

NUNAVUT WATER BOARD

Doris North Gold Mine Project Type "A" Water Licence
Amendment Application No. 2AM-DOH1323

TECHNICAL SESSION/COMMUNITY SESSION
VOLUME 1

Cambridge Bay, Nunavut
September 13, 2016

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1 Proceedings taken at Cambridge Bay Community Hall,
 2 Cambridge Bay, Nunavut

3

4 September 13, 2016

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6 NUNAVUT WATER BOARD

7 T. Kabloona Chair of Hearing

8 M. Mrazek Member

9 M. Nortok Member

10

11 NUNAVUT WATER BOARD STAFF

12 T. Meadows Legal Counsel

13 S. Autut Executive Director

14 D. Hohnstein Director of Technical Services

15 S. Aredes Technical Advisor

16 I. Porter Licensing Administrator

17 B. Kogvik Board Secretary/Interpreter

18 H. Ohokannoak Interpreter

19

20 TMAC RESOURCES INCORPORATED/LICENSEE

21 J. Roberts TMAC Resources VP Environment

22 A. Buchan TMAC Resources Director of

23 Community Relations

24 I. Evalik TMAC Resources IIBA Liaison

25 S. Hamm TMAC Resources Project Manager

26 O. Curran TMAC Resources Director of

1		Environment
2	M. Rykaart	Engineering Consultant/SRK
3		Consulting
4	M. Henry	Environmental Consultant/ERM
5		Consultants
6	N. Bishop	Environmental Consultant/ERM
7		Consultants
8	C. Kowbel	Legal Counsel
9		
10	KITIKMEOT INUIT ASSOCIATION	
11	J. Roesch	Senior Hope Bay Project
12		Officer
13	J. Donihee	Legal Counsel
14		
15	INDIGENOUS AND NORTHERN AFFAIRS CANADA	
16	K. Costello	Director of Resource
17		Management
18	D. Abernethy	Regional Coordinator, Water
19		Resources
20	S. Forte	Water Management Coordinator
21	A. Tariq	Regulatory and Science Advisor
22	T. Carroll	Legal Counsel, Department of
23		Justice Canada
24		
25	ENVIRONMENT AND CLIMATE CHANGE CANADA	
26	M. Dahl	Environmental Assessment

1

Coordinator

2

A. Wilson

Water Pollution Specialist

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1 INTERPRETERS/TRANSLATORS

2 H. Ohokannoak Inuktitut Language Interpreter

3 R. Dempster Sound Technician

4 S. Anderson, CSR(A) Official Court Reporter

5

6 (PROCEEDINGS COMMENCED AT 9:13 AM)

7 Opening Remarks by the Nunavut Water Board Chair

8 THE CHAIRPERSON: Good morning, and welcome to
9 the public hearing for the amendment application by the
10 TMAC Resources Incorporated in relation to Licence
11 2AM-DOH1323 which authorizes the use of water and the
12 deposit of waste associated with the Doris North Gold
13 Mine Project and submitted.

14 My name is Thomas Kabloona, and I'm the Chair of
15 the Nunavut Water Board, and I am the Chairperson for
16 today's public hearing.

17 Before we proceed with the hearing, please us
18 begin with an opening prayer by Henry Ohokannoak.
19 (Opening Prayer)

20 THE CHAIR: Thank you, Henry.

21 On behalf of the Nunavut Water Board, I welcome
22 you to the community of Cambridge Bay. Now, to provide
23 some background and set the stage for the hearing, the
24 Nunavut Water Board, which I shall refer to as "the
25 Board" or "the NWB" is an institution of public
26 government created under Article 13 of the Nunavut Land

1 Claims Agreement.

2 THE NWB is responsible for the use, management,
3 and regulation of freshwater in the Nunavut settlement
4 area. The purpose of this public hearing is to review
5 an application brought by TMAC Resources Incorporated,
6 whom I shall refer to as "TMAC", for the amendment of a
7 Type A water licence in accordance with the Nunavut
8 Waters and Nunavut Surface Rights Tribunal Act.

9 Pursuant to Section 13.3.6 of the Nunavut Land
10 Claims Agreement and Section 29 of the Nunavut Waters
11 and Nunavut Surface Rights Tribunal Act, the Board has
12 delegated its power to dispose all matters related to
13 amendment application for Type A Licence Number
14 2AM-DOH1323 including the conduct of this public
15 hearing to a panel of the Board, which is referred to
16 "P13".

