156:26 157:4,5	associated (18)

164:2 166:3 177:18,18 181:14 184:15 189:23 191:4 195:19 197:10 200:22 201:22 203:3,6,14 247:18 association (55) 139:11,13 140:5 142:2 165:11,25 170:12 176:16 177:25 178:4 179:2,17 180:6 180:10 181:21 187:16 192:2 205:26 209:1 218:19,23 219:2 219:5,11,13,16 225:13,22 228:1 228:5 229:17,20 233:10 237:8 240:4,7 245:17 245:19 248:24 254:1,2 256:25 258:25 264:22 264:26 265:13 265:14,16 267:1 268:8,23 272:19 273:19 277:9,14 Association's (1) 269:16 assume (1) 202:21 assumed (2) 201:9,13 assumption (1) 196:23 attached (1) 274:24 attended (1) 169:10 attracted (1) 183:20 audio (1) 273:24 authorities (1) 272:20 authority (1)	237:20 authorizations (...) 162:9 168:10,17 168:19,23 169:26 235:6 authorized (5) 196:1,9 197:12 208:5,6 Autut (30) 141:11 193:4,5 214:10 214:11 225:23 225:24 227:25 227:26 228:12 232:17,18 233:23,24 234:16 237:13 237:14 238:6,6 238:14 243:3,4 244:14,15 246:9 248:12,13 262:10,11 265:9 available (6) 153:26 154:1 201:13 229:13 239:2 255:2 avoid (3) 160:21 177:1 183:5 awaiting (1) 247:13 aware (2) 186:18 235:18 awareness (1) 183:17 B B (30) 141:13 142:10,18 166:19 167:26 168:5 185:21 187:4,14 190:24 195:15,15,17,17 196:1,10,22 197:5,13,16,21 197:26 198:2,4 208:7 232:5 269:20 271:25 272:3,10	BACI (1) 168:2 back (25) 144:12 146:17 147:7,10 148:18 151:2 153:8,19 156:8 182:8 195:5 198:4 207:19 211:10 214:8 218:10,15 231:16 246:25 247:7,22,25 248:2,6 270:24 back-and-forth ... 211:3 backfill (2) 151:4 153:8 backfilled (1) 195:7 balance (5) 159:8 159:9,21 160:8 250:16 bannock (1) 266:23 bars (4) 153:13,15 153:17,17 based (14) 160:7 163:23 174:23 183:23,26 190:7 200:18 202:3,23 206:1 215:14 220:19 239:14 259:18 baseline (4) 162:19 163:22 169:17 170:7 basically (5) 147:11 159:16 259:12 260:6 263:8 basis (3) 183:13 223:23 236:3 Bay (35) 138:25 141:1 142:3 143:3 151:1 154:13,16,17,25 157:4,24 158:13 163:26 168:18	168:19 170:6,23 193:16 217:11 219:3,7,14,18 219:25 220:26 224:12 266:3,20 267:18 268:10 274:2 275:2,4 277:11,16 BDC (1) 221:12 beaches (1) 147:1 bear (1) 259:14 beds (1) 168:16 began (1) 211:18 beginning (1) 273:8 behalf (2) 268:1 273:14 belabour (1) 242:7 believe (9) 176:18 179:23 205:19 210:4 212:13 224:13 233:9 236:1 272:21 believes (2) 222:11 223:12 belt (17) 162:19 163:26 165:15 166:6 168:18 170:2,23 184:12 184:21 217:11 241:17 242:11 263:1,4,13 266:3 275:2 belt-wide (2) 164:23,25 Ben (1) 273:23 benefit (3) 179:14 187:1 193:12 benefits (1) 224:11 benthic (2) 163:19 167:13 berm (1) 214:23 berms (4) 147:23 147:24 148:12 148:25	best (11) 145:5,5 145:11,25 153:26 154:1 174:17,18,19 224:15 276:6 better (5) 174:3 175:23,24 176:13 272:11 beyond (2) 150:14 202:7 big (5) 144:7 147:1,18,21 176:3 biggest (3) 176:19 204:11,24 Biologist (2) 142:13,15 biology (1) 165:24 biophysical (1) 184:26 bit (11) 147:20 154:17 160:13 179:5 186:22 188:14 194:20 194:21 208:19 211:1 238:10 black (5) 153:14 153:17 186:20 186:24 206:16 blanket (1) 202:20 block (1) 172:7 blown (1) 167:18 blue (1) 154:11 blue/green (1) 143:18 board (154) 138:3 139:8,12,14,20 139:22 140:3 141:5,10,13 143:10 150:17 160:5 173:24 178:22 179:14 181:8 183:13,14 185:8,18,24 186:10 187:1,9 187:26 188:25
---	--	--	---	---

189:23 191:2,13 193:2,3,5,9 195:13 196:20 198:6,16,21 199:7,16,23 200:19 203:24 205:1 206:5 207:18 208:9 209:11,25 210:20 211:24 212:12,17,24 213:18 214:11 218:21 219:19 223:25 224:4 225:19,21,24 226:2,20 227:8 227:26 228:2,13 228:24 230:21 231:13 232:8,18 232:20 233:20 233:24 235:5,6 235:10,17 236:6 236:16 237:14 237:15 238:7,13 238:22 239:5 241:6,26 242:9 242:11 243:2,4 243:5,7,9 244:7 244:15 245:1 246:8 247:11,14 247:23 248:8,10 248:13,26 249:6 250:17 251:15 251:23 253:17 253:20 254:9,20 255:9,24 256:2 256:16 257:6,19 257:25 258:2 259:13 260:19 261:15 262:11 262:13,16 263:15 264:1 265:17 266:19 267:5,17 268:2 269:4,4,14,14 269:17,23 271:4 271:12,19	272:19 273:8,14 274:3,13 275:3 Board's (4) 178:1 269:7 274:21,26 boards (2) 169:5 170:21 bolded (1) 188:15 bond (12) 176:10 178:11 180:20 197:16,19 198:2 198:11,13 204:16,19 270:7 270:26 bonded (2) 197:21 198:1 bonding (4) 178:9 269:17 270:2 271:3 bonds (1) 201:24 Boston (96) 145:1 145:9,12,14 147:3 148:2 151:15,16 152:14 153:25 154:16 158:21 158:21 160:23 162:26 163:10 164:25 166:17 166:21 172:1 173:6 176:24 177:11 179:19 180:1,8 181:12 182:19 184:10 184:19 185:19 186:14,22 188:11 189:11 189:12 190:26 191:12 193:17 195:11,25 196:11,12,14 198:7,10 204:21 204:21 205:7,12 205:14,14,16 207:3,6,12,14 207:20 208:3,26 209:8 212:18,20 220:15 221:3,8	221:10,19 222:18,20,21 224:15 232:3 248:21 252:2,14 255:22 256:8,9 256:17,24 262:18,20 263:5 263:7,8 264:4 265:23 269:9 270:17 271:6 272:1 274:9 277:7,25 278:14 bottom (1) 150:6 box (3) 157:2,19 158:17 bracket (1) 173:26 Bradley (11) 192:18 225:3 229:24 239:11 241:7,21 246:19 255:3 257:15 262:2 267:14 brain (1) 246:24 brand-new (1) 210:18 breach (1) 144:5 breaching (1) 144:7 break (10) 182:1 182:4,5,8 218:6 218:12 247:2,4 247:25 248:2 bridge (2) 172:7,8 brief (6) 219:25 239:13 247:16 267:16 268:19 268:20 briefly (1) 263:17 bring (2) 182:12 273:13 bringing (1) 227:18 brings (2) 173:4 226:17 brittle (5) 214:26 216:20,26 217:2	217:6 brought (2) 220:4 221:5 build (15) 146:8,9 147:14 148:20 149:3 152:17,20 152:25 174:23 176:1 197:13,16 197:18,25 213:9 building (8) 147:21 148:14 152:23 153:1 172:9,10 213:23 222:25 buildings (3) 171:15 197:7 264:11 built (5) 147:17 148:11 174:5 180:26 197:7 bullet (3) 198:23 199:8,9 buttons (1) 167:17 buy (2) 173:8,9	275:6 called (11) 145:23 145:24 151:4 166:19 168:2 176:12 177:2 178:9 181:2 207:7 216:24 Cambridge (8) 138:25 141:1 143:3 266:20 267:18 268:10 274:2 275:4 camp (6) 175:15 176:4 196:11 201:16 202:25 204:10 Canada (102) 139:15,17,19,25 140:2,7,9,10 142:6,9,12 146:12 167:21 169:11 185:6 187:18 190:3,9 192:10,13,17,19 192:22,26 199:13 208:16 209:1,13,19 210:5 211:4,6 211:10 212:3 224:25 225:2,4 225:7,9 229:11 229:23,25 230:1 232:21 233:6 234:7 237:19 238:19,24,25 239:8,9,12,20 239:26 240:12 240:14,16,21,24 241:5,8,18,22 244:2,13 245:4 245:13,22,25 246:12,20 249:5 249:10 251:3 254:11,16,22 255:4,11,14 257:8,11,14,16 257:20 259:4,8
---	--	---	---	---

261:26 262:3,7 266:15,18 267:11,13,15,23 269:1,2 273:20 273:21,22 Canada's (2) 242:8 268:4 Canadian (1) 237:24 cancelled (3) 187:7 196:22 260:15 capacity (1) 147:17 capture (1) 260:1 captured (5) 196:26 209:22 232:2 260:13,18 care (16) 200:5,22 200:25 201:1,5 201:8,10,12,14 201:16,20 203:11,16 204:7 204:14 248:9 carried (1) 161:11 carries (1) 204:24 carry (1) 167:2 case (2) 188:1 199:17 cases (1) 213:12 catchment (2) 154:14,18 catchments (1) 154:10 categories (1) 184:25 caterers (1) 274:1 cause (1) 217:2 causes (1) 177:5 cave (1) 194:26 caveat (1) 209:2 cells (1) 222:26 certain (5) 148:13 167:12 178:15 216:5 227:21 certainly (1) 255:1	Certificate (7) 140:14 183:3 184:6 250:8 251:7,10 276:1 certify (1) 276:3 cetera (1) 171:16 Chair (238) 140:12 141:6 143:2,10 171:1 181:25 182:4,7 182:11 185:23 186:5,6,7,16 191:20,22 192:1 192:8,11,15,18 192:21,23 193:1 193:4,10 195:13 195:21 196:19 197:2 198:8,21 199:11 203:24 204:26 205:20 206:5 208:1,23 210:13 211:7 212:1,23 213:4 213:18 214:5,9 214:10,13 215:6 217:22,25 218:1 218:8,10,15,20 218:26 219:9 224:19,23 225:1 225:3,6,8,11,14 225:17,23 226:2 226:20,26 227:24,25 228:13,14,18,23 228:25 229:9,15 229:22,24 230:1 230:2,5,7,9,11 230:13,19,20 231:3,5,11,12 231:20,21 232:7 232:13,17,23 233:4,22,23 234:5,18 235:8 235:9,22 236:4 236:5,24,25 237:12,13,17 238:5,7,9,15,21	238:23 239:7,10 240:3,6,9,10,14 240:15,18,22 241:10,12,20,21 242:3,6 243:1,3 243:5,9,17 244:8,14,17,21 244:26 245:2,10 245:11,12,16,18 245:21,23 246:1 246:3,6,9,14,15 246:18,23 247:6 247:10,26 248:1 248:6,12,18,25 249:1,7,8,11 251:1,12,14,16 251:21,22 252:20,21,25,26 253:5,6,12,18 253:19,21 254:3 254:8,14,19 255:8,23 256:4 256:6,18,19,20 257:5,9,18,21 257:24 258:7,9 258:12,13,14,22 258:23 259:3 261:25 262:1,5 262:6,9,10,22 262:24 265:7,11 266:12,16 267:8 267:14,21,25 268:12,15 273:10,12,13 Chairman (10) 153:21 154:6 161:4 193:14 218:22 219:12 232:9 256:26 259:6 265:15 change (50) 139:16,19 140:8 142:9 150:20 167:21 187:25 189:20 190:3 192:16,19 199:15 208:15	209:13,19 211:9 215:25 225:2,4 227:5 229:23,25 234:10 235:3,19 236:13 238:2,19 238:24 239:8,9 239:11,26 240:20 241:8,22 244:13 246:12 246:20 254:22 255:4 257:13,16 261:26 262:2 267:11,12,15 269:2 273:21 changed (5) 201:4 202:10 220:9 229:1 263:20 changes (14) 182:18 185:18 186:21 187:3,13 187:25 189:14 189:22,26 190:10 201:18 236:20 263:17 272:9 channels (1) 144:12 characterization... 170:8 characterized (2) 163:7 166:23 chase (1) 193:22 check (2) 144:2 174:1 checked (1) 173:26 chemical (1) 177:5 Christine (7) 186:8,24 230:12 231:6 236:26 253:7 256:7 circled (1) 145:16 circulate (1) 258:3 circulated (3) 186:24 199:26	257:3 circulates (1) 183:14 circumstances (1) 235:14 CIRNAC (65) 179:17,25 185:6 189:19,19 199:10 200:3,11 200:19,23 201:23 202:5,9 202:20 203:7 206:17 210:5,9 211:13,25 218:7 220:25 221:2,6 221:8,11,16,24 222:19 224:2,22 226:8,12,18,21 227:18,21 228:21 229:18 229:21 230:6 232:19,26 233:2 233:26 234:2 237:5,15 238:16 240:9 249:21 250:23,26 255:6 259:3 263:21 264:2,24 265:21 266:12 267:9 269:15,26 271:2 271:3 CIRNAC's (7) 199:20 202:11 203:1 227:1 249:14 250:23 269:18 City (1) 276:8 clarification (4) 213:19 230:13 248:14 249:14 clarified (2) 200:17 241:14 clarify (6) 196:25 232:10,24 262:18,19 263:19 clarifying (2)
---	---	--	---	--

198:24 227:9	251:18 258:18	colour (1) 143:18	170:20 227:19	completed (4)
clarity (3) 190:11	265:11,14	coloured (2)	239:19,24 241:2	148:9 188:5,16
240:2,25	266:13,14 267:5	153:15,17	committee (3)	188:19
clause (4) 188:23	267:11,12,22,23	come (14) 143:23	169:10 170:16	completely (2)
189:9 190:5,11	268:13,14	146:17 177:22	170:18	148:23 204:15
clauses (1) 189:12	269:13 273:11	178:3 194:17	commonly (1)	compliance (1)
clean (8) 149:26	273:12 275:7,8	195:1 205:22	213:7	249:25
152:21 153:10	closure (37)	218:10 247:22	Communicatio...	component (8)
155:14,15,19,20	143:14,20	247:25 248:2	141:13	156:1 157:9
158:9	144:16,20 148:4	252:24 255:26	communities (1)	176:12 191:11
clear (6) 190:20	149:20 150:23	270:1	170:11	201:5 204:17
233:19 236:9	153:14,19 154:5	comes (5) 147:4	community (9)	249:2 274:25
237:2 244:1	171:2,4,9,17,18	155:12 156:4	150:25 161:18	components (7)
268:24	172:25 175:6	260:21 270:3	239:1 266:20	161:15 174:5
clearly (1) 235:13	176:19,23,26	coming (7) 171:9	267:17 268:9,10	176:11 200:16
climate (42)	177:8,18 178:8	201:18 207:19	273:17,25	220:20 223:22
139:16,19 140:8	178:10 185:2	212:14 230:22	community-bas...	252:8
142:9 150:20	190:5,6,12	247:7 273:9	169:15	comprehensive ...
167:21 190:3	200:16 201:17	COMMENCE...	compact (1)	161:10 170:7,10
192:16,19	202:17 203:5	143:1 248:4	213:11	comprehensivel...
208:15 209:13	204:24 222:23	commencement...	compacted (1)	163:7
209:19 211:9	233:1,2 270:7	207:23	148:15	compressed (1)
214:24,25 225:2	clusters (2)	comment (5)	compacting (1)	269:5
225:4 229:23,25	180:26 181:1	183:15 190:8	147:15	computer (1)
238:18,24 239:8	cold (3) 216:6,17	214:7 237:16	compaction (2)	256:13
239:9,11,26	216:24	259:17	148:16,17	concentrator (4)
240:20 241:8,22	collaborative (2)	comments (25)	company (9)	196:6 197:11,18
244:13 246:12	220:3 272:20	140:2 163:26	181:8 194:9	197:24
246:20 254:22	collaboratively ...	164:18 169:11	198:26 199:7	concern (6)
255:4 257:13,16	268:5	170:14 182:16	227:11 266:2,8	143:26 177:6
261:26 262:2	colleagues (1)	185:7,13 186:26	266:10 270:15	239:17 250:23
267:10,12,15	255:6	189:19 190:17	comparative (1)	266:8 270:19
269:2 273:21	collect (6) 148:13	192:4 198:22	167:26	concerning (2)
climates (3) 216:6	152:6 155:16	210:22,25,26	compared (1)	258:26 265:22
216:14,24	163:22 217:17	211:13,17	166:25	concerns (2)
close (10) 145:13	217:20	226:18 237:3,15	compelled (1)	177:4 266:25
148:2 149:24	collected (7)	245:7 259:5	235:11	conclude (3)
171:25 172:14	147:25 152:5	261:23 274:5	compensate (1)	153:21 172:8,9
172:16,16 258:3	153:2 162:19	commercial (4)	169:7	concluded (3)
273:14 274:11	163:3,13 217:10	187:7 207:25	compensated (1)	145:11 173:7
closed (1) 274:13	collecting (2)	208:4 227:15	169:24	275:10
closer (1) 200:7	158:8 217:19	commissioning ...	compensation (3)	concludes (4)
closes (1) 274:18	collection (2)	181:17 207:8	228:2,7 248:23	144:24 191:20
closing (27) 140:5	156:20,21	223:4	complete (6)	249:1 274:25
140:6,8,10,11	collectively (3)	commitment (1)	152:2 171:19	concluding (1)
140:12 230:18	159:25 179:21	250:2	184:4 201:9	182:2
231:2 247:20	217:14	committed (5)	270:8 276:4	conclusion (2)