17 I will be chairing this panel, and with me today
18 are -- members of the panel are Board members Ross
19 Mrazek to my right, and to my left, Makabe Nortok.
20 Several staff members who have contributed to the NWB's
21 administration and the technical review of the
22 application are present, along with legal counsel to
23 the NWB, and I will introduce the individuals attending
24 today. Stephanie Autut, Executive Director; David
25 Hohnstein, Director of Technical Services; Sonia
26 Aredes, Technical Advisor; Ida Porter, Licensing

1 Administrator; Teresa Meadows with Shores Jardine LLP,
2 legal counsel to the Board.

3 In addition, we have two interpreters available
4 for simultaneous interpretation, Ben Kogvik, secretary
5 for the Board, and Henry Ohokannoak who is from
6 Cambridge Bay.

7 For audio support we have Ryan Dempster from Pido
8 Productions with us. If you have any -- experience any
9 difficulties with your headsets, he will be able to
10 provide assistance.

11 To ensure an accurate record of these proceedings
12 is kept, we have with us a court reporter, Sara
13 Anderson, from Dicta Court Reporting. To assist Sara,
14 I'd ask that all parties please state their name prior
15 to speaking.

16 Before I provide an overview of this application
17 and what to expect today during this public hearing,
18 there are some important housekeeping items for
19 everyone here. First, as indicated earlier, there will
20 be interpretation available throughout the hearing.
21 Earpieces can be obtained from the table located just
22 by the door as you enter this room. Channel 2
23 broadcasts English. Channel 4 broadcasts Inuinnaqtun.
24 And when you are speaking to the microphone, please
25 turn off your earpiece to avoid feedback. And floor is
26 Channel Number 1.

1 Second, the Board will appreciate if everyone,
2 including the applicant, interveners, and members of
3 the public sign in on the sheets located at the table
4 as you come into the hall. This is an important record
5 of the attendees at this public hearing, and we
6 appreciate your help in making sure it is complete.

7 The washrooms are located just as you enter the
8 hall, and the exits are located at the side and back of
9 the hall. There will be coffee, tea, and snacks
10 located at the tables along the right side of the hall
11 available throughout the hearing during breaks.

12 I would also like to remind everyone to please
13 turn off your cell phones.

14 Finally, to assist both our court reporter and our
15 interpreters, please wait to have a microphone before
16 you speak. Then state your name. Speak clearly and
17 slowly to -- avoid the use of abbreviations. We
18 appreciate your assistance in making sure your comments
19 are recorded and the Board's recording of the
20 proceedings is accurate and complete.

21 I would like to notify participants that media is
22 present at this meeting. While we are happy that the
23 media's here, I will ask on behalf of the Board that
24 parties not make any comments regarding the Board's
25 potential conclusions on the matter in any way. The
26 Board cannot and does not comment on any matter before

1 it reaches a decision. In the past, parties in other
2 proceedings have approached the media prior to the
3 release of the Board's decision suggesting comments
4 about what the Board is going to do either procedurally
5 or in terms of the final result.

6 Since the Board cannot comment on pending matters
7 either by confirming or denying the accuracy of
8 statements by others to the media, the Board would
9 appreciate if all parties would refrain from any such
10 comments that may imply a certain action or decision by
11 the Board.

12 Board members will not discuss the hearing or the
13 matters before the Board with any of the parties or the
14 media. If you have concern about the Board and its
15 practices or procedures, please speak with the
16 executive director, and she will assist you.

17 Prior to identifying and introducing all the
18 parties in attendance today, I will provide a brief
19 history of the licence that have been issued to the
20 Doris North Gold Mine Project, as well as the current
21 amendment application that is before the Board.

22 The NWB has issued two licences and two amendments
23 to the Doris North Project, Licence Number 2AM-DOH0713
24 was issued Miramar Hope Bay Limited on September 19,
25 2007, with an expiry date of September 30, 2013. The
26 licence allows for the use of 480,000 cubic metres of

1 water per year and the deposit of waste for a mining
2 and milling undertaking.

3 On February 20, 2001, the licence was assigned
4 from Miramar Hope Bay Limited to Hope Bay Mining
5 Limited. Amendment Number 1 to Licence 2AM-DOH0713 was
6 issued on August 4, 2010, to allow for relocation of
7 the explosives mixing and storage facility.