condition (7) 174:22 188:20 234:26 235:5 250:7,9,25	consider (3) 209:7 235:14 265:25	190:2	260:22	175:5,6,7,8,9,11
conditional (1) 198:25	consideration (...) 150:20 170:13	Consulting (1) 141:23	controlled (1) 222:25	175:13 176:8
conditions (12) 185:22 187:4 208:11 220:25 223:19 224:6,7 250:15 259:25 260:23 261:4 269:11	considered (3) 169:4,16 216:19	consumptive (1) 213:25	controls (1) 182:23	177:8,17 178:8
conduct (2) 145:3 165:11	considering (1) 242:15	contact (16) 143:23 149:25 155:11,12,12,15 156:11,12 158:8 177:1 189:2 195:26 196:15 260:14 263:1,7	conventional (1) 146:23	200:2,11 202:2 202:15,25 203:4 203:10,12,18 204:18 222:23
conducted (7) 162:2 166:16,18 169:18 170:19 220:3,17	considers (1) 145:10	contain (3) 149:6 151:20 155:16	conversation (1) 167:20	costs (20) 173:21 175:7,8,8,12,12 175:21,23 176:5 201:16,17 202:22 203:13 203:14,26 204:5 204:5 221:25 224:1 226:4
conductivity (1) 216:2	consist (1) 146:4	contained (1) 153:2	conveyed (1) 144:12	counsel (29) 141:16,26 142:4 185:24 192:3 218:21 228:24 230:21 231:6,13 235:10 236:6 238:22 245:1 247:11 248:26 251:15,23 253:20 254:4,9 254:20 255:9,24 257:1,6,19,25 273:22
confer (1) 230:8	consistent (4) 150:8,15 189:7 271:12	containment (15) 147:23,23 148:12,19,25 152:2,3,4,13,15 152:26 153:2 154:2 191:5,15	cooperation (1) 265:19	counterbalance... 169:2
confident (3) 256:14 271:18 272:17	consists (2) 144:21 180:16	contaminants (2) 143:26 155:14	cooperatively (1) 170:20	couple (7) 151:26 155:5 182:14 193:6 225:25 243:5 259:9
configuration (1) 150:7	consolidated (4) 222:15 264:7,12 264:16	contents (2) 139:1 254:26	Coordinator (1) 142:10	course (8) 189:4 209:2,3,4 242:10,13 256:11 269:3
confirm (13) 195:23 211:25 228:1 244:9,10 246:21 248:20 249:21 250:26 253:21,23 255:10 261:7	consolidation (1) 264:3	contingency (4) 189:16 203:15 204:4 250:11	copies (2) 186:1 218:22	court (3) 142:20 273:23 276:15
confirmation (5) 234:2,3 246:11 248:15 252:9	constantly (1) 226:14	continue (9) 143:5 169:19 170:17,26 182:9 183:12 205:20 215:20 232:16	copy (31) 186:13 219:3,6 252:10 252:12,14,17,19 252:22 253:3,10 253:11,12 254:13,24 255:1 255:12,18,21 257:3 258:1,10 277:5,10,15,20 277:24 278:2,5 278:9,13	cover (29) 143:20 143:21 144:2,11 144:12,20,21 148:4,21,25 150:3,7,7 172:1 172:23 173:6 176:26 177:2,3
confirmed (2) 260:25 261:2	constrain (1) 270:18	continued (4) 139:7 143:8 163:22 217:17	core (1) 144:6	
confusion (4) 160:22 238:11 260:9 261:11	construct (1) 215:23	continues (1) 228:8	correct (15) 208:3 209:6 213:6 227:13 229:12 233:7 236:7 239:13 241:9,23 252:22,24 255:5 262:26 271:9	
consecutive (3) 162:22 164:1 166:23	constructed (1) 144:26	continuing (2) 145:8 182:14	correctly (2) 197:4 208:5	
consensus (2) 185:11 272:26	construction (16) 155:24 165:26 187:10 188:3,10 188:13,24 207:23 222:14 223:15,20,21 231:25 232:1,5 261:1	contractual (1) 227:14	cost (27) 173:2,24 174:11,15 175:1	
	consultant (1) 220:18	contributed (1) 273:16		
	consultants (2) 203:8 219:20	control (5) 168:2 168:4 260:14,16		
	consultation (3) 167:20 170:11			

177:9,9,15,18 195:8 214:23 215:17 221:26 222:23,24 covered (2) 148:23 220:1 covering (1) 150:4 covers (2) 184:20 204:19 crack (2) 214:25 217:5 cracks (1) 217:2 create (1) 213:13 credit (6) 222:3 222:11 223:3,6 223:8 270:14 criteria (31) 144:4 145:11 148:1 152:7 156:15,16 156:23 157:6 158:12 167:12 189:2,7 191:18 208:25 209:4,7 212:20 241:16 241:18 242:12 244:12 263:2,3 263:11,12 269:23 271:10 271:12,13,19,21 critical (1) 159:9 cross-section (1) 144:15 crossing (1) 170:2 crossings (1) 168:15 crown (15) 193:13,15,23,26 194:6,6,11,16 194:23 195:3,7 195:9,10 220:13 230:15 Crown- (1) 139:14 Crown-Indigen... 139:24 140:1,6 142:5 178:5	179:3 187:17 190:8,16 192:9 192:12 199:12 212:2 224:21,24 229:10 230:14 232:20 233:5 234:6 237:7,18 238:25 240:11 245:21,24 249:4 249:9 251:2 254:10,15 257:7 257:10 259:4,7 266:14,17 268:26 273:20 crushed (6) 144:22 146:4,5 146:22,25 150:5 CSR(A) (2) 142:20 276:14 cubed (1) 188:12 cubic (9) 160:15 160:16 161:1 173:22 174:7 188:9 231:26 232:4 260:26 culvert (8) 168:14 172:6,7,19,20 172:21,21,22 Curran (47) 141:21 181:24 181:25 182:11 182:12 186:16 186:17 195:21 195:22 197:2 198:8,19 208:1 208:2,23,24 210:13,14 213:4 213:5 214:5,6 225:14,15 231:21,22 232:12 234:18 235:22 240:22 240:23 241:12 242:6,7,21 243:26,26 246:3 246:4 248:18,19 249:11,12	262:24,25 268:15,16 current (4) 154:14 179:7 215:14 271:25 currently (10) 164:15 168:17 168:20 179:9 180:19 196:1 206:17,19 221:17 252:10 cutting (1) 144:7 cyanide (1) 165:13 cycle (2) 158:4 236:19 D D (4) 141:14 188:3 190:24 260:13 dam (6) 144:5,6,7 144:8,22 148:7 damaging (2) 216:16,17 dams (1) 147:1 data (9) 162:19 163:3,26 165:8 217:17,19,20 239:19 241:2 date (8) 164:3 186:26 220:8 226:12 227:4,21 236:1 267:6 Dated (1) 276:8 daughter (1) 266:23 day (4) 143:3 149:5 215:21 276:9 days (22) 181:3,9 181:10,17 187:12 198:24 198:25,25 199:1 199:3,5 207:22 222:3,6 223:3,6 223:9,20 224:5	263:24 274:17 274:17 de-icing (2) 261:17,18 deal (2) 216:23 256:14 dealt (4) 231:15 235:16 236:14 236:20 decades (1) 215:13 December (1) 188:26 decide (2) 241:26 274:14 decided (1) 145:15 decision (5) 178:1 200:24 273:9 274:19,21 decisions (2) 171:25 235:12 deemed (3) 187:11 198:23 199:6 deeper (1) 157:14 defer (5) 230:16 230:17,26 231:1 255:6 deferred (4) 230:24 231:15 247:19 249:4 defined (9) 205:6 205:8,10,15 206:9,11,14 207:23 223:21 definition (7) 190:19 205:6,10 205:11,13,15 206:21 definitions (2) 190:18 207:19 degree (1) 272:25 deliberations (1) 267:6 delineation (6) 239:18 240:26	243:11,18,21 244:4 demolish (1) 172:10 demonstrate (1) 242:16 demonstrates (1) 153:26 department (4) 219:15 266:25 266:26 268:1 depending (2) 204:3 215:23 depicted (3) 153:14 221:22 222:17 depicts (2) 154:15 158:4 deposit (2) 166:21 193:19 deposited (1) 222:4 deposition (2) 222:6 271:1 depth (1) 193:25 Derek (20) 182:12 205:11,19 206:4 207:18 208:3,8 208:24 209:10 209:24 210:15 211:23 212:11 212:16 243:6,9 244:1 262:15,26 263:14 describe (2) 182:17 253:1 described (8) 160:21 161:9 171:12 185:13 191:12,16,18 200:16 describes (1) 250:11 describing (1) 176:22 description (2) 139:3 160:21
---	---	---	---	--

descriptors (2) 191:14 260:3	175:1,2,2	146:19 201:22	144:4 147:26	208:11
design (10) 149:2 150:22 160:8 168:2,3 171:11 171:12 211:11 243:19,25	developing (4) 171:9,18 174:16 202:24	202:14 203:3,11 203:22 263:23 265:2,4	152:7,7 154:25 156:15,16,22 157:1,6,7 158:12,24,24 164:12 166:8,11 167:1 185:9 189:2,2,7 191:18 208:13 208:18 209:8,14 211:11 212:20 241:14,16 242:11 244:12 249:25 263:3 269:23 271:10 271:12,21	dispose (1) 172:11 disposition (2) 223:7,9 distance (2) 174:12,20 distinct (1) 187:7 diversion (1) 213:23 diverting (1) 158:9 divide (1) 178:14 division (1) 269:19 document (23) 243:13,15 247:17,22,23 251:26 253:2,4 253:8,13,15 254:5,7,12,13 254:17,26 255:12,15,26 256:11 258:10 274:10 documents (8) 247:14,15 251:24 252:9,22 258:17,21 259:1 doing (6) 184:3 213:8 214:23 215:2 234:20 239:5 Donald (25) 141:14 206:4,4 207:4,17,18 208:8,8 209:10 209:10,24,24 211:23,24 212:11,11,16 243:8,9 244:6 262:15,15 263:14,14 265:6 Donihee (7) 142:4 192:4 253:14 254:3,4 256:26 257:1 Doris (65) 146:20
designed (7) 162:10,13 165:2 166:7 263:6 271:10 272:11	development (9) 169:6 170:9,17 184:12 201:8 221:15 265:20 266:3 275:1	different (38) 145:17 148:8 149:21 150:5 151:10 153:15 154:10 155:1,3 155:17 158:23 158:26 159:19 159:21,22 160:19 174:9,10 174:10 175:17 179:4,9,11,13 180:13,14 184:19 196:5,16 200:3,4,12 203:8 204:3 206:10 226:25 237:5,10	208:18 209:8,14 211:11 212:20 241:14,16 242:11 244:12 249:25 263:3 269:23 271:10 271:12,21 discharged (11) 154:24,24 156:5 156:6 158:17 159:4,6 166:15 167:6,8,8	
designs (2) 150:18 153:4	Dewar (34) 142:7 192:11,12 199:11,12,18 205:21 212:1,2 218:8 224:23,24 226:26 229:9,10 233:4,5 234:5,6 237:17,18 240:10,11 245:23,24 251:1 251:2 253:13 254:14,15 257:9 257:10 266:16 266:17	differential (1) 201:20 differentials (1) 203:20 differentiation (...) 177:22 differently (1) 194:13 diffuser (1) 168:4 dig (1) 172:20 dimensional (1) 167:22 diminishes (1) 215:22 direct (8) 149:25 164:11 175:7,8 175:21,22 202:22 203:12 directed (2) 155:23,25 directly (2) 166:14 167:19 Director (5) 141:11,12,13,24 142:7 discharge (39)	discovered (2) 193:19 256:12 discrete (4) 202:3 202:4,7,11 discuss (3) 170:18 179:25 267:19 discussed (9) 186:18 202:21 208:14,21,26 210:3,8 224:6 251:4 discussion (7) 144:24 197:7 199:6 203:8 206:1 209:3 239:22 discussions (12) 164:19 185:15 201:3 205:26 210:21 211:5 212:4 221:1,11 239:14 254:25 264:25 dispersion (2) 167:23 170:9 disposal (2) 145:6	
details (4) 158:6 179:24 187:23 239:16	dewatered (1) 145:24 dewatering (1) 214:1 DFO (6) 244:24 245:11,20 246:22 262:5 267:22 diamond (11) 162:7 165:7 167:3 169:25 190:22 208:20 209:17,21 249:26 271:15 271:20 difference (18) 149:22 159:3 176:22 196:4 197:23 200:4,9 200:15,18,20,22 200:23 202:1,1 203:16 234:11 264:19,21 differences (9)			
determination (1) 224:5				
determine (18) 145:4 160:8 171:6,19 172:6 172:13,17,25 173:5,16 174:6 174:17,18,19 176:2,3,17 269:11				
determined (4) 168:10 173:17 224:3 251:10				
determining (2) 159:9 175:25				
detoxified (2) 191:8,9				
develop (15) 145:12 147:1 151:8,10 159:13 171:17 172:4 173:14 174:3,4 174:23,26 176:9 180:22 194:19				
developed (5) 168:20 174:15				

146:23 149:22 150:11,26 154:12,14,20,23 156:4,7,24 157:5 158:6,6 159:2 160:15 161:21 162:26 163:6 164:2,4 164:15,16,24 165:15,21 166:4 166:20,21 176:23,23,25 177:11 181:1,2 181:5 182:18 184:10,14,17 186:21 188:6 189:5 190:20 191:6 195:10 204:13 205:8 206:7,20,22,25 249:19 250:7 253:9 256:10 259:10 262:21 264:8 269:8 271:5,13,19 272:1	dozer (1) 172:22 Dr (18) 143:9 161:4,9 164:12 170:25 171:1 193:11,14 200:10 204:2 206:13 207:5 211:7 215:7 217:8 242:19 243:16 263:22 draft (26) 186:13 186:14 205:4,10 205:14 207:20 208:12,12 209:4 211:19 217:13 251:26 255:18 255:21 256:17 256:23 261:24 269:8,9,24 274:8,22 277:6 277:7 278:9,13 drafted (1) 208:25 drafting (1) 209:6 drafts (1) 269:10 drain (2) 154:9,13 drainage (3) 154:11,13,15 drains (4) 154:14 154:16 156:13 156:21 draw (1) 155:19 drawn (1) 160:25 drill (1) 195:3 driven (4) 167:22 221:26 222:23 232:1 driver (1) 160:6 drivers (1) 171:24 driving (1) 175:13 drop (4) 195:4,6 216:2,9 drops (2) 216:4 216:10 dry (20) 144:11 144:23 145:12 145:22,23 146:7	146:7,9,12,21 147:3,12,12,14 148:5,14 149:10 149:12 217:4 222:22 due (4) 161:22 166:16 169:1,8 duplicate (1) 184:13 duration (1) 200:25 dust (8) 143:23 149:11,13,15 164:14 165:20 166:9 177:1 duty (2) 215:20 215:24	161:6,21 162:5 162:6,11,14,17 164:3,7,9,16,22 164:24,26 165:1 165:6,14,17 166:6 167:24 168:3,7 170:5 189:21,24 190:1 210:2,6,12,15 210:23 212:5 240:26 243:10 243:15 244:3 efficient (1) 269:5 effluent (16) 155:23 162:7 165:7 167:3,4,7 167:23 169:25 170:9 190:23 208:20 209:17 209:21 249:23 249:26 271:15 effort (2) 170:4 202:18 eight (4) 165:21 180:21 181:6 220:4 either (7) 155:23 157:23 192:7 220:20 247:12 253:23 259:1 Elders (1) 273:26 electronic (14) 252:23 253:12 253:22,26 254:5 254:7,13 255:1 255:12,18,21 258:1 278:9,13 electronically (5) 253:9 254:18 255:16 256:17 259:2 element (4) 172:5 172:13,15 202:13 elements (4) 159:22 173:12 175:6 215:18	eliminated (1) 265:26 emphasize (1) 269:13 emphasized (2) 270:9 271:23 employed (1) 154:1 employees (1) 183:17 employing (1) 266:6 encounter (2) 157:17 158:15 encouragement... 268:20 endeavour (1) 214:7 engage (2) 170:17 273:2 engaged (2) 164:18 170:15 Engineer (1) 141:23 engineering (7) 148:5,10 150:14 204:4 219:23 220:18 221:12 English (17) 186:12 218:24 219:2 252:11,13 252:16,18 255:17,20 277:5 277:10,20,24 278:2,5,9,13 enhance (1) 169:3 enhanced (1) 165:5 enhancements (2) 169:15,16 enhances (1) 148:18 ensure (12) 143:22 147:24 152:23 154:1 155:16 168:23 169:22 170:22
--	---	--	--	--