8 Amendment Number 2 to Licence 2AM-DOH0713 was
9 issued on February 15, 2011, to allow for
10 infrastructure expansion.

11 Amendment Number 3 to Licence 2AM-DOH0713 was
12 issued on January 18, 2012, to allow for that --
13 changes in the management of waste rock and ore.

14 On June 18, 2013, the licence was assigned from
15 Hope Bay Mining Limited to TMAC Resources Incorporated.

16 Renewal Licence 2AM-DOH1322 (sic) was issued to
17 TMAC Resources Incorporated on August 16, 2013, and
18 will expire on August 15, 2023. The licence allowed
19 for the use of 480,000 cubic metres of water per year
20 and the deposit of waste for mining and milling
21 undertaking.

22 Application before the Board: So those were the
23 previous licences. Now I'm going to move on to the
24 application that is before the Board. As mentioned
25 earlier, the application that is currently before the
26 Board is for amendment of a Type A Water Licence

1 2AM-DOH1323 issued to TMAC Resources for mining and
2 milling undertaking at the Doris North Gold Mine
3 Project.

4 The application to amend the water licence, which
5 is the subject of this public hearing, was submitted on
6 June 15, 2015, and consisted of the following
7 documentation: cover letter, project summary and
8 submission outline, project description, NIRB and NWB
9 application documents, water management plans, interim
10 closure and reclamation plan, water management plan,
11 interim closure and reclamation plan, water management
12 plan, waste rock and ore management plan, engineering
13 design documents.

14 In addition to the initial submission, TMAC
15 provided the following submissions in response to
16 intervener's comments.

17 2015, TMAC submitted Doris North Mine interim
18 closure and reclamation plan, supporting information on
19 geochemistry, memo on tailings pore water, memo
20 discussing tailings cover, memo discussing mine
21 flooding.

22 In 2016, TMAC submitted water and load sensitivity
23 analyst (sic), Doris Lake fish habitat, TIA capacity,
24 memo addendum to the closure plan, water and load
25 balance model, results of sensitivity analyst (sic) for
26 TIA and Doris Creek, interim water management plan,

1 alternate water management strategy.

2 Effects to water quality arising from mine
3 re-flooding, Doris aquatic effect monitoring program
4 and surveillance network and program revisions.
5 Groundwater management plan and Doris Tailings
6 Impoundment Area operations, maintenance and
7 surveillance manual. Doris amendment interim dyke
8 trade-off study.

9 The proposed amendment would make changes to the
10 type and quantity of waste to be generated at the site
11 and also requests changes to the water and waste
12 management strategy. The scope of the application for
13 the amendment of the licence is generally as follows:
14 management of saline groundwater inflow originating
15 from mine works, discharge of the saline groundwater to
16 Robert's Bay; a modification in tailings disposition
17 (sic) strategy to include combination of backfill
18 underground for the treated cyanide tailings, subaerial
19 disposition for the gravity flotation tailings within
20 the Tailings Impoundment Area; during operations, the
21 seasonal discharge of compliant effluent from Tailings
22 Impoundment Area, TIA, to Robert's Bay, instead of
23 Doris Creek; an increase in waste rock, domestic waste,
24 hazardous, nonhazardous waste generated by the
25 undertaking as a consequence of extension of mine life
26 from a two to six years of the life of the mine and

1 increase in the milling rate; updated reclamation
2 costs.

3 Copies of all these submissions as well as all
4 other documents related to this amendment application,
5 specifically in Doris North Gold Mine Project, more
6 generally are available on the NWB's FTP site.

7 In addition, our licencing administrator, Ida
8 Porter, has made available for view -- public viewing
9 of this hearing paper copies of the documentation that
10 have been received today for the application. If you
11 are interested in reviewing any of the documentation,
12 please ask Ida.

13 The application procedure history: Now I'm going
14 to provide you with a brief summary of the procedural
15 history for the application that is before the Board.

16 June 15, 2015, TMAC submitted the application and
17 supporting documentation for the amendment of Type A
18 Water Licence Number 2AM-DOH1323. August 21, 2015, the
19 NWB acknowledged receipt of the amendment application
20 and asked interested parties to review the scope and
21 completeness of the information provided, as well as to
22 identify any deficiencies.

23 September 18, 2015, the NWB received comments from
24 the completeness of the amendment application
25 information request, IRs, from Indigenous and Northern
26 Affairs Canada, INAC; Environment and Climate Change

1 Canada, ECCC; Fisheries and Oceans Canada, DFO; and
2 Kitikmeot Inuit Association, KIA; and Natural Resources
3 Canada.