172:2 216:25 217:2 235:17 ensures (3) 148:16 152:4 181:20 ensuring (2) 183:19 271:8 enter (1) 157:16 ENTERED (1) 277:1 enters (1) 157:22 entire (4) 150:8 158:4 178:11 270:16 entitled (1) 252:1 environment (79) 139:16,18 140:8 142:9 144:13 146:11 148:26 149:26 150:9 158:24 161:7,22 161:25 162:3,15 162:17 163:12 163:25 164:4 167:9,11,20 170:6,24 176:20 182:22 184:1 185:6 190:3 192:16,19 208:15 209:1,9 209:12,18 210:5 211:3,6,9 215:16,23 216:19 219:15 220:2 225:2,4 229:22,25 238:18,23 239:7 239:9,11,20,25 240:20,24 241:4 241:8,18,22 242:8 244:2,13 246:12,20 254:22 255:4 257:13,16 261:26 262:2 267:10,12,15 269:1 271:22	273:21 environmental ... 141:21 142:10 145:10 148:19 152:2 154:2 160:4 161:16 162:1,6 166:1 169:10,12 170:15 182:22 182:25 183:22 211:19 217:13 239:23 241:4 273:6 environments (1) 219:22 EPP (1) 241:3 equipment (3) 201:10,13 204:10 equitable (2) 222:12 223:12 equivalent (1) 207:2 erecting (1) 181:4 ERM (1) 141:24 especially (1) 273:17 essentially (5) 171:3 191:14 196:3 204:4 233:26 establish (1) 183:9 estimate (19) 171:6,10 173:24 175:7 178:8,10 187:19 190:7 197:9 198:12 200:2,11,13 202:16,25 203:4 213:20 214:8 231:24 estimated (3) 214:3,4 232:3 estimates (2) 203:10 233:17 et (1) 171:16	evaluate (2) 162:16 164:8 evaluation (1) 234:20 evening (2) 253:3 275:3 event (4) 234:10 236:19 238:2 270:8 events (4) 202:4,5 202:8,11 everybody (1) 215:11 everyone's (1) 208:22 everything's (1) 198:1 evidence (1) 274:11 exact (2) 179:25 259:23 exactly (5) 158:18 202:9 203:10 206:9,11 example (22) 156:19 170:2 171:22,26 173:6 173:23 174:6 175:13 180:23 181:14 183:21 184:16 188:17 203:15 204:13 205:7 207:22 208:17 263:1,3 263:12 264:10 excavator (2) 172:20 174:18 exceed (1) 270:12 exceeded (1) 250:21 exceeds (4) 206:22,25 207:12,14 Excel (1) 252:6 exception (1) 263:5 excess (1) 156:26	exchange (1) 233:25 execute (1) 197:5 execution (2) 220:22 221:16 Executive (1) 141:11 exemption (1) 194:10 exercise (1) 227:6 exhibit (27) 179:23 186:3,9 186:12 187:23 205:4,18 212:15 219:2,5 252:11 252:13,16,18 253:16,17 255:17,20 277:4 277:9,14,19,23 278:1,4,8,12 exhibits (8) 140:15 218:25 229:3,3 251:17 252:4 269:24 277:1 existence (1) 210:16 existing (10) 158:19 180:17 182:22 186:21 189:8 196:11 210:17 271:13 271:18 274:16 expansion (1) 222:9 expect (3) 157:16 241:24 266:5 expectation (1) 212:10 expedite (1) 198:26 expensive (2) 242:14 270:14 expertise (1) 206:2 experts (1) 219:21 expire (1) 248:22	expires (2) 228:7 228:9 explain (3) 178:24 193:13 256:1 explained (7) 143:12 150:10 150:25 158:6 159:17 171:26 265:4 explaining (1) 178:2 explains (1) 203:21 explanation (1) 200:8 explicit (1) 249:22 explicitly (2) 178:20 250:11 exploration (11) 187:5,7 207:25 208:6 213:8 269:21 271:26 272:2,7,11,14 expose (1) 195:2 exposed (5) 143:17,22 144:17 148:21 215:18 exposing (1) 194:18 exposure (1) 223:14 expression (2) 194:12 195:6 expressions (1) 151:6 extends (1) 193:18 extensive (6) 160:2 161:19 162:2 170:4 211:8 215:12 extra (2) 156:18 218:12 extract (6) 151:8 152:20 193:15 194:21,23 195:1
--	--	--	--	--

extracting (1) 194:3	features (8) 151:26 154:21	190:24 200:19	184:2 215:3	followed (4) 172:12 176:17
extreme (2) 214:24,25	156:18 159:1,11	201:17 210:26	217:17	177:22 202:20
extremely (1) 242:14	159:18 191:5,15	211:19 217:13	fisheries (37) 140:10 142:12	following (7) 145:9 164:10,21
	fed (3) 159:16,18	219:3,6,25	142:13,14 162:8	226:21 227:9
F	175:15	224:10 244:12	165:9 166:5	260:2 271:18
F (1) 188:14	federal (7) 161:12	247:20 248:7	168:9,9 169:7	foregoing (1) 276:3
facilitate (1) 220:21	162:4 165:6	255:26 263:16	169:10,26,26	forget (1) 204:8
facilitator (1) 273:24	169:6 170:12,21	263:18 265:22	192:22,25 217:9	forgot (1) 231:14
facilities (7) 154:2	245:3	277:10,15	217:10 219:22	form (7) 150:8
156:20 171:16	feedback (1) 273:3	finalize (1) 205:18	220:1 225:6,9	183:10 217:4
173:13 189:3,4	feel (3) 233:11	finally (3) 156:25	230:1,3 240:14	235:4 253:22,26
264:6	235:11 261:20	191:1 271:23	240:16 245:3,13	254:7
facility (29) 145:13,22	fellow (4) 266:21	financial (3) 171:3 265:4	255:10,13	Fort (1) 146:14
147:10,16,18,22	267:20 268:9	266:7	257:20,22 262:7	forth (2) 211:10
147:25 148:3,5	273:15	financially (1) 266:1	267:23,26 268:3	246:25
148:12,18,20,22	felt (1) 242:11	find (1) 205:8	269:1 273:21	forward (5) 185:15 217:20
149:3,5,6,11,19	figure (2) 145:15	fine (1) 198:1	five (14) 161:14	220:4 245:8
149:24 150:1,22	152:18	finished (2) 151:5	190:7 226:8,22	273:8
151:12 152:11	figures (1) 153:5	231:9	226:23 227:1,3	found (2) 205:11
152:12,13	file (10) 187:23	first (40) 145:3	232:25 233:3	260:15
177:16 189:22	218:24 235:13	151:12 152:19	234:1,14,21	four (4) 252:9
196:16 205:16	236:1 251:17	154:19 155:18	235:2 259:15	259:15 264:15
fact (11) 149:23	252:3,10 253:8	160:26 171:11	five-year (4) 226:12,16	269:13
154:4,22 193:19	258:2 274:14	174:4,7,16	233:15 237:24	framework (29) 165:2 186:15
206:18 216:6,19	filed (11) 179:23	175:24 176:11	fixed (1) 235:20	207:20 208:13
217:18 234:3	191:1 245:4	180:17,20	flagging (1) 186:10	224:8 226:9,14
236:16 242:15	253:4,16 254:7	181:15 183:1	flat (1) 147:21	226:17 227:15
fails (1) 270:8	258:17,21	195:24 198:17	flatten (1) 172:22	228:6,9 247:25
fair (2) 173:26	260:19 269:7,24	198:19 200:1,13	fleet (1) 201:10	251:25,26
237:25	filing (11) 247:17	202:23 204:22	flexibility (1) 272:10	253:15 255:19
falls (3) 144:11	249:3 252:23,24	206:6,20 207:22	flexible (1) 227:18	255:22 256:9,10
147:24 241:14	253:25 254:12	210:7 215:9	flow (1) 165:8	256:17,24
familiar (2) 151:19 173:25	254:18,23	216:9 223:3	flown (1) 175:14	259:11 261:24
family (3) 169:6	256:17,23 269:8	231:16 239:16	flows (1) 152:5	266:4 269:10
170:12,22	filings (1) 247:24	239:17 243:18	fluid (2) 261:18	274:8 277:7
far (2) 264:19,20	filter (4) 146:6	243:24 249:21	261:19	278:10,14
farms (1) 263:2	147:6,6,11	259:17 268:22	follow (6) 171:5	freeze (1) 148:17
fat (1) 167:16	filtered (3) 145:23	270:23 273:4	181:13 202:22	frequency (2) 242:14,17
feature (2) 152:16	181:18 207:9	firstly (1) 155:6	203:1 209:12	frequent (1) 272:8
154:3	filtrate (2) 191:8	fish (18) 161:18	271:15	freshwater (18)
	191:11	161:18 162:13	follow-up (3) 196:21 203:25	
	final (27) 149:20	163:20 167:13	206:6	
	157:9 161:16	168:8,8,11,13		
	162:1 182:16	168:21,25,25		
	185:4,5,12	169:1,4,22		

154:25 155:7 156:3,9 158:9 161:6,22,25 162:3,15,17 163:12,24 164:4 170:5,19,24 209:8 front (2) 147:1 186:4 front-end (4) 204:10,15,22,23 frozen (1) 144:6 fuel (3) 174:11 189:3 263:2 full (3) 147:17 183:17 270:26 fully (1) 270:7 fulsome (1) 227:6 function (4) 143:21 177:3,9 177:14 fundamental (4) 155:4,5,10 173:19 fundamentally ... 177:21 further (20) 139:22 140:3 148:18 185:15 198:2 214:12,16 238:7 244:2,16 245:14 247:4 248:10 250:15 258:26 262:4,8 262:13 267:2 274:11 future (2) 170:18 172:7	generally (1) 214:1 generate (2) 143:22 149:13 gentlemen (1) 143:10 geochemically (2) 149:21 177:13 geochemistry (1) 250:5 geographical (1) 223:23 geotechnical (5) 141:23 150:13 194:15 219:22 220:18 getting (2) 143:13 182:7 give (3) 179:5 180:23 235:6 given (9) 191:16 215:4 222:13 223:1,14 224:11 231:25 234:20 236:21 Gjoa (1) 214:19 glasses (1) 199:19 Glenn (1) 166:2 global (2) 270:1 270:16 go (46) 143:5,6 145:25 153:11 157:6 158:12,20 171:8 172:25 177:11 179:8 182:9 192:10 195:3 198:17 214:16 215:6 219:9 224:22 226:3 230:9,9 231:3,20 233:22 234:25 235:8 236:24 239:8 241:10,20 242:4 242:5 245:11 247:3,19 248:7 251:18,19 253:5	256:4 258:7,18 262:22 263:17 265:5 goes (7) 148:6 149:8 155:22 156:6 159:5 264:19,20 going (21) 146:17 150:3 151:10,12 151:13,14 155:1 158:5 160:3 171:8 172:18 177:19 179:8 189:11 207:26 211:10 212:21 217:19 225:25 230:14 261:9 gold (2) 146:5 193:21 good (13) 143:2,9 149:12 154:2 174:1,24 176:13 215:10 218:6,15 229:12 267:17 275:3 grant (3) 235:15 274:14,21 granted (1) 199:5 grateful (1) 265:25 gravel (1) 145:26 great (1) 265:26 greater (2) 151:22 264:6 greatest (2) 221:24 222:20 grey (3) 143:17 147:22 155:21 ground (14) 152:19 157:12 157:13 178:16 183:9 184:3 193:24 194:3,4 194:7,14,24,26 195:4 groundwater (4) 157:17,18	158:15,16 grouped (1) 184:25 grouping (1) 260:7 groups (1) 218:5 grow (1) 153:3 guess (15) 198:10 200:5 207:21 208:10,21 209:12,14,26 210:3 212:20 218:4 259:10 263:16,20,23 guidance (1) 269:10 guys (4) 207:24 209:13 241:13 246:15	harm (1) 168:25 harmonization ... 165:5 harsh (1) 216:19 haul (3) 173:22 174:12 195:5 hailed (2) 153:8 153:18 Haven (1) 214:19 hazardous (2) 172:10 184:17 healthy (1) 237:22 heard (1) 182:20 hearing (26) 138:9,18 141:6 143:3 186:3 191:21 218:25 230:23 245:5 247:20 249:2 252:4 258:2 265:18 267:17 268:5,17 269:5 273:14,16,26 274:4,7,10,17 274:25 hearings (5) 185:16 253:16 256:11 268:24 269:25 heat (1) 216:16 height (2) 148:23 194:6 held (5) 197:14 232:5 233:17 267:3 270:3 Hello (1) 192:1 helpful (1) 269:10 helps (3) 148:17 159:7 266:1 Henry (12) 141:24 160:2 161:4 189:26 211:1,7 217:8 242:19 243:16 243:16 273:23 275:6
---	--	--	--	---

G

G (3) 189:1 261:4
261:13
general (8) 185:21
187:4 193:11
195:14 198:24
199:25 205:15
211:2

266:22		175:6 178:7	203:5	231:9,17 251:8
high (4) 147:19	I	242:25 270:10	inconsistency (1)	infrastructure (...)
187:2 272:18,25	Ian (1) 259:6	271:24 272:7,7	260:21	155:13 166:17
hit (1) 167:16	ice (11) 213:3,7	impoundment (...)	inconsistent (1)	184:15 190:21
hold (1) 237:20	213:10,13,14,22	143:14,16	260:11	195:18 196:4,5
holding (1) 260:2	213:23 230:25	144:25 145:2,8	incorporate (1)	196:12,13,26
home (1) 275:5	231:25 232:6	146:20,26 148:7	183:8	197:6 223:22
hope (24) 142:3	260:26	149:9 150:11,19	incorporated (4)	271:1
151:1 154:16	idea (4) 145:4	152:8 153:24	164:22 234:12	inherently (1)
163:26 168:17	171:18 178:9,13	154:23 155:25	273:3,18	272:8
170:6,23 193:16	identification (1)	156:7,17,24,26	increase (1) 165:3	initial (2) 170:16
196:18 203:21	250:18	157:4,5,21,23	indicate (1)	200:11
217:7,11 219:3	identified (1)	158:13 176:23	250:20	initially (3) 264:1
219:7,14,18,25	162:15	176:25 206:7	indicated (5)	264:4,23
220:26 224:12	identify (1) 183:2	improvements (1)	187:15,22 229:5	input (5) 209:3,5
266:3 269:10	IIBA (3) 183:7	164:21	235:13 249:15	211:5 219:17
275:2 277:11,16	224:13 266:5	improves (1)	indicating (1)	268:7
hospitality (1)	IIBAs (1) 183:3	194:14	222:5	inputs (3) 159:14
274:3	illustrate (2)	INAC (1) 226:21	Indigenous (1)	164:11 166:9
hosting (2) 265:18	176:21 190:13	include (16)	139:15	inspector (4)
268:10	illustration (1)	161:17,18 162:5	indirect (6) 175:8	193:26 194:5,10
hot (1) 216:14	147:16	163:21 164:11	175:11 176:5	194:13
hour (2) 171:13	imagination (1)	165:1 168:13,23	203:14,18,26	install (1) 216:3
182:1	152:18	170:7 182:26	indirects (4)	installed (1)
hour-and-a-hal...	imagine (2)	183:4 196:24	175:18,19,20,22	215:21
247:15	147:20 226:6	205:25 214:3	individual (3)	installments (1)
hours (3) 218:4,6	immediately (1)	250:15 271:16	217:15 258:11	223:2
218:9	178:12	included (20)	260:9	instance (1)
housekeeping (1)	impact (12)	165:8 169:9	indulgence (1)	183:25
247:9	161:16 162:1	189:1,10,12	251:19	integrate (1)
huge (2) 216:21	168:3,4 169:12	190:5,9,11,21	industrial (3)	164:23
216:21	172:2 176:19	205:10 208:18	208:18 259:21	integrated (1)
human (1) 143:23	177:16 211:19	209:16 214:1	259:22	187:6
hundred (6)	211:20 217:13	241:24 242:10	industry (1)	integrity (2)
177:8,17 194:1	217:15	243:12,20	146:10	151:3 215:22
194:2 196:3	impacts (1) 183:6	244:11 251:9	infiltration (3)	intend (1) 245:5
199:1	implemented (2)	260:26	150:3 166:4	intended (1)
hydraulic (1)	153:20 250:12	includes (9)	215:25	216:1
216:2	implementing (1)	162:21,22 164:1	inflow (1) 157:18	intensive (2)
hydro-geology (2)	178:15	169:24 170:13	inflows (2) 157:17	169:17 273:5
219:21 220:1	important (22)	183:19 206:17	165:19	intent (1) 178:21
hydrological (1)	146:18 149:2	252:7 259:19	inform (1) 159:7	interactions (3)
154:8	150:17 151:17	including (7)	information (12)	163:24 182:21
hydrology (4)	151:26 152:16	156:5 163:16,18	149:2 159:14	182:24
161:17 163:14	153:12 154:3,7	181:18 207:9	163:14,22 169:4	interested (4)
219:21 220:1	154:21 155:3,10	250:12,19	169:12 205:5	164:18 169:19
	156:1,10 159:20	inconsistencies ...	211:17 222:8	233:11 239:25