4 October 8, 2015, NWB acknowledged TMAC's response
5 to information requests, IRs, and invited parties to
6 comment on TMAC's submission. Comments received by
7 parties indicated that the amendment application was
8 considered complete and able to proceed to the
9 technical review period.

10 November 4, 2015, the NWB and the Nunavut Impact
11 Review Board, or NIRB, issued a joint letter regarding
12 the coordinated process of the NIRB considering the
13 amendment proposal for the Doris North Project
14 Certificate Number 003 and NWB considering the
15 amendment application for Licence Number 2AM-DOH1323
16 filed by TMAC. The letter informed the parties of the
17 commencement of a coordinated public technical review
18 period of the application and invited parties to make
19 representations to the NWB.

20 November 5, 2015, the NWB issued a letter
21 providing parties with greater details regarding the
22 NWB's expectation for technical review period, NWB's
23 next steps in consideration of the amendment
24 application.

25 November 10th, 2011, the NWB gave public notice of
26 TMAC's amendment application and invited interested

1 parties to make representations to the Board.

2 December 8, 2015, NWB received technical review
3 comments from KIA, INAC, and ECCC, and DFO.

4 December 21, 2015, the NWB received TMAC's
5 submission responding to the technical comments.

6 January 8, 2016, NWB received additional technical
7 review comments from ECCC.

8 January 20th, 2016, the Board confirmed the venue
9 and days of the technical meeting and community
10 session, being January 28th and 29, 2016, in
11 Cambridge Bay and provided parties with a proposed
12 agenda. Also TMAC was requested to provide a response
13 to ECC's comments submitted on January 8, 2016.

14 January 26, 2016, TMAC submitted a response to
15 ECC's technical review comment from January 8, 2016.
16 January 26th, 2016, NWB issued the final agenda for the
17 technical meeting and confirmed attendance of the
18 following interveners: Environment and Climate Change
19 Canada, Fisheries and Oceans Canada, Kitikmeot Inuit
20 Association, Indigenous and Northern Affairs Canada,
21 and TMAC Resources at the NWB technical meeting.

22 January 28 and 29th, 2016, NWB hosted a technical
23 meeting and community session in Cambridge Bay.

24 March 15, 2016, TMAC hosted the Doris North
25 aquatic monitoring workshop in Edmonton, and
26 Environment and Climate Change Canada, Fisheries and

1 Oceans Canada, Kitikmeot Inuit Association, Indigenous
2 and Northern Affairs Canada, and the NWB participated.

3 May 18, 2016, NWB hosted a meeting in Iqaluit to
4 review submissions and commitments.

5 June 6, 7, and 8, 2016, TMAC hosted technical
6 workshops in Iqaluit with respect to updates and
7 submission of management plans required under the water
8 licence.

9 June 15, 2016, NWB issued correspondence providing
10 notice that the NWB would be holding a prehearing
11 conference by teleconference for the amendment
12 application on June 24th, 2016.

13 June 24, 2016, NWB held the prehearing conference
14 via teleconference. The parties in attendance included
15 TMAC Resources, Kitikmeot Inuit Association,
16 Environment and Climate Change Canada, Fisheries and
17 Oceans Canada, Indigenous and Northern Affairs Canada,
18 and Natural Resources Canada.

19 July 7, 2016, NWB issued the prehearing conference
20 decision report, a formal notice of this public
21 hearing.

22 Based on the application, written submissions
23 received, information exchanged prior to and subsequent
24 to TM/PHC, the NWB staff have prepared the following
25 list of issues that remain to be addressed at this
26 hearing: water quality predictions, Robert's Bay

1 discharge monitoring, waste rock and tailings,
2 mitigation measures, water treatment, management plans
3 and reports, closure and reclamation planning, water
4 user compensation.

5 Written submissions for this hearing have been
6 received from Kitikmeot Inuit Association, Indigenous
7 and Northern Affairs Canada, Fisheries and Oceans,
8 Environment and Climate Change Canada, and TMAC.

9 If I have missed a written submission by any
10 intervener, please advise David Hohnstein, NWB's
11 director of technical services, as soon as possible.

12 If there are no issues, I would like to move to
13 our roll call. I will begin roll call with the
14 applicant, TMAC, then go the local associations,
15 representatives, and intervening parties. Mr. Roberts,
16 could please introduce the members of your team who
17 will be appearing on your behalf during the hearing.