interests (1) 224:15	219:2,5,11,13 219:16 224:12	211:16,21 220:5 224:9 228:2	214:7 225:26 226:2,19 227:7	257:1 258:23 266:2 269:19,26
Intergovernme... 274:20	224:16 225:13 225:21 228:1,5	240:1 265:21 267:19 268:4	231:23 232:8,22 233:20 244:7	270:11 271:2,4 271:9
interim (15) 190:6,12 200:22 200:25 201:1,5 201:8,10,12,16 201:20 203:11 203:16 204:7,14	229:17,20 233:10 237:8 240:4,7 245:17 245:19 248:23 254:1 256:24 258:25 264:22 264:26 265:13 265:14,16 266:6 267:1 268:8,23 269:15 272:19 272:22 273:19 277:9,14	issuing (1) 224:14 item (12) 187:9 259:23,25,26 260:1,5,9,10,13 260:23 261:5,13 items (2) 185:14 259:20 iterative (1) 186:23	253:13 265:3 Karén's (1) 206:7 Karoline (3) 273:24 276:3,14 keep (6) 155:14 193:23 256:3,16 267:16 268:18 keeping (2) 253:2 256:22 key (12) 149:2 159:14 160:5,6 182:24 200:18 201:7 263:23 264:3,20 265:2 269:13	KIA's (6) 219:20 221:22 222:17 223:13 224:7 269:18 kilometres (5) 166:20 173:22 174:13,13 213:22 kinks (1) 217:5 Kitikmeot (55) 139:11,12 140:5 142:2 165:10,24 170:11 176:16 177:24 178:4 179:1,17 180:6 180:10 181:21 187:16 192:2 205:25 208:26 218:19,23 219:2 219:5,11,13,15 225:12,21 228:1 228:4 229:17,20 233:10 237:8 240:4,7 245:17 245:19 248:23 254:1 256:24 258:25 264:22 264:26 265:13 265:14,16 267:1 268:8,23 269:15 272:19 273:19 277:9,14
Internal (1) 274:21		J		
interpreters (1) 273:23		J (5) 142:3,4 189:21 191:1 251:25		
INTERPRETE... 142:17		Janowicz (1) 142:14		
interval (1) 226:16	Inuit-owned (1) 220:12	jetty (1) 168:19	Kharatyan (39) 141:12 193:8,9 195:12,12 196:19,20 198:6 198:6,15,15,20 198:21 199:15 199:23,23 203:23,23 204:26 205:1 212:23,23 213:17,17 226:1 226:2,19,19 227:7,7,24 232:8,8,22,22 233:20,20 244:7 244:7	
intervener (4) 163:25 228:20 245:9 258:11	Inuktitut (2) 142:18,19	Joanni (3) 214:17 214:19 215:7		
interveners (10) 142:1 218:18 231:10 232:15 245:3 266:21 267:20,22 268:9 273:19	invertebrates (2) 163:19 167:13	John (18) 192:2,3 219:13 226:3 227:9,10 228:1 228:4,12 229:19 240:7 245:19 253:14 254:3 256:26 258:24 265:16 268:22		
intervening (4) 185:18 208:14 208:22 210:4	investigated (1) 169:14	jumping (2) 238:10,11		
intervention (4) 182:16 185:12 210:26 244:24	investigations (1) 150:13	June (1) 271:17		
Inuinnaqtun (3) 218:24 219:6 277:15	investing (1) 270:20	justifying (1) 222:10	KIA (40) 177:7 178:4 191:25 192:8 205:8,9 219:10,17 220:2 220:10,13,23,25 221:1,15 222:10 222:11,12 223:12,17,19 224:2,5,19 226:5,13 227:11 227:14,19 228:20 254:4	
Inuit (66) 139:11 139:13 140:5 142:2 165:10,25 169:5,9,19 170:11,12,15,21 176:16 177:24 178:4 179:2,17 180:6,10 181:21 183:8 187:16 192:2 205:25 209:1 218:19,23	involved (3) 154:26 172:19 202:18	K		
	involves (1) 194:17	K (3) 141:12 142:20 189:24		
	irrigation (1) 149:16	Karén (28) 193:7 193:8 195:12,22 196:19 197:3 198:6,9,15,21 199:23 203:23 204:26 207:19 212:23 213:17		
	isolation (1) 177:2			
	issuance (2) 186:22 270:17			
	issue (6) 216:23 224:10 230:17 248:9 265:22 274:18			
	issued (7) 195:16 195:20 196:24 197:18 223:26 236:12 272:2			
	issues (10) 203:7			
				know (22) 150:21 171:22 200:1 206:2,11 209:5 210:9,16 211:4 212:7,9 214:21 227:6 233:17 234:11 237:4,20 237:22 238:2 240:25 268:17 274:5 knowledge (3)

169:17 183:8 273:3 Knox (1) 146:14 Koana (19) 192:11,23 225:8 230:2 233:4 234:5 237:17 240:10,15 245:23 251:1 254:14 257:9,21 262:6 266:16 267:7,25 268:11 Kogvik (3) 141:13 142:18 273:23 Kowbel (21) 141:26 186:7,8 230:7,11,12 231:5,6 236:25 236:26 251:20 251:21 252:21 253:1,6,7 256:1 256:6,7 257:26 258:9 Kowbel's (1) 252:9	land (19) 145:13 150:8 171:20 173:8 176:12 177:4,9,10 190:14 217:4 220:13,13,16,19 220:21 221:3,18 221:19 263:25 land/water (3) 221:8 264:20 265:24 landfarm (1) 189:4 landfarms (1) 156:20 landfill (5) 172:12 172:23,24 261:6 261:8 landfills (2) 156:19 189:3 landowner (1) 176:16 lands (2) 219:15 272:23 landscape (2) 144:14 148:24 language (4) 176:13,14 178:18 213:14 largely (1) 184:13 larger (3) 151:21 154:15 263:9 largest (1) 153:5 lastly (1) 212:16 latest (1) 211:26 Law (1) 141:16 lawyer (1) 268:20 laydown (1) 196:7 layer (3) 144:21 152:24 157:14 layers (1) 150:5 layout (1) 190:13 layouts (2) 195:23 196:17 leaching (1) 250:13 Leader (1) 141:22	leadership (1) 268:24 leads (1) 264:26 lease (1) 227:16 leaves (2) 146:7 195:6 left (7) 143:11 145:15 147:11 153:9 154:4 181:26 200:18 left-hand (6) 143:15 162:25 163:9 165:15 166:12 167:14 legal (26) 141:16 141:26 142:4 185:24 192:3 218:21 228:24 230:21 231:13 235:10 236:6 238:22 245:1 247:11 248:26 251:15,23 253:20 254:9,20 255:9,24 257:6 257:19,25 273:22 length (1) 147:19 let's (3) 191:26 218:11 247:2 letter (3) 223:3,5 223:8 letters (3) 222:3 222:11 270:14 level (3) 165:8 176:4 187:2 levels (2) 163:15 242:22 liability (3) 204:24 237:23 270:12 licence (121) 138:10 160:7,11 160:14,20 164:17 178:12 178:13,21,24 180:1 182:18,19	183:26 185:1 186:14,21,22,25 187:3,4,14 188:2,4,6,8,14 189:1,5,8,11,15 189:26 190:4 191:3,6,12,18 195:16,16,19 196:1,2,14,23 196:24 197:5,12 197:15 207:21 208:4,12,12,26 214:2 219:4,8 219:26 220:24 223:19 224:8 226:8,15,23 227:12,16,21 228:9 231:24 232:2 234:1,26 235:7,16,20 236:2,8,9,15,21 237:4,25 238:4 241:6,19 247:24 248:16,20,21,21 250:3,26 251:25 251:26 253:10 255:18,21 256:9 256:10,23 259:10 261:21 261:24 269:9,9 269:11 271:6,14 272:9,14 274:8 274:15,16,23,23 275:1 277:7,12 277:17 278:10 278:14 licences (27) 161:12 162:4,8 164:8 183:3 184:6 185:20 187:5,6 195:15 195:17 196:22 201:12 213:8 224:14 236:12 244:11 248:16 269:20,22,24 270:18 271:26	272:2,4,6,11 licensee (1) 261:15 licensing (7) 141:15 164:20 169:13 170:22 221:4 268:25 273:6 life (7) 149:19 150:22 151:7,11 153:4,6 250:4 life-changing (1) 266:24 lifespan (3) 214:21,22,22 lift (2) 148:15 152:21 lifts (3) 147:15 148:15,20 lightly (1) 237:21 liked (1) 251:5 limits (1) 263:12 line (4) 152:18 186:20,25 206:16 lined (2) 148:13 152:3 liner (11) 150:4,4 173:9,10 214:21 214:22 215:10 215:15 216:8,11 217:5 liners (8) 215:12 215:13,19 216:7 216:13,17,22,25 lining (2) 222:22 222:24 list (3) 140:15 148:8 184:4 listed (1) 259:20 listening (1) 224:17 lists (2) 260:6 261:5 little (6) 154:17 160:13 166:2 200:7 208:19
---	---	--	--	--

238:10	losses (2) 169:1,8	217:25	Maritz (12) 143:9	244:12
load (8) 146:8	lot (1) 211:5	make-up (1)	181:24 187:15	Meadows (51)
147:12 159:8,8	low (2) 150:2	156:3	187:22 191:15	141:16,16
159:20 160:7	172:1	making (3)	193:14 200:10	185:23,23
172:21 250:16	lower (3) 163:9	159:10 201:18	204:2 206:13	218:20,21
loaded (4) 204:10	202:26 216:12	273:16	207:5 215:7	228:23,24
204:15,22,23	lowered (1) 201:4	manage (4)	263:22	230:20,21
loading (3) 175:9	lunch (3) 218:12	149:15 184:16	mark (2) 186:2,9	231:12,13 235:9
202:24 203:17	230:24 231:16	202:18 261:18	marked (1) 229:3	235:10 236:5,6
located (1) 148:2	LUNCHEON (1)	managed (1)	marker (1)	237:1 238:21,22
location (2) 145:5	218:13	149:19	233:15	244:26 245:1
191:17		management (72)	Mary (4) 235:13	247:10,11
locations (7)	M	142:7 143:12	235:26 236:7	248:25,26
189:6 191:4,13	M (5) 141:8,22,24	144:26 147:14	237:4	251:14,15,22,22
194:9 252:1,17	142:11,14	149:15 150:12	matched (1)	252:26 253:13
278:2	Madrid (44)	150:19 153:22	202:11	253:19,20 254:8
logic (4) 177:21	146:23 151:13	153:22,23,25	material (10)	254:9,19,20
181:6,14,15	151:14,15,15	154:7,20,21	148:15 149:21	255:8,9,23,24
logical (2) 176:18	152:11 154:12	155:2,6,18	175:10,11 186:3	256:20 257:5,6
178:14	158:1,1,10,11	156:2,10 157:9	215:17 234:10	257:13,18,19,24
logistically (1)	158:11,14,15	157:25 158:3,5	234:11 238:2	257:25 258:14
202:19	159:2 162:26	158:18,22 159:1	253:25	265:10
long (6) 150:6	163:6 164:25	159:7,11 162:14	materials (8)	Meagan (1)
175:26 214:20	165:16 166:4,21	165:4 170:1,2	172:10,11	209:18
217:3 218:12	184:10 189:5	171:26 176:24	174:13 228:26	mean (8) 153:11
268:18	190:20,26 191:5	177:12 182:15	229:2,6 245:4	155:11 160:4
long-term (1)	195:11,24,24,25	182:23,25 183:1	249:3	199:5 207:24
148:19	196:7 197:12	183:20,23,25	matter (4) 201:23	213:3 233:1
longer (4) 144:9	252:2,12 262:18	184:5,11,14,24	219:20 241:5	234:21
194:25 242:22	264:8,10,10,11	184:26 188:15	255:25	means (11) 144:7
242:24	264:12,13,14	188:18 190:15	matters (3)	196:21 199:1
longest (1) 216:7	265:23 277:21	202:14,15 204:5	218:26 255:7	206:21,24 207:8
look (12) 144:19	Madrid-Boston...	208:11 221:15	268:25	207:11,13 216:1
145:19,22 146:2	182:20 250:8	222:21,21,26	maximum (3)	216:9 227:11
147:17 152:19	main (2) 184:25	223:8,10 249:15	160:9 214:4,4	meant (2) 201:19
166:12 185:15	187:13	249:16 250:10	McLellan (19)	243:24
227:22,22	maintain (4)	250:19,25 251:6	142:13 192:23	measures (5)
229:15 273:8	175:16 269:20	261:5,5,6,8,10	192:24 225:8,9	161:20,24 183:5
looked (2) 145:7	270:15 271:25	Manager (1)	230:2,3 240:15	250:11,12
145:17	maintenance (14)	142:8	240:16 245:12	measuring (1)
looking (4)	200:6,23,25	manner (1) 220:3	245:13 255:13	184:1
199:10 233:13	201:1,6,8,10,12	manpower (1)	255:13 257:21	mechanic (1)
234:2 237:15	201:17,20	202:24	257:22 262:6,7	175:17
looks (4) 160:22	203:12,17 204:7	map (1) 191:17	267:24,25	mechanism (2)
187:23 226:5	204:14	marine (4) 157:1	MDMER (6)	188:23 198:3
262:17	major (1) 223:21	157:18 158:17	209:7 241:25	mechanisms (1)
loss (2) 168:11,21	Makabe (1)	158:24	243:19,24 244:5	250:22

meet (12) 147:26 156:16 157:5 158:12 183:18 218:5,5 222:12 235:2 249:23,25 267:19	148:22 160:15 160:16 161:1 173:22 188:9,12 194:1,2,22,24 206:23,26 207:13,16 231:26 232:4 260:26	249:26 250:1,5 271:15	missing (1) 205:11	166:3,10 167:9 190:14 202:6
meeting (3) 150:26 220:6 223:13	mic (1) 193:7	mine's (4) 193:26 194:5,10,13	misunderstandi... 203:9	monitoring (74) 161:10 162:2,5 162:6,7,22 164:1,7,16,22 164:24,26 165:1 165:6,14 166:7 167:3 168:8,23 169:21,24 170:3 170:10,19 183:10,14,24 189:6,21,24 190:1 191:4,13 200:5 201:23,25 201:26 202:3,5 202:8,11 204:8 204:15 209:14 210:1,2,6,12,15 210:23 212:5,9 212:18 217:19 220:2 240:26 241:25 242:17 242:22 243:11 243:15 244:3 252:1,1,2,12,14 252:17 262:17 262:20 272:24 277:21,25 278:2
meetings (1) 270:4	microphone (1) 247:8	mines (7) 154:12 158:2,2 166:4 189:5 209:22 272:21	misunderstandi... 200:15	
meets (6) 152:7 156:15,22 167:12 228:10 272:18	middle (1) 145:21	mines' (1) 158:16	mitigate (2) 170:5 171:20	
member (3) 141:7 141:8 225:18	Mike (6) 160:2 161:3 189:26 211:1,23 243:16	minimize (3) 155:7,11 183:6	mitigation (5) 159:11 161:20 161:24 164:11 272:24	
members (12) 186:4 214:14,16 217:23 228:15 238:15 242:4 244:17 246:26 269:4 273:15,25	milestone (1) 227:4	minimizing (1) 156:9	mitigations (4) 149:14 164:2,5 168:24	
mentioned (8) 165:16,24 191:3 207:19 212:19 232:26 260:16 263:19	milestones (1) 233:14	minimum (1) 193:25	mix (1) 158:17	
met (1) 144:4	mill (2) 147:4 263:8	mining (25) 151:1 151:5 162:7,20 167:3 171:19 187:8 193:20,21 193:23 207:22 207:23,24,25,26 208:4 209:21 252:3,14 264:12 269:22 270:20 271:20 272:5 277:25	mixing (2) 157:2 157:19	
metal (12) 162:6 165:7 167:3 169:25 190:22 208:20 209:17 209:21 249:23 249:26 271:15 271:20	million (33) 149:6 151:20 160:15 179:10,22 180:2 180:5,9,15,19 197:8,10,17,21 197:26 198:2,3 198:4 206:23,26 206:26 207:12 207:15 220:11 220:14 221:6,7 221:19,20 222:4 222:7 223:6,10	Minister (16) 176:15 177:7,19 177:23 180:7,12 181:21 235:12 236:9 250:9 260:2 269:19 270:11 271:9 274:19,19	MMER (5) 241:15,17 242:16,24 244:12	
metals (2) 163:21 217:10	mine (38) 145:20 150:16 151:3,4 151:8,18,21 153:4 154:3 155:3 157:10,10 157:10,13,14,21 157:23 158:11 158:11,14,15 165:7,19 169:14 169:25 181:1 190:22 193:25 194:8 208:20 209:17 220:20 223:22 249:23	Minister's (3) 236:22 237:20 274:24	mobilization (4) 201:9 204:9,14 204:17	
method (3) 151:1 193:15,20		Ministry (3) 235:12,14 236:10	model (8) 159:13 159:16,18,21,24 233:13 243:21 250:15	
methods (1) 149:16		minor (6) 188:4 188:15 189:22 189:25 190:9 259:15	modelling (5) 160:8 167:23 170:9 241:25 250:4	monitors (1) 182:23
metre (5) 144:21 152:21 174:7 216:3,5		minutes (1) 247:3	modifications (1) 189:14	monthly (1) 242:14
metres (20) 147:18,19		misleading (1) 160:13	moments (2) 254:6 256:12	months (1) 261:16
			money (7) 178:14 181:9,20 197:6 197:19,20 201:4	morning (4) 143:2,9 238:12 239:24
			monitor (4) 167:5 168:5 183:12,23	move (7) 150:24 154:6 229:6 232:15 233:13 246:24 265:11
			monitored (7) 163:7 165:21	moving (2) 185:4 188:3
				Mrazek (4) 141:7 217:24 228:16 244:19

multiple (3) 149:13 167:7 169:21	175:14,15,15,16 181:19 235:3 238:3 269:20	140:7 142:5 187:17 190:9,16 192:10,12 199:12 212:2 224:22,24 229:10 232:21 233:5 234:6 237:7,18 238:25 240:11 245:22 245:24 249:5,10 251:2 254:11,15 257:8,10 259:4 259:7 266:15,17 273:20 274:1,20	138:3,25 139:8 139:12,14,20,22 140:3 141:1,5 141:10 162:20 169:5 170:21 185:24 189:18 191:2 193:3 198:21 203:23 206:4 207:18 208:8 209:11,24 211:24 212:11 212:16 213:17 218:21 219:18 223:25 224:4 225:21 227:7 228:24 230:21 231:13 232:20 235:10 236:6 238:22 243:7,9 245:1 247:11 248:10,26 251:15,23 253:20 254:9,20 255:9,24 257:6 257:19,25 262:13,16 263:15 265:17 268:2 269:4 270:20,21 272:4 272:18,23 273:7 274:26	obligations (3) 188:5,16 270:9 obliged (1) 226:10 observed (1) 164:5 obtained (1) 224:12 obviously (7) 145:7 185:1 210:19 217:1 234:24 241:15 249:24 occur (3) 181:11 233:9 238:4 occurred (1) 239:14 ocean (4) 157:6,8 157:19 158:17 Oceans (23) 140:10 142:12 169:11 192:22 192:25 225:7,9 230:1,3 240:14 240:16 245:4,13 255:11,14 257:20,22 262:7 267:23,26 268:3 269:1 273:22 October (5) 138:26 139:5 141:3 191:2 277:2 offered (1) 272:10 office (1) 236:22 Officer (2) 142:3 219:14 Official (2) 142:20 276:15 offset (3) 169:2,16 169:16 offsetting (9) 162:9 165:10 166:5 168:25 169:7,18,20 170:1,16 offsite (1) 172:11 offspec (1) 263:6
multitude (1) 149:17	net (1) 266:9 network (2) 210:1 212:7 neutral (1) 250:14 never (1) 210:10 new (9) 138:11 184:12,13 186:22 196:15 201:9 271:5 274:15,22 Nicoll (2) 142:22 273:25 night (6) 150:25 239:1,6,15,19 241:1 nine (2) 180:16,16 NIRB (8) 185:8 210:19 211:18 217:12 219:19 250:8 251:7 273:25 non-consumpti... 213:26 non-hazardous ... 172:11 184:17 non-MMER (1) 242:10 non-parallelism... 168:7 non-point (4) 164:10,13 165:17 166:9 nonhazardous (2) 261:7,9 normally (1) 201:12 north (13) 144:6 151:13,15 158:1 158:11,14 165:15 205:8 253:9 264:10,11 264:12,13 Northern (38) 139:15,25 140:1	northernmost (1) 146:12 notch (1) 144:8 note (7) 150:17 151:17 153:12 154:8,19 237:3 271:14 notes (3) 214:14 268:19 276:6 noticed (1) 208:17 notification (1) 181:9 November (2) 200:14 276:9 number (27) 160:10,13,15,17 160:17,19 171:7 182:21 191:16 200:6,8 201:19 202:12 214:1,3 214:4 250:6,7,9 250:23 251:7,17 251:19 259:19 260:12,23 277:3 numbers (8) 175:4 178:6 179:15,24 200:1 200:2 215:3 226:25 numerous (4) 185:7 188:21 210:22 270:4 Nunavut (71)	NWB (3) 224:2 273:22 274:18 O O (1) 141:21 objection (3) 253:25 254:6 255:15 objections (9) 254:12,18,23 255:11 256:22 257:2,12,17,23 objectives (1) 250:21 obligation (1) 227:14	

Ogama (1) 166:2	242:15	185:26 186:20	panel (17) 141:7,8	parties (37)
oh (4) 167:15	ongoing (5)	221:22 222:17	162:25 163:9	164:18 169:20
232:15 242:4	164:17 169:3	originally (6)	165:15 166:12	179:13 180:1,4
246:15	199:8 221:11	216:1 220:10	167:14 186:4	182:16 183:15
Ohokannoak (3)	268:7	221:6,8 251:4	217:23 228:15	185:18 186:19
142:19 273:23	open (13) 191:24	264:9	238:15 244:17	186:25 187:1,21
275:7	212:25 220:23	outcome (1)	246:26 268:2	208:15,22 210:4
okay (38) 167:16	223:17 224:17	235:18	273:15 274:12	211:16 215:4,15
182:7,14 186:16	224:19 229:16	outer (1) 215:18	274:14	229:1,4 233:11
192:15 212:15	237:10 253:3	outfall (2) 166:14	parallelism (1)	235:1 239:4
218:1,1,10	256:3,16,22	167:19	168:7	245:9 247:12,14
219:9 226:18	274:7	outflow (1)	parameter (2)	253:23 254:25
227:25 228:18	open-pit (1)	168:18	209:20,23	256:1,21 258:4
229:15,16 232:7	151:21	outside (3) 145:25	parameters (5)	258:5,20 265:12
232:13,15	operate (4) 174:9	227:11,16	208:13 209:14	270:5 273:16
234:16 235:8	270:19 272:13	outstanding (2)	212:19 262:20	274:5
238:9,15,16,16	272:22	266:25 274:2	263:9	party (2) 226:11
241:10 243:1,1	operation (2)	overall (14) 154:8	Parsons (3) 142:8	270:3
244:21 246:7,8	145:20 222:14	154:10 165:21	259:6,7	pass (2) 167:6
246:17,19,23,26	operational (1)	169:21 170:6,18	part (52) 144:13	247:8
247:1,6 248:1	223:15	220:10,14 221:2	145:7,16 148:24	Patch (1) 165:22
251:12	operations (6)	227:15 252:19	155:6,18 156:10	patience (1) 274:3
Oliver (28)	143:17 147:25	265:22 267:2	159:20 161:15	pays (1) 204:9
160:26 181:25	155:26 165:26	278:5	161:20 178:7	peak (1) 160:20
182:11 186:17	187:11 188:3	overbonding (5)	180:18 182:2,2	people (5) 151:19
195:22 196:21	operator (2)	266:1 270:19,22	187:4,14,15	175:16 176:2
198:7,17,22	174:11,19	270:23 271:7	188:3,4,7,14,22	184:23 224:16
208:1,23 210:13	opportunity (2)	overburden (1)	189:1,5,14,16	percent (30)
211:18 213:4	258:18 268:3	195:8	189:21,24 190:4	175:22 177:8,17
214:6 225:14	orange (1) 144:17	overlap (3) 196:3	199:9 200:20	180:5,7,9,11
231:21 234:17	order (11) 150:2	196:14 198:11	201:7 203:12	196:3 200:3,21
235:22 240:22	159:13 172:18	overlapping (2)	205:26 215:9	202:22 203:16
242:6 243:26	173:3 176:17	195:15 196:26	217:12 227:14	203:18 220:12
244:9 246:3	177:22 194:21	oversight (1)	232:26 239:25	220:12,15,16,19
248:18 249:11	194:25 203:1	219:17	243:12,18,22,23	221:9,9,10,10
262:24 268:15	216:8 256:15	overview (1)	259:25 260:5,5	221:12,17,18,19
once (14) 144:2,4	ore (13) 145:9	161:6	260:6,13,23	221:20 242:18
145:20 148:2,22	151:9 156:12	P	261:4,13 262:26	242:19,21
156:13 167:8	193:16,16 194:3	pad (2) 153:10	participated (1)	percentage (4)
171:19 172:15	194:18,21,21	195:25	268:23	175:21 202:20
203:18 232:24	195:4 196:7,8	pads (2) 152:22	participation (3)	202:26 203:19
274:9,13 275:6	250:14	197:7	266:11 269:2	percentages (1)
one-and-a-half ...	organizations (2)	Page (2) 139:3	273:26	203:15
201:1	179:10,11	277:3	particular (2)	perform (3)
one-third (1)	orientate (1)	pages (1) 276:4	220:24 223:19	150:22 215:20
149:7	183:16	pair (1) 181:4	particularly (2)	215:24
onerous (1)	original (4)		210:4 211:10	performing (1)

219:19	169:20,23 170:6	place (18) 148:4	155:22 156:2,4	144:3 147:2
period (12) 149:3	179:8,12 180:17	149:4,4,14	156:5,8 157:7	148:1 152:9,13
150:23 181:19	180:18,18,19	150:2 159:12	159:5 181:17	152:15,26 153:3
201:2,8,25,26	184:8 196:12	168:21 171:23	207:9 223:5	156:14 263:5,6
202:4,10 207:10	205:9,9 206:20	173:11 181:22	259:21,22 263:8	263:6
210:22 216:5	206:20,24 219:4	184:14 201:21	play (1) 249:20	ponds (15) 148:13
periodic (6) 226:6	219:7 221:1	208:19 216:13	please (9) 186:9	152:3,4 156:13
227:17 235:18	222:5 223:21	260:13,16	195:16 198:17	156:13 171:15
236:17 237:22	224:13 228:8	261:22 272:5	198:20 205:17	189:3 195:26
237:26	265:20,23 266:3	placed (2) 144:2	207:4 237:16	196:15 260:14
periodical (1)	266:4 273:4	153:16	248:17 253:26	260:16,17,22
226:22	275:2 277:11,16	places (2) 242:2	pleased (4)	263:1,7
periodically (3)	phased (2) 178:9	260:12	185:13 187:21	portal (1) 195:5
224:1 226:4,15	206:8	placing (5) 147:14	269:26 272:25	Porter (1) 141:15
periods (1)	phases (2) 153:15	148:14,21 150:4	plume (5) 239:18	portion (1) 188:5
160:19	164:20	168:15	240:26 243:11	portions (1)
peripheral (1)	philosophy (5)	plan (43) 157:26	243:18,21	157:12
175:12	173:23 176:6,22	159:1 169:7	plus (2) 188:9,12	position (3)
periphyton (1)	178:23 202:21	170:3 171:9,17	PM (3) 218:14	199:10 236:21
163:16	physical (3)	171:18 184:20	248:4,5	237:6
permafrost (2)	159:17 175:9	188:18 189:12	Po (1) 166:2	positioned (1)
157:11,15	181:7	189:17 190:1,6	Pogo (1) 146:14	162:16
permanent (1)	physically (1)	190:13 199:1,8	point (17) 149:7	possibility (1)
144:9	259:1	210:15,16,18,23	160:5,12 164:9	258:16
permeability (1)	phytoplankton ...	211:21,26 212:5	164:11 166:7	possible (2) 189:8
172:1	163:17	227:3 233:2	179:22 198:23	237:5
permit (1) 271:26	pick (1) 143:10	234:10 239:23	200:21 234:23	post (4) 181:9
person (1) 175:13	pictograms (1)	241:4 243:11,12	235:11 241:14	197:6 270:15,26
perspective (4)	146:17	243:15 244:3	242:23 244:12	post-closure (4)
160:1,1 167:4	picture (1) 145:21	247:21 249:16	246:10 249:13	200:5 201:22
233:7	pieces (1) 173:3	250:10,25 251:6	270:12	204:8,15
perspectives (1)	pile (10) 146:8	251:9 261:6,8,8	pointing (1)	post-Project (1)
183:8	150:8 151:15,16	261:10,18	227:19	251:10
pertain (2) 185:1	151:16 152:13	planned (1) 222:9	points (8) 163:1,2	posted (13)
241:17	152:15,26 153:1	planning (5)	163:4,5 241:17	178:12,15
pertinent (1)	153:3	171:2,4 189:16	241:24,26	179:11 180:19
182:18	piles (8) 151:11	189:18 200:6	242:11	180:21,22
pH (1) 250:14	151:11,18,21	plans (22) 149:15	Poitiers (1)	181:20,20
phase (51) 153:14	152:1,3,17	159:7 170:1	141:25	204:16,18
153:19 154:19	156:11	183:9,10,25	policy (2) 200:24	206:12 267:4
154:22,22	pillar (12) 193:13	184:5,7,11,20	201:23	270:10
155:24,26	193:15,24,26	184:24,26 185:1	poll (1) 256:21	posting (1) 270:24
158:19 161:8,14	194:6,6,11,16	185:3 187:10,12	pollution (2)	postings (1) 179:7
161:16,22,26	194:23 195:4,7	189:25 198:23	260:15,16	potable (1)
162:18 163:23	195:9	199:6 233:18	polymers (2)	155:20
164:19,21	pillars (1) 195:11	249:15 261:5	216:22,25	potential (25)
168:12,19 169:8	pipes (1) 168:15	plant (15) 147:8,8	pond (13) 143:19	161:6 162:10,14

162:16 164:9 165:17 166:3,5 166:26 167:24 168:3,7,12,21 169:16 170:5 195:14 199:26 205:4 234:13 236:19 237:2 249:18 250:13 265:26 potentially (6) 143:25 177:14 195:18 196:22 235:21,25 pots (1) 178:14 power (2) 233:8,9 PowerPoint (6) 186:13 219:3,6 277:5,10,15 practical (1) 155:8 practice (4) 141:22 153:23 201:11 236:10 practices (1) 154:1 prayer (2) 275:7,8 precommissioni... 181:19 207:10 predict (1) 159:25 predicted (3) 161:22 163:24 165:18 predictions (4) 161:8,26 166:1 250:16 predictive (1) 170:8 prefer (3) 200:24 201:25 231:10 preference (1) 199:20 preliminary (1) 209:2 prepared (2) 227:23 231:7 preparing (1)	236:16 present (6) 161:10 229:8 239:1,3 258:4 268:3 presentation (36) 139:7,11,16 143:6,8 154:7 161:5 182:3,9 182:13 186:1 187:16 191:16 191:20,23,25 198:18 210:10 218:2,17,23 219:10,11,24 220:8 228:26 229:2,12 238:17 238:19,26 239:6 239:9 244:23 245:6 249:14 presentations (1) 229:4 presented (6) 153:5,23 160:26 190:1 238:26 239:15 presenter (1) 244:24 presenting (1) 229:5 President (1) 141:21 press (4) 146:6 147:6,6,11 presses (1) 146:6 pressing (1) 167:17 presumably (1) 189:20 prevent (2) 177:1 188:24 preventing (3) 270:22,23 271:7 previous (2) 226:3 263:18 previously (2) 223:17 228:26	price (5) 173:3,15 173:18 174:9,10 prices (1) 173:18 primarily (1) 165:18 primary (7) 162:12 163:16 177:3 193:20 200:14,21 264:18 Principal (1) 141:22 principle (4) 148:11 155:10 179:1 180:3 principles (9) 155:4,5 158:7 159:2 174:4,16 175:25 179:16 202:23 print (1) 253:10 prior (18) 144:16 149:19 153:19 168:21 178:15 181:22 207:22 220:5 222:3,6 223:4,6,9,20 239:26 261:17 261:21 263:26 probably (4) 176:13 181:26 254:23 259:15 problem (2) 216:21 256:14 procedural (2) 179:22 218:26 procedure (1) 171:5 proceed (2) 187:10 231:18 proceedings (8) 141:1 143:1 218:14 248:5 256:12 274:19 275:10 276:5 process (39) 145:17 163:23	169:20 170:22 171:4 173:4 183:7 184:8,18 184:18,21,22 185:9 186:19,23 187:20 196:7 198:13,26 199:2 199:3 200:17,20 209:5 210:20,20 211:18 217:12 219:18 223:4,25 234:12 237:10 249:16 259:21 263:8 269:3 271:24 273:6 processes (2) 155:18 169:13 processing (8) 147:8,8 156:2,4 156:5 181:17 207:8 223:4 produced (2) 200:11,13 producers (4) 162:12,12 163:16,18 producing (2) 181:18 207:9 product (1) 146:22 production (3) 223:5 269:22 272:5 productivity (6) 168:12,22 169:1 169:4,15 174:21 products (1) 216:24 program (22) 142:15 162:5 164:7,16,22,23 164:24,26 165:1 165:6,13,14 166:7 170:16 210:1,2,6,12 212:5,7,18 240:26	programs (8) 162:10,13 170:1 170:10 183:10 210:1 217:19 262:17 progress (1) 185:11 progressive (1) 149:17 progressively (1) 148:20 project (98) 142:3 150:14,26 151:1 151:24 153:6,14 154:9,14,26 155:6,19 159:8 159:10,26 160:8 160:9,21 161:8 161:21 162:11 162:14,18,21,23 163:24 164:3,4 164:10 165:9 166:24 168:10 168:12,20,22,24 169:2 170:7 171:11,12 172:5 172:13 175:5 176:9,10,11 179:4,7,9 180:14,18,22,25 182:21 183:2 184:5,6,15,23 187:11 189:23 190:26 196:14 202:14,15,17,17 202:19 204:5,13 210:17 219:4,7 219:14,16,18,26 221:1 224:13 227:5 237:6 250:8 251:7 266:1,10,26 269:12 270:7,24 271:10,19 272:17,23,26 273:4 275:2 277:11,16
--	---	--	--	---

projects (7) 154:9 159:22 162:20 171:3 200:26 252:8 270:20 proof (1) 223:26 proper (1) 183:19 properly (2) 217:4 233:25 Proponent (2) 199:7 268:6 proportion (3) 176:14,15 177:19 proportionality... 180:8 proportionately... 203:26 204:6 proportioned (3) 180:6,10,11 proposal (2) 221:6 264:25 propose (3) 234:26 252:3 253:8 proposed (37) 180:16,25 181:13 182:19 189:23 190:21 190:25 195:10 196:6,13 201:26 208:14 209:15 212:8 220:26 222:2,17 223:2 223:18 251:25 252:2,8,14 256:9 262:17,19 263:11 264:1,4 264:5,9,15,16 264:23 270:24 273:4 277:24 proposes (1) 251:17 proposing (3) 178:25 194:16 233:26 protect (6) 148:26 150:5 152:25	177:3,10,15 protected (3) 168:9 169:22 215:16 protection (4) 142:14 183:5 239:23 241:4 protective (5) 161:25 170:23 271:11,21 272:22 proven (2) 146:15 161:20 provide (17) 161:5 173:26 181:8 211:2 213:20 219:17 219:24 222:2,6 223:26 224:4 231:8,17 239:24 241:2 258:1 269:10 provided (31) 186:19 190:18 190:25 197:1 200:2,2,7 204:1 205:4 210:11,26 212:13 214:3 220:25 221:11 221:23 222:8,16 222:18 223:2,3 223:6,9,16 224:2 229:13 239:20 253:12 254:6 268:24 274:9 provides (2) 149:1 179:24 Province (1) 276:8 proving (1) 164:5 provisions (1) 217:20 proximity (2) 145:13 166:17 public (26) 138:9 139:10 143:3	186:3 214:15,17 214:18 218:25 225:18 230:23 237:24 242:4 245:5 246:7 247:20 249:2 252:4 258:2 265:18 268:5 273:13,16 274:7 274:10,17,25 pump (6) 144:4 146:25 147:9 148:1 157:6,19 pumped (1) 158:16 pumphouse (1) 157:3 pumps (1) 157:3 purpose (4) 147:23 202:16 219:24 256:16 purposes (2) 256:23 269:21 put (17) 143:20 149:14 151:2 157:24 159:24 170:4 172:1,22 173:1,3,18 175:14 176:26 243:22 245:8 259:14 260:20 putting (1) 173:15 pyramid (1) 147:21	250:5,20 271:11 quantified (1) 159:24 quantify (4) 159:18 160:23 173:12 176:5 quantitative (1) 165:2 quantities (6) 173:5,17 174:2 175:2,3 203:6 quantity (5) 159:14 162:11 165:23 166:3 170:8 quantum (14) 179:5,18,20 187:18 199:14 206:3 221:18 234:22 235:15 235:20 236:13 236:20 267:2 270:2 quarries (1) 156:19 quarry (3) 144:22 152:21 173:10 question (61) 139:8,12,14,20 139:22 140:3 149:12 193:3,10 193:11 195:14 195:22 196:18 196:21 199:25 203:25 205:19 206:6 207:18 208:10,21,24 209:26 212:6,17 212:21,25,26 214:20 215:2,8 215:9,10,11 216:18 217:7,8 217:9 225:20,21 226:5 228:15 229:17 230:13 230:24,26 231:1 231:7,15,23	232:19,20 243:7 243:10,17 244:1 244:22 248:10 249:4 262:16 263:16 questioning (9) 191:24 218:3,18 229:6 239:4 247:23 249:1 265:3,8 questions (70) 139:10,18,24 149:10 192:4,7 192:14,20,25 193:6 210:5 214:12,15,18 217:25 224:18 224:20,26 225:5 225:10,12,16,18 225:25 228:13 228:19 229:14 229:16,21,26 230:4,5,17 231:9 238:8 240:2,5,8,13,17 240:19,20 242:4 243:2,6 244:16 244:18 245:9,15 245:20,26 246:2 246:5,6,10,13 246:21 247:18 247:19 249:6,9 258:16,20,26 259:9 262:4,8 262:12,13 268:11 quick (1) 161:5 quickly (1) 200:17 quite (4) 198:14 210:16 259:22 264:21 quote (2) 178:6 179:14
Q				
quality (25) 142:11 157:4 159:21,21 160:1 161:7,17,18 162:11,12 163:15,16 165:11,13,23,23 165:26 167:5 170:8 184:2 189:10 220:2				
R				
R (1) 141:7				

radium (6) 241:13,17,23 242:10 244:10 244:11 Radium-226 (3) 208:17 209:16 209:20 Raglan (1) 146:11 raised (1) 202:12 rapidly (1) 230:22 rate (6) 149:5 173:20,20 174:5 174:6,14 rates (7) 173:14 173:25 174:3,4 174:23 175:2,3 reached (3) 201:19 263:23 272:26 reaches (2) 156:14 216:4 reaching (1) 222:4 read (1) 261:14 reading (1) 273:9 ready (5) 148:2 148:24 226:11 226:12,13 reality (3) 188:20 189:11 213:15 realize (2) 246:18 254:23 really (4) 151:23 197:23,25 210:10 reason (14) 149:13,24 153:16 155:7 157:20 160:18 173:1 177:6,17 200:14,14 202:25 242:12 266:6 reasons (1) 200:21 recall (3) 176:25 177:12 218:26	receipt (3) 220:23 222:10 223:24 receive (3) 223:20 255:1 266:9 received (14) 185:7 210:22 228:26 229:2 247:12 253:21 253:24,24 254:11,17,24 255:5 274:10,11 receiving (7) 162:3 167:9,10 223:17 255:12 255:15 263:10 recirculated (1) 147:7 reclaim (4) 143:19 144:3 147:2 148:21 reclaimed (1) 173:24 reclamation (22) 149:17 185:2 190:5,10,13 220:17,22 221:2 221:16,25,26 224:1 226:4 233:1,2 252:5 270:1,6,10,12 270:16,26 recognize (3) 177:26 251:6 273:7 recognized (1) 202:16 recognizes (1) 270:6 recognizing (1) 258:15 RECOMMEN... 218:14 248:5 recommencing ... 256:12 recommend (1) 180:4 recommendatio...	170:14 268:4 recommended (3) 250:9 269:16,18 recommending ... 242:9 reconvene (1) 247:16 record (14) 211:25 237:16 246:11 248:17 253:3 256:3,16 256:22 258:2 259:14 274:7,10 274:18,18 records (1) 274:13 recovery (4) 193:13,15 194:16 195:9 recycle (1) 156:7 recycling (2) 155:8 158:9 red (1) 154:15 reduce (2) 194:5 194:11 reduced (1) 264:18 reducing (1) 215:25 reduction (1) 201:15 redundant (1) 261:22 reevaluate (2) 233:18 235:2 reference (7) 149:7 162:23 166:18,19,22 167:26 168:5 referring (2) 208:12 253:15 reflect (5) 188:5 188:16,20 189:22 190:25 reflected (1) 224:8 reflective (1)	184:9 regard (1) 178:3 regarding (4) 199:25 239:17 267:2 268:25 regards (4) 259:10,17,19,25 regularly (1) 226:24 regulated (1) 209:20 regulation (3) 190:23 241:16 244:5 regulations (16) 161:13 162:4,7 165:7 167:4 169:25 208:20 209:7,17,21 249:24,26 271:16,21 272:4 272:16 regulatory (7) 163:23 169:6 170:12,21 183:4 219:17 272:20 relate (1) 185:9 related (10) 150:18 151:26 170:6 189:13 195:14 200:4 202:14 203:4 205:13 255:7 relating (3) 215:10 240:25 243:10 relation (4) 209:26 233:16 237:6,6 Relations (35) 139:15,25 140:1 140:6 142:5 187:17 190:8,16 192:9,12 199:12 212:2 224:24 229:10 230:14 232:21 233:5	234:6 237:18 238:25 240:11 245:22,24 249:5 249:10 251:2 254:10,15 257:7 257:10 259:4,7 266:14,17 273:20 relative (1) 151:18 released (3) 144:1 152:9 197:22 relevant (2) 222:13 223:14 reliable (1) 174:25 rely (2) 209:3 245:5 remain (4) 229:3 240:1 272:3 274:7 remaining (7) 143:19 144:3 180:11,21 194:23 195:4 203:3 remains (4) 144:10 148:16 171:19 245:7 remarks (18) 140:5,6,8,10,11 140:12 265:12 265:14 266:13 266:14 267:11 267:12,22,23 268:13,14 273:11,12 remember (3) 144:6 146:3 200:5 reminded (1) 230:22 remit (1) 274:13 remove (6) 144:22 147:5 148:25 172:6,18,20 removed (1)
---	---	---	--	--

146:5	167:2 168:10	140:4,11 141:20	162:17 164:4	231:15,18 245:8
removes (1) 147:7	184:11 187:10	142:8 143:8	results (10) 160:2	248:9 266:3,4
rendering (1)	188:18 189:9	186:12 193:3	160:3 183:14,24	rigorous (3) 145:3
145:19	213:23 222:1,24	204:12 214:18	184:1 215:4	145:9 176:1
repeating (1)	223:25 224:4	220:4 225:12	217:11 243:20	rigour (1) 148:7
232:24	231:26 233:12	240:20,23 243:7	243:22 272:21	risk (2) 204:25
report (5) 183:13	234:15 236:14	248:10,19 249:9	retract (1) 212:21	223:14
185:14 187:21	241:1 242:1	252:11,13,16,18	returning (1)	risks (1) 222:13
196:15 242:25	244:4 249:23	255:17,20	275:5	River (5) 235:13
reported (2)	250:12,24 267:4	262:13 265:19	reuse (1) 156:8	235:26 236:7
217:12 243:19	270:15,26	266:5 268:14	reusing (1) 155:8	237:4 270:24
reporter (3)	271:15 272:13	273:18 277:4,19	revealed (1)	road (15) 146:1
142:20 273:24	requirement (4)	277:23 278:1,4	199:18	188:10,13,24
276:15	168:24 190:6,12	278:8,12	review (31) 185:8	213:2,2,3,3,7,14
reporting (3)	250:2	respect (14) 206:7	185:10 199:2	213:15,22
189:17,18	requirements (...)	230:25 235:12	210:21,24 220:1	230:25 232:1
243:23	162:3 183:2,4,5	236:22 239:16	220:3,17 226:6	260:26
reports (2) 196:9	183:18 184:9,14	239:22 241:3,13	226:10,11,22	roads (6) 152:22
217:15	184:20 189:18	250:4 254:25	227:1,2,3,10,20	159:23 171:15
represent (2)	190:10 222:13	256:8 258:20	232:25,26 233:1	172:5 231:26
153:5 163:2	223:13 228:10	262:16 271:9	233:9,12 234:8	232:6
representatives ...	requires (6)	respectively (2)	234:9 235:19,26	Roberts (8)
258:4	159:14 221:24	191:8 220:13	236:17 237:22	154:13,17,25
represents (1)	222:19 237:25	responded (2)	237:25 247:3,14	157:4,24 158:13
270:4	250:10,15	211:12 224:7	reviewed (2)	166:2 168:19
request (12)	requiring (1)	response (13)	224:2 226:5	rock (45) 143:20
165:10,24	222:22	163:25 165:2	reviewers (1)	144:22 146:4,5
220:21 227:1	research (1)	189:19 190:16	210:18	146:22,25 147:4
233:8 234:11	215:14	230:26 231:23	reviewing (3)	150:5,24 151:2
253:2 256:2,3,8	reshape (1) 173:7	235:24 240:24	184:23 226:14	151:6,7,10,11
257:26 274:15	resolution (1)	244:19,20 265:3	247:22	151:18,21 152:1
requested (2)	221:5	265:9,10	revised (6) 186:24	152:3,12,15,17
200:26 259:14	resolve (2) 203:1	responses (1)	188:19 222:15	152:20,21,24,26
requesting (8)	265:24	211:15	223:15 253:3	153:1,3,7,10,16
187:9,11 188:8	resolved (11)	responsible (1)	274:8	153:18,22 154:4
188:11 198:23	185:14 203:7,19	219:16	revision (2) 189:9	156:11 159:23
234:3,8 256:15	211:16,21 220:5	rest (1) 144:10	243:14	172:23 173:10
requests (6)	221:14 224:10	restoration (3)	revisiting (1)	173:11,22,23
169:12 211:17	224:11 240:1	227:3 233:18	239:5	176:26 195:8,25
247:14 269:14	268:5	234:9	right (21) 145:21	196:8 250:13
269:17,23	resolving (2)	result (6) 165:18	147:8 150:6	Roesch (20) 142:3
require (7) 188:1	265:20,22	165:19 168:11	153:13,17	192:1,2 219:12
199:16,21	Resource (1)	226:24 234:22	162:25 171:25	219:13 226:7
204:11 213:10	142:7	235:25	173:10 194:17	227:13 228:4,4
213:15,16	resources (42)	resulted (2)	205:26 207:26	229:19,19 240:6
required (28)	139:7,9,10,18	164:20 203:13	211:20 212:26	240:7 245:18,19
161:12 164:8	139:21,23,24	resulting (2)	216:25 218:11	258:24,24

265:15,16 268:22 role (1) 219:19 room (1) 273:1 Ross (2) 217:23 228:15 rounding (1) 203:6 royalties (1) 266:9 rubber (1) 214:25 rubbers (1) 216:20 running (2) 267:17 269:5 runoff (13) 144:11,23 147:24 148:13 148:26 150:1 152:4 153:2 159:23 164:14 165:20 166:9 177:16 Rykaart (22) 141:22 143:9,9 161:9 164:12 170:25 171:1 193:11,14,14 200:10,10 204:2 204:2 206:13,13 207:5,5 215:7,7 263:22,22	167:15,18 184:2 sand (5) 145:25 145:26 146:7,8 147:12 satisfaction (4) 224:7 228:3 239:21 241:3 satisfied (3) 211:26 228:11 251:11 saw (1) 196:16 saying (2) 177:26 244:9 scenario (1) 197:25 scenarios (1) 237:11 schedule (11) 153:11,12 176:1 190:18,20,24 191:1 202:24 242:20,22 251:25 Schumann (4) 142:20 273:24 276:3,14 scope (3) 259:17 259:18,24 second (10) 143:3 151:13 155:10 159:20 187:9 199:9 201:21 222:5 223:5 271:7 secondary (2) 162:12 163:18 secondly (1) 154:3 secret (1) 199:19 section (3) 153:21 154:7 187:2 secured (4) 176:14,15 222:10 237:23 security (83) 171:3,6,10 176:10 179:7,19	179:19,20 180:15 187:19 187:26 196:23 197:1,14,23 199:9,14,15,21 199:25 201:24 205:23 206:8,12 220:11,15,17,23 220:26 221:2,4 221:7,16,21,22 221:25 222:2,12 222:13,18,20 223:1,12,13,18 223:20,24,26 224:3,10 226:14 227:2,20 232:25 233:9,12,17 234:8 235:2,7 235:15,20,26 236:23 237:21 247:13,18 252:6 252:7 255:7 259:26 263:17 263:20 265:22 266:7 267:2,3 269:17,19 270:2 270:10,16,25 sediment (5) 161:18 162:11 163:15 165:23 167:13 sedimentation (1) 260:17 see (31) 143:15 145:20,26 150:6 151:25 152:12 152:17 160:17 160:26 163:3,10 166:25 167:10 167:17 168:6 178:26 184:1,24 194:12 205:7,15 212:10 215:3 233:2 236:11 237:26 241:24 242:1,5 257:2 260:8	seeing (1) 183:24 seeking (2) 248:14 251:8 seen (4) 206:18 212:8 251:5 260:21 select (1) 226:10 selected (2) 145:16 167:19 send (9) 146:5 152:8 156:14,16 156:23,23 157:18,21 258:6 sending (1) 147:5 Senior (4) 142:3 142:10,14 219:14 sense (3) 158:23 207:26 233:15 sensitive (1) 177:13 sent (1) 157:24 separate (5) 154:18 184:11 243:13,13,15 separation (2) 152:24 264:6 September (1) 186:20 serve (1) 148:26 Services (1) 141:12 session (2) 239:1 273:17 set (8) 163:26 223:21 236:17 236:18 269:24 271:19 272:4,15 sets (1) 168:1 setting (2) 146:16 154:9 sewage (3) 155:21 155:22,23 shape (2) 217:3 235:4 share (2) 239:14 273:2	shared (1) 233:10 shareholders (1) 266:9 sharp (1) 217:5 shores (1) 158:21 short (3) 247:2 256:15 268:17 shortest (1) 216:14 shorthand (2) 276:5,6 shortly (3) 160:3 178:6 179:23 show (2) 144:15 161:24 showed (1) 168:1 shown (2) 182:25 191:15 shows (3) 144:19 158:26 226:24 shrink (1) 153:3 sic (6) 178:5 187:20 207:12 237:8 249:24 269:1 side (2) 143:15 167:14 sides (2) 203:9 233:3 sighting (1) 167:21 sign (1) 165:3 significant (6) 161:21 164:3 185:10 187:20 270:4,19 significantly (2) 270:11,18 similar (10) 145:2 146:1 152:22 181:6 221:13 238:24 256:9 263:4,12 270:23 similarly (5) 158:14 160:25 196:11 213:10 264:14
---	--	--	---	---

simple (4) 149:16 175:20,20 198:14	171:21 198:11	242:4 246:15 251:13	234:5 237:17 240:10 245:23	staged (13) 206:8 220:23,26
simpler (1) 198:10	situations (1) 237:7	sort (11) 143:18 206:1 207:24	251:1 253:13 254:14 257:9	221:22 222:11
simplest (1) 176:21	six (6) 180:25,26 181:12,13,26	209:16 210:7,8 212:18 227:4	266:16	222:17 223:12
simply (2) 159:23 203:9	264:17	239:5 243:12,14	Spencer's (1) 234:19	223:18,24
sincerely (1) 268:1	size (4) 151:22,24 153:5 204:6	sought (1) 248:16	spill (2) 189:17,18	224:10 269:16
single (2) 172:13 172:15	skill (1) 276:7	Sound (1) 142:22	split (18) 176:12	270:2 271:3
site (49) 144:10 145:12,19 148:2	skipped (1) 246:15	source (6) 164:9 164:10,11,13	178:5 179:6	stages (9) 178:17 180:14 185:10
150:16,25	slide (20) 143:15 144:19 148:8	166:7,9	180:3 187:20	206:9,10 222:14
151:13,15,24,25	154:11 158:4,26	sources (5) 164:10 165:17 169:21	220:12,15,19,26	223:15 248:7
152:23 154:3,24	159:15 160:12	263:10,13	221:3,8 223:18	270:25
155:9 156:12,19	160:18,22 179:6	south (8) 151:14 151:16 152:11	263:25 264:20	staging (5) 178:8 178:8 187:19
158:7,10,21,21	182:15,25 184:4	158:1,11,15	264:23,24 265:1	221:4 271:5
159:3 160:9	190:24 198:17	166:6 264:14	265:24	stand (2) 206:19 275:7
165:20 166:11	198:19 212:25	spaces (1) 151:8	spreadsheet (1) 252:6	standard (3) 173:25 198:25
166:13 169:14	226:3 249:14	speak (8) 191:7 191:10 195:24	square (6) 206:23 206:26 207:13	201:11
175:14 181:1,5	slides (12) 160:26 171:7 179:12	199:26 211:1	207:16 216:3,5	standardize (2) 200:24 201:24
183:12,16,18,21	181:26 182:15	217:9 220:9	SRK (1) 141:23	standards (3) 271:17 272:18
184:13,17,22	182:17 185:17	252:23	stability (1) 148:16	272:24
193:17,20 198:7	185:25,26 186:2	speaking (2) 205:2 208:4	stable (3) 148:17 194:4,14	start (15) 146:22 148:14 153:1
201:13 220:20	186:13 277:5	speaks (1) 191:9	stack (13) 145:13 145:22,23 146:9	173:15 182:2
223:22 255:22	slopes (1) 148:21	special (1) 266:22	146:13,21	191:25,26
256:24 262:21	slurry (2) 146:20 146:24	Specialist (1) 142:11	147:14 148:5,14	218:18 222:5
264:4 270:12	small (5) 151:18 151:23 203:25	specific (6) 212:19 216:23	149:11,12 217:4	224:21 229:16
274:9 278:14	204:17 249:13	239:25 243:21	222:22	240:3 243:6
site-specific (1) 174:24	smaller (1) 188:21	250:19 260:1	stacking (1) 147:3	245:16 265:13
sites (24) 145:17 151:18 155:3	smelter (1) 266:9	specifically (11) 191:3,6 208:15	Staff (28) 139:8 139:12,14,20,22	started (1) 143:13
163:11,13	snow (1) 213:12	209:7,15 210:10	140:3 141:10	starting (5) 185:21 193:10
166:10,12,13	socio-economic ... 145:11 184:26	211:4 216:22	193:2,3 214:12	198:22 218:17
167:15,18,19,21	solely (1) 256:22	243:24 250:24	225:19,21	246:24
167:22,25,26	solid (1) 211:21	263:20	228:13 232:19	state (5) 153:23 199:20 208:6
168:4,4,6 212:8	solids (1) 191:9	specified (2) 190:10 220:20	232:20 243:2,5	220:7 250:3
241:25 252:2,12	somebody (3) 160:22 175:15	Spencer (15) 192:11 199:11	243:7 246:8,10	stated (8) 200:12 205:14,24
264:8 277:21	175:16	212:1 224:23	248:8 249:6	227:10 241:1,5
sits (1) 158:21	sorry (10) 158:20 167:16 205:21	229:9 233:4	262:9 266:19	statement (7) 161:16 162:1
sitting (2) 218:16 248:6	212:21 224:22		268:2 269:4	
situation (2)	226:21 238:10		273:22,22	
			stage (3) 150:15 178:20 204:1	

169:13 211:19 211:20 234:19 242:8 statements (7) 217:13,16 230:18 231:2 247:20 251:18 258:19 states (2) 178:19 235:1 stating (1) 206:18 stay (1) 171:23 stays (1) 154:20 step (7) 155:1,17 158:5 172:24 173:4 183:1,22 step-by-step (1) 171:8 Stephanie (21) 193:5,8 214:9 214:11 225:24 226:1 227:26 232:18,23 233:24 237:14 238:5,6,20 243:4,8 244:15 248:9,13 251:12 262:11 steps (3) 155:2 172:24 182:26 Stickleback (1) 166:16 stipulate (1) 248:17 stockpile (1) 147:12 stockpiles (4) 151:7,25 156:12 250:14 stope (1) 194:19 storage (4) 189:3 195:26 196:8 205:16 Store (1) 274:2 strategies (1) 149:14 strategy (9)	143:20 156:2 158:18,19,22 172:4,12 176:18 176:26 stream (3) 165:8 168:14 170:2 streamline (2) 184:21,22 streams (8) 162:21 163:2,14 163:17,17,20 165:9 168:14 street (1) 145:26 stringent (2) 271:17 272:24 strong (1) 194:4 strongly (2) 266:2 266:10 structural (2) 151:3 153:8 structure (5) 144:10 176:9,10 178:7,10 structures (1) 144:9 study (7) 211:10 239:18 240:26 243:11,19,25 244:4 sub-tranches (3) 264:5,15,17 subject (10) 150:12 219:20 220:24 221:14 223:24 239:2,4 241:15 245:7 272:8 subjected (1) 242:13 submission (8) 187:12 200:19 219:3,7,25 222:16 277:11 277:16 submissions (3) 185:4,5,5 submit (3) 199:1	250:17 261:15 submits (1) 258:10 submitted (10) 188:25 191:13 210:19 212:15 226:16 243:13 259:1 261:20 263:19,26 subsequent (3) 200:13 236:11 236:11 subsequently (1) 197:17 substantial (5) 196:5 201:21 202:13,18 224:11 substantially (1) 232:4 substantive (1) 189:25 success (3) 265:26 267:6 273:17 successful (1) 161:20 successfully (1) 224:9 sufficient (1) 222:8 suggest (2) 191:4 241:19 suggested (4) 186:20 189:6 264:2 271:11 suggesting (1) 244:2 suit (1) 272:11 suite (2) 262:19 263:9 summarize (3) 182:17 185:17 187:2 summarizing (1) 182:15 summary (8) 149:1 182:17	186:13 205:22 219:25 252:19 277:6 278:6 summer (1) 163:15 Summerfield (25) 142:10 192:18 192:19 225:3,4 229:24,25 239:10,11 241:7 241:7,21,22 246:14,17,19,20 255:3,3 257:15 257:15 262:1,2 267:14,15 summing (1) 175:4 sumps (3) 156:21 156:21 189:3 sunlight (2) 215:18 216:15 supersede (1) 196:14 support (8) 156:3 165:9 166:5 169:3,18 189:20 206:3 266:10 supported (1) 266:2 supports (1) 270:6 suppose (1) 210:7 supposed (1) 214:14 sure (9) 149:25 159:10 171:20 177:16 217:3 237:23 255:1 259:22 261:10 surface (31) 151:6 152:19 153:16 154:5 155:13 161:17,17 173:8 173:9 193:18,24 194:2,7,11,13 194:18,18,22 195:1,2,2,6	206:15,24,26 207:13,15 222:1 222:9,24 271:26 surge (3) 148:1 152:9 263:5 surrounding (4) 150:9 166:14 176:20 261:11 surveillance (2) 210:1 212:7 surveys (1) 215:3 suspect (1) 212:14 sustainability (1) 169:3 sworn (1) 219:1 system (10) 144:11,12,20,23 144:23 154:18 154:22 155:21 155:22 156:11 T T (1) 141:16 TA (1) 189:9 table (9) 139:1 149:1 252:6,12 258:19 263:26 264:23 265:1 277:20 tables (1) 260:3 tail (2) 168:18 176:24 tailing (5) 206:7 221:24 222:1 223:10 264:5 tailings (121) 143:12,14,16,18 143:21,22,24,24 143:25 144:1,16 144:18,24,26 145:2,6,8,13,14 145:23,24,24 146:1,3,10,18 146:19,20,23,26 147:12,13 148:5 148:7 149:4,8,8 149:11,12,22,23
---	---	---	---	---

149:26 150:11 150:12,18,19 151:20 152:8 153:22,23,24,25 154:23 155:13 155:25 156:6,7 156:17,24,26 157:3,5,21,23 158:13 159:23 171:16,22,26 172:2 173:7 176:23,24,25,26 177:5,12,13 181:15,15,18 190:15 191:8,10 196:16 204:18 205:7,16 206:15 206:22,25 207:7 207:7,7,8,9,10 207:11,11,13,14 221:26 222:2,4 222:7,9,19,20 222:21,22,24,25 223:1,5,7,7,10 250:6,14 264:15 271:1 take (21) 146:4 148:3 171:8 172:8,10 175:26 182:1,1,4 201:13 205:17 234:23 237:21 240:2 244:21 247:1,4,16 248:2,9 272:5 taken (8) 141:1 150:20 214:24 214:26 236:22 261:21 272:20 276:5 takes (1) 199:3 talik (3) 157:11 157:11,16 talk (4) 144:25 160:3 171:2 247:17 talked (3) 159:2	180:13 258:15 talking (7) 143:13 179:13 213:6 230:15 259:11 259:13 260:17 talks (4) 260:14 260:24 261:6,13 tank (1) 263:2 technical (23) 141:12,14,24 145:10 148:6,8 169:11 170:13 185:7,8,10 200:16 203:4,7 206:2 210:21,23 211:17 220:5 224:9 256:13 265:20 268:4 technically (1) 202:19 Technician (1) 142:22 technologies (2) 145:18 149:18 technology (5) 145:5 146:9,15 146:24 153:26 tells (1) 171:14 temporary (4) 151:7,11 152:1 152:16 ten (4) 149:3 151:22 164:1 166:22 tends (1) 214:25 Teresa (38) 185:23 218:19 218:20 228:22 228:23 230:19 230:20 231:11 231:12 233:22 235:8,9,24 236:4,5 238:21 244:25,26 247:8 247:10 248:1,25 251:13,14,22 252:25 253:13	253:18,19 254:8 254:19 255:8,23 256:19 257:5,18 257:24 258:13 term (10) 150:6 188:2,19 217:3 234:26 235:5 248:15,20 250:6 250:9 terminology (1) 157:2 terms (14) 150:11 154:8 158:8 159:9 160:4 171:13 176:18 204:22,23 208:10 216:18 236:7 253:2 269:11 terrestrial (1) 177:2 test (6) 147:26 152:6 156:22 166:1 168:3 242:15 testing (1) 215:12 tests (1) 167:7 thank (257) 161:4 170:25 171:1 181:23,24 182:5 182:7,11 186:4 186:6,7,10,16 191:22 192:5,6 192:7,8,15,18 192:21 193:1,4 193:8 195:12,21 196:19 198:8,15 199:11,24 203:24,25 204:26 205:20 205:21,22 206:5 207:17 208:1,9 208:23 209:10 209:25 210:13 211:7,21,23 212:1,12,22 213:4,18,19	214:4,5,10,13 215:4,7 217:8 217:21,22 218:1 218:8,20 219:12 224:17,19,23 225:1,3,6,11,14 225:17,23 226:1 226:1,19,20,26 227:8,24 228:12 228:14,20,23 229:9,21,22,24 230:7,11,19,20 231:3,5,12,20 231:21 232:6,13 232:17,22,23 233:21,22,23 234:18 235:9,22 236:5,24,25 237:1,12,13 238:5,7,9,16,17 238:21 239:7,10 240:3,6,8,9,18 240:22 241:10 241:12 242:3,6 243:1,3,8,8,16 244:6,8,14,17 244:21,22,26 245:10,12,16,18 245:20,21 246:1 246:3,6,9,13,14 246:23,26 247:6 247:6,10,26 248:1,12,18,25 249:6,8,11 251:12,14,21 252:20,21,24,25 252:26 253:5,6 253:7,18,19 254:3,8,19 255:8,16,23 256:4,6,18,19 256:20,26 257:3 257:5,18,24 258:7,9,11,13 258:14,21,23 259:2,3,6 261:24,25 262:1	262:5,9,10,22 262:24 263:14 265:6,7,15,17 265:18,21 266:11,11,12,19 266:19,19,20,21 266:22 267:5,8 267:8,14,16,20 267:21 268:2,9 268:11,12,15,22 268:26 269:3 273:1,9,10,10 273:15 275:6 thanks (12) 181:24 192:26 195:21 197:2,2 198:8 208:24 214:7 234:16 241:21 262:8 274:1 they'd (1) 242:1 thick (2) 144:21 152:21 thin (1) 148:15 thing (19) 145:3 145:12 150:17 150:26 152:14 152:19 153:9 154:8,19 160:23 171:11 173:14 174:26 176:8 183:16 201:3,7 205:13 264:3 things (13) 159:15 159:15,16 160:5 164:14 165:3 171:13,14 175:17 206:14 249:20 250:6 260:10 think (31) 146:18 167:16,16 181:23 193:12 199:8,20 205:11 206:2,9,16 212:6,22 225:18 226:23 227:1
---	---	--	--	---

230:15 233:7,14 235:26 237:1,22 237:24 238:1 241:4,13 246:24 249:13 250:1,22 266:23 thinking (2) 172:25 197:20 third (5) 151:14 202:13 204:9 223:8 226:11 thoroughly (1) 210:3 thought (1) 227:5 three (22) 151:10 155:2 166:10,12 167:22 179:26 180:4 184:25 185:17 187:13 201:2,3 206:3 206:10,10 207:6 215:13 222:26 223:2 252:4 261:16 264:18 three-year (1) 273:5 thresholds (4) 242:24 250:18 272:3,15 thumb (1) 167:17 TIA (11) 158:16 190:14 206:20 206:22,24,25 222:5,7 249:19 249:23 250:5 tied (1) 197:23 till (1) 253:3 time (21) 151:5 154:5 160:19 163:11 200:21 210:17 215:22 215:25 216:5 233:9,19 236:12 252:24 258:1,5 259:13 264:21 266:26 268:6 269:21 270:13	timeline (1) 269:6 timelines (1) 243:14 times (1) 151:22 tissue (2) 217:10 217:17 tissues (1) 163:21 TL-7 (2) 191:7,8 TL-8 (2) 191:7,10 TMA (2) 207:12 207:14 TMAC (193) 139:7,8,10,18 139:20,22,24 140:3,11 141:20 143:8 161:11 162:16 163:22 164:17 167:2 169:4,14,18 170:4,15,20 176:7 178:4 179:1,17 182:12 184:7 185:13 186:8,12,17 187:5,16 193:3 193:10 194:16 195:22 197:18 198:24 199:26 200:2,8,12 201:2,3,4,26 202:9,22,23,26 203:8 205:22 208:2,24 210:7 210:14 212:9,13 213:5,7,19,20 214:6,18,20 217:9,17 220:4 220:10,14,24,25 221:1,23 222:2 222:8,19 223:2 223:25 224:4,6 224:6 225:11,15 226:9,13 227:14 227:19 230:5,8 230:9,12,24 231:6,20,22 234:4 235:18,23	236:24,26 237:1 237:9 239:19,24 240:18,20,23 241:2,11 242:7 242:26 243:7,26 246:1,4 248:10 248:15,19 249:4 249:8,9,12 251:4,17 252:11 252:13,16,18,20 253:5,7 255:17 255:20 256:7,10 256:16 258:10 259:11,20 260:17,24 261:6 262:13,19,25 264:2,8,14,16 264:22,26 265:18,21 266:5 266:6,20 267:1 267:4,18 268:13 268:14,16 269:13,14,17,20 269:22,26 270:6 270:8,9,15,24 270:25 271:2,3 271:18,24 272:13,19 273:10,18 274:9 277:4,19,23 278:1,4,8,12 TMAC's (13) 143:4 161:24 182:22 191:20 201:7 202:25 220:21 222:12 223:13 231:7 269:15,18 274:15 Tobin (3) 142:11 209:18,18 today (5) 151:25 188:20 264:1,23 265:1 today's (1) 185:15 told (4) 146:3 192:6 205:3	259:12 tonight (3) 256:18 274:9,10 tonnage (1) 206:15 tonnes (11) 149:5 149:6 151:20 206:23,26 207:12,15 222:4 222:7 223:7,10 Toomasie (1) 141:6 top (6) 143:20 144:20 147:21 154:11 173:11 213:9 topic (1) 242:7 topics (2) 185:12 269:14 total (22) 149:6 160:14 161:1 175:1,5 176:8 179:10 180:15 181:12 185:5 188:8,11 206:22 206:23,25 207:11,12,14,15 221:7,18,20 touch (1) 143:24 toxicity (1) 167:7 track (5) 188:10 188:13,24 213:7 213:12 tracks (1) 213:9 Trade (1) 274:21 tradition (1) 169:17 trained (1) 266:7 tranche (17) 180:17,20 181:2 181:3,5,14,15 181:19 190:14 190:19 204:4,6 204:18 264:11 264:11,12 269:16 tranches (31)	178:17,19 179:4 179:6 180:13,16 180:16,21,23,24 181:7,12,13 187:19 205:2,5 207:6,21 221:24 222:10,15,19 260:4,7 263:24 264:1,2,3,9,19 270:25 transcribed (1) 276:6 transcript (3) 140:14 276:1,4 transfer (2) 159:19 223:1 Translator (2) 142:18,19 translators (2) 266:22 267:20 transmission (1) 247:13 transport (1) 147:13 transporting (1) 175:10 travels (1) 275:5 treated (3) 152:10 166:14 167:1 treatment (11) 155:22,23 157:7 159:5 189:12 208:18 249:17 249:18,22 250:20 259:21 trench (1) 195:2 trends (4) 166:24 166:25 168:5 250:20 tri-party (1) 206:1 trigger (13) 162:13 178:19 178:19 181:3,7 181:16 190:19 205:5 206:14,21 235:21 250:18
---	--	---	--	--

272:9	185:21 187:6	211:2,15 228:25	179:2 185:9	visitors (1) 275:4
triggered (6)	195:15,19,19,20	233:25 238:23	188:7 213:1,10	visualize (1)
165:4 178:20	196:2,13,22,23	245:2 251:16	213:13,16,20,25	145:25
181:5 190:22	197:1,5,9,11,13	understood (2)	213:26 214:8	void (1) 151:8
204:19,23	197:13,14,16	199:4 249:22	215:12,13	volume (4) 138:19
triggers (7) 165:2	204:3 208:7	undertaken (1)	219:20 231:8	149:8 160:1
178:23,25	219:4,7,26	242:23	232:3 260:24	173:11
190:14 205:15	224:14 236:2	unfrozen (2)	261:17 269:22	volumes (2) 203:6
207:2 260:6	244:11 269:20	157:12,13	272:15	230:25
truck (9) 172:21	269:21 271:13	unique (1) 150:26	usefulness (1)	
173:23 174:8,9	271:25 272:1,1	unit (10) 173:14	215:24	W
174:10,17	272:3,6,14	173:20,20 174:3	user (1) 228:2	W (1) 142:22
175:10,13,16	274:15,16,22,23	174:4,5,14,15	uses (2) 173:25,25	wait (1) 182:12
trucks (2) 146:8	274:26 277:12	174:23 213:1	utilized (1) 196:2	walk (2) 171:4,5
147:13	277:17	unprecedented ...		walk-away (1)
try (2) 155:11	typically (5)	162:20	V	171:21
268:18	151:21 155:24	update (8) 189:17	validate (1)	walked (1) 158:7
trying (3) 155:14	173:21 175:22	190:6,12,25	161:26	want (19) 150:24
201:24 235:17	194:22	235:6 244:3	value (2) 209:5	160:5 172:19
tundra (8) 152:19		250:24 253:14	265:5	177:15 194:23
152:25,25	U	updated (24)	valued (2) 161:15	205:22 209:15
155:24 156:15	ultimately (10)	190:2,20 205:4	273:26	220:7 230:26
156:23 189:2	148:24 157:22	224:1 226:4	variable (4)	233:16 234:25
213:11	158:10 159:4	233:3 247:13,18	174:12 188:9,12	242:13 249:21
tunnel (2) 194:20	177:26 195:8	247:24 249:17	213:1	250:26 261:10
194:25	202:9 217:1	252:5,7 253:9	variance (1)	262:18 268:21
turbines (6)	234:14 264:25	255:18,21	194:5	268:22,26
180:24,25,26	unavoidable (1)	256:10 260:19	various (4) 163:1	wanted (10) 182:1
181:2,4 264:17	168:26	260:25 261:3	184:6 206:9	187:1 205:25
turn (3) 170:25	unchanged (1)	269:8 271:16,20	252:7	226:8 227:17
192:3 255:25	154:20	278:9,13	vein (2) 193:21,22	229:7 232:10,24
two (30) 154:9,10	underground (1...	updates (7) 188:4	VERBAL (4)	237:3 260:20
154:21 158:1,2	151:2 153:8,19	188:16,17,21	244:19,20 265:9	wants (2) 198:26
159:14 168:17	157:10,11	189:22,25	265:10	227:21
173:19 175:6,19	193:21,22,25	239:13	verify (1) 174:1	warning (1) 165:3
176:11,21 180:8	194:20,26 195:3	updating (1)	version (9) 206:16	warranted (1)
180:26 184:19	195:5	227:20	210:12 253:9	224:15
195:15,17	underneath (2)	upfront (1) 204:1	254:5 260:25	wasn't (2) 244:11
201:18 206:14	157:13 194:20	uphill (1) 174:20	261:1,3 263:18	261:1
216:10 218:4,6	understand (11)	upper (2) 162:25	263:18	waste (37) 150:24
218:8,22 222:3	146:19 155:4	167:14	Vice (1) 141:21	151:2,6,7,10,11
222:10 239:13	170:4 171:24	use (35) 145:6,8	view (6) 179:22	151:18,21 152:1
249:20 264:16	172:15,19 173:2	155:7 157:2	184:10 187:5	152:3,12,14,16
270:22	197:4 213:21	159:19 160:6,9	271:24 272:6,7	152:20,24,26
type (49) 138:10	251:8,9	160:20 165:20	vision (2) 147:20	153:1,3,7,10,15
161:11 162:4,8	understanding ...	174:17,18,19	184:7	153:18,22 154:4
164:8 174:8,11	171:17 185:25	176:13,14,21	visited (1) 163:12	156:11 159:22

183:19 184:17 185:9 195:7,25 196:8 208:11 250:13 261:4,5 272:15 wastewater (1) 259:22 water (336) 138:3 138:10 139:8,12 139:14,20,22 140:3 141:5,10 142:8,11 144:3 144:3,4 146:7 146:25 147:5,5 147:7,9 148:3 149:16 152:6 154:6,18,20,21 154:23 155:2,5 155:11,12,12,15 155:15,18,19,20 155:20,21 156:1 156:4,6,8,10,11 156:13,13,14,15 156:17,21,22,25 156:26 157:3,4 157:9,10,21,22 157:25 158:3,4 158:8,9,10,18 158:22,26 159:1 159:4,5,7,7,8,19 159:20 160:6,7 160:7,9,10,14 160:20,20,24,24 161:7,12,17 162:4,8,11 163:15 164:16 164:19 165:8,11 165:13,19,22,25 166:3,4,14 167:1,5,8,11,11 167:24 168:13 168:15 169:13 170:8,22 176:12 177:4,15,17,20 178:22 180:1 183:3,13,13 184:2,6 185:8,9	185:19,24 186:14 187:6 188:7,15,17,24 189:3,10,12 191:2,5,11,14 193:2,3,9 195:13,19,26 196:9,15,20 198:6,16,21 199:7,23 200:19 201:11 203:23 205:1 206:4 207:18 208:8,18 209:11,24 210:20 211:24 212:11,16,24 213:1,10,13,16 213:17,20,23 214:8 216:3,5 218:21 219:4,8 219:19,26 220:2 220:13,16,19,21 220:24 221:3,18 221:20 223:19 223:25 224:4,8 224:14 225:19 225:21 226:2,7 226:15,20 227:7 227:12,16,21 228:2,7,9,24 230:21,25 231:8 231:13,24 232:3 232:4,8,18,20 233:20,24 235:10 236:2,6 237:25 238:3,22 241:6,19 243:2 243:7,9 244:7 245:1 246:8 247:11,24 248:8 248:10,13,22,26 249:16,16,18,22 250:2,5,16,17 250:19,20,25 251:6,15,23,25 251:26 252:1,2 252:12,14	253:20 254:9,20 255:9,18,21,24 256:9,23 257:6 257:19,25 259:13,21 260:14,24,26 261:24 262:13 262:16 263:1,6 263:7,7,13,15 263:25 265:17 268:2 269:4,9,9 269:20,22,24 270:17 271:6,11 271:14,25 272:2 272:3,6,9,11,14 272:15,18 273:6 273:8 274:8,15 274:16,22,23,26 275:1 277:7,12 277:17,20,24 278:10,14 water-retaining... 144:9 waters (5) 155:9 172:3 263:10 272:4,23 waterworks (1) 239:26 way (14) 145:25 174:5,15 175:20 175:23,24 176:21 193:18 235:3 238:10 260:9 270:23 271:7 272:22 ways (3) 173:19 175:19 270:22 we'll (29) 143:5 143:10 144:4,5 149:3,4,4 150:7 153:9 154:6 156:16 157:18 157:19 164:23 172:20,21,22,23 182:4 214:7 218:10,18 243:6 243:22 247:15	247:16,23 248:2 267:16 we're (40) 144:7 147:3,3,21 148:2,24 150:3 151:5,10 152:22 153:7 155:8,14 167:25 172:18 178:1 187:21 188:8,11 189:4 198:5 212:4 218:2 226:13,13 227:22 229:12 229:13 230:15 233:12 234:8,20 237:23 239:25 241:9 242:9 251:11 256:14 256:15 265:25 we've (52) 144:2 146:5 147:1 152:14,23 156:14,25 158:1 159:10 160:13 160:19 163:2,13 164:21 165:5,7 171:12 173:7,16 175:1,1,2 178:2 178:18 179:21 187:20 188:2,19 188:23 189:12 189:14 190:9,11 190:18,20 191:6 191:12,16,16,17 196:6 198:1,12 205:22 211:8,12 211:16 212:8 213:14 253:15 263:11 271:10 week (2) 268:18 269:6 weeks (1) 273:9 welcome (3) 218:15 245:15 248:6 went (1) 203:20 weren't (1)	212:18 west (1) 154:17 white-out (1) 174:22 width (1) 147:19 wildlife (1) 183:20 William (1) 273:25 willing (2) 231:17 267:19 willingness (1) 273:2 wind (6) 180:24 180:25,26 181:2 181:4 264:17 Windy (4) 155:20 160:16 165:12 165:25 winter (14) 163:15 188:10 188:10,12,24 213:2,2,2,3,6,7 213:22 231:25 232:5 wish (9) 225:18 245:8 265:17,18 265:21 267:6 268:1 275:3,4 withdrawal (2) 165:19 168:14 witnesses (1) 219:1 Wolverine (1) 165:22 wording (5) 190:9 259:23 260:12 260:21 261:11 words (1) 215:17 work (18) 146:15 146:18 150:10 150:15 169:17 169:19 172:17 173:3,16 176:1 180:24 184:19 220:22 221:25 266:6 267:5 270:4 273:7
---	---	--	---	--

worked (1) 205:23	215:19 216:8,10 217:11 226:8,22	174:13 200:3,20 201:26 202:2	2:09 (1) 218:14 20 (8) 162:18	267 (2) 140:8,10 268 (1) 140:11
workers (1) 184:22	226:23 227:1,4 232:25 233:3	242:18,19,21 10-year (1) 202:4	163:3,8 194:22 194:24 203:16	27 (2) 221:19 260:14
working (1) 170:20	234:1,14,21 237:5 238:11	100 (2) 220:19 221:12	203:18 217:10 20,000 (1) 232:4	273 (1) 140:12 276 (1) 140:14
works (3) 218:9 264:6,10	271:1 yellow (1) 144:17	11 (1) 185:5 11:40 (1) 218:13	200 (2) 216:8,10 2010 (1) 164:17	277 (1) 140:15 2AM-BOS---- (1) 138:11
workshop (3) 169:9 170:18 251:11	yesterday (15) 143:11 144:16 186:24 199:26	141,000 (1) 207:15 143 (2) 139:5,7	2011 (1) 273:4 2017 (2) 188:26 200:14	2AM-DOH132... 138:12
world (1) 146:10	211:14,20 219:1 220:7,8 221:5	15 (5) 166:19 180:6 202:6	2018 (8) 138:26 139:5 141:3	3
worries (1) 246:17	229:2,13 245:5 245:6,14	220:12 260:5 15-minute (1) 182:5	169:18 220:6 271:17 276:9 277:2	3 (6) 144:21 198:23 201:19 205:7 207:7,13
wouldn't (3) 197:22 199:5 234:24	yesterday's (1) 143:6 Yukon (1) 146:13	17 (1) 221:18 186 (1) 277:4 193 (1) 139:8	2035 (3) 228:7,10 248:22 214 (1) 139:10	3.4 (2) 207:15 223:9 3:04 (1) 248:4
write (1) 235:4	Z	2	219 (3) 139:11 277:9,14 225 (1) 139:12	30 (2) 145:17 274:17 30-tonne (1) 173:22
writing (1) 261:16	zone (2) 157:16 194:7 zones (1) 148:13	2 (42) 138:19 154:19,22 161:8 161:14,16,22,26	227 (9) 141:3 23 (2) 220:15 261:13	31.7 (1) 180:19 34 (2) 186:12 277:4
written (3) 178:23 185:4 211:12	zooplankton (1) 163:19	162:18 163:23 164:19,21 168:12,19 169:8	232 (1) 139:14 239 (1) 139:16 23rd (2) 191:2 212:14	35 (2) 219:2 277:9 36 (2) 219:5 277:14
X	0	169:20,23 170:6 173:22 179:12 180:18 184:8	24 (1) 180:9 240 (1) 139:18 243 (1) 139:20	36.7 (1) 220:14 37 (2) 252:11 277:19
Y	1	207:7,11 213:1 216:4 219:4,7 221:1 222:5	248 (1) 139:22 249 (1) 139:24 25 (8) 138:26 139:5 141:3	37.5 (2) 180:2,9 37.8 (1) 221:20 38 (3) 179:10 252:13 277:23
yeah (18) 182:4 197:4 199:18 208:3 212:4	1 (17) 152:21 154:22 158:19 174:13 179:8	169:20,23 170:6 173:22 179:12 180:18 184:8	252 (4) 138:26 139:5 141:3 147:19 148:22 201:25 202:2 277:2	39 (2) 252:16 278:1 3D (1) 147:20
213:6 214:5 230:9 231:14 241:8,23 242:21	1-1 (2) 252:12 277:20 1-3 (2) 186:13 277:6	207:7,11 213:1 216:4 219:4,7 221:1 222:5	25-year (1) 202:10 252 (4) 277:19,23 278:1,4	4
244:1 246:23 251:4 261:25 262:26 267:8	1.15 (1) 206:26 1.7 (2) 207:12 223:6	224:13 228:8 259:19 265:20 265:23 266:4 273:4 275:2 277:11,16	255 (2) 278:8,12 259 (1) 140:1 262 (1) 140:3 265 (1) 140:5 266 (1) 140:6	4 (8) 197:8,17,21 198:1,4 242:20 242:22 250:23 4.8 (3) 197:9,26 198:3 4:30 (4) 247:16,17
year (12) 160:15 160:16 161:2 210:21 216:9 217:18 231:25 232:11,12 234:20 235:2 250:17	10 (9) 162:22	2(a) (3) 205:9 206:20 219:26 2(b) (2) 205:9 206:24 2,400 (1) 149:5 2.5 (2) 206:22 222:4 2:00 (1) 218:11		
years (33) 149:4 162:18,22 163:3 163:8 164:1 166:23 190:7 201:1,2,3,25,26 202:2,2,7				

248:2,3	61.2 (1) 220:11			
4:38 (1) 248:5	62.1 (3) 179:21			
40 (2) 252:18	180:5,15			
278:4	62.2 (1) 221:18			
40.5 (1) 221:7	65.8 (1) 221:6			
41 (2) 255:17				
278:8	7			
42 (2) 255:20	7.7 (2) 206:25			
278:12	222:6			
43.8 (1) 221:9	73 (1) 221:19			
44,000 (1) 160:16	75 (1) 180:11			
440,000 (1)	77 (1) 220:15			
206:23				
45 (1) 274:17	8			
480,000 (1)	80,000 (1) 207:13			
188:11	800,000 (1)			
483,000 (1) 161:1	197:10			
49 (1) 221:10	83 (1) 221:17			
4th (2) 186:20	85 (2) 180:5			
276:9	220:12			
	9			
5	9 (1) 249:14			
5 (8) 173:21 174:6	9:09 (1) 143:1			
202:21 247:2				
250:7,10 251:7				
261:5				
5-minute (1)				
247:4				
5.1 (1) 149:6				
50 (1) 175:22				
50.2 (1) 221:10				
50/50 (1) 264:24				
500 (2) 147:18				
215:19				
500-metre-thic...				
157:14				
56.2 (1) 221:9				
6				
60 (18) 181:3,9,9				
181:16 187:12				
198:24,25,25				
199:3,5 207:22				
222:3,6 223:3,6				
223:9,20 224:5				
60,000 (2) 231:26				
260:26				