18 Roll Call

19 MR. ROBERTS: Thank you, Mr. Chairman. I
20 will do that. I'm -- excuse me. I'll have to
21 apologize a few times during the proceedings, I
22 believe. As you may be able to tell, my voice is a
23 little weak.

24 I'm joined today by my team from TMAC Resources.
25 A gentleman, who many of you will know is a very
26 integral part of our team; he is off doing something

1 else today, Alex Buchan is TMAC's resources director of
2 community relations. Alex, as you will know, is based
3 here in Cambridge Bay and has been on the project since
4 2005, one of the longest serving members of the project
5 team.

6 Alex is a former wildlife manager for the
7 territorial government and has also worked as a
8 community economic development officer. Alex leads
9 TMAC's stakeholder engagement and participates in
10 various regional and local socioeconomic initiatives.
11 He is one of TMAC's appointees to the Hope Bay, IIBA,
12 implementation committee.

13 Also you will see here during the proceedings
14 Mr. Ikey Evalik, also from Cambridge Bay. Ikey is TMAC
15 Resources' IIBA liaison. Ikey will be arriving later
16 because he's currently supporting the crew change with
17 the site. He is based here and has been on the project
18 for a number of years. Ikey's role is to ensure
19 compliance with and implementation of the Hope Bay
20 IIBA.

21 Thank you, Mr. Chairman. Again, John Roberts,
22 TMAC Resources. On my right is Sharleen Hamm.
23 Sharleen is our -- TMAC Resources project manager for
24 this amendment. Sharleen joined the project in 2014
25 and has been coordinating the amendment application
26 process since then.

1 Sharleen is a registered professional biologist
2 and has been working in the Arctic, specifically the
3 Kitikmeot Region for over ten years conducting aquatic
4 baseline and impact assessment activities.

5 Behind me I have Oliver Curran. Oliver joined --
6 he is our director of environment. Oliver joined TMAC
7 in March and brings six years of Nunavut experience
8 leading the environmental assessments, water licensing,
9 and public consultation and compliance programs for
10 Nunavut's Mary River Project. In his previous role,
11 Oliver attended several technical meetings and final
12 public hearings for obtaining and amending Type A
13 licences with the Nunavut Water Board.

14 Also behind me is Dr. Maritz Rykaart,
15 environmental consultant -- or, sorry, engineering
16 consultant with SRK Consulting. Maritz has over
17 25 years of experience as a professional engineer
18 specializing in permafrost engineering, mine waste
19 management, and Maritz has been working on the Hope Bay
20 Project perhaps longer than anyone else, almost 15
21 years.

22 He is a professional engineer registered to
23 practice in Nunavut and provides us with expert advice
24 on geotechnical and tailings engineering, permitting,
25 field characterization, capital and closure cost
26 estimating, and strategic planning. He is the engineer

1 of record for the north dam in the Doris Tailings
2 Impoundment Area.

3 Mike Henry is an environmental consultant with ERM
4 Consultants. Mike has been involved in the field of
5 freshwater and marine ecology for over 20 years. His
6 expertise is in basin-scale oceanography. He has
7 conducted marine-specific environmental impact
8 assessments and environmental effects monitoring
9 programs in British Columbia, Nunavut, and
10 internationally. In the Kitikmeot Region, Dr. Henry
11 has recently designed the marine programs for the Doris
12 amendment and the proposed Back River, Hackett River,
13 and BIPAR projects.

14 Nicole Bishop is an environmental consultant with
15 ERM. Nicole has seven years' experience in
16 environmental consulting, four of which have focused on
17 projects in the Kitikmeot. Nicole manages and
18 coordinates multidisciplinary project teams for
19 environmental assessment applications, regulatory
20 processes including those for Hope Bay, Back River,
21 Hackett River, and BIPAR.

22 On my left, many of you will recognize Christine
23 Kowbel, TMAC's legal counsel with the firm of Lawson
24 Lundell. Christine has been working on legal matters
25 in Nunavut since 2000 and specifically on Hope Bay
26 project since 2001 as both regulatory advisor and legal

1 counsel.

2 And I would note that Mr. Buchan, Alex, is now
3 here, and many of you will recognize him, I'm sure.

4 And, lastly, I'd introduce myself. As I said, I'm
5 John Roberts. I joined TMAC in 2014 as vice president,
6 environmental affairs. I'm a professional engineer and
7 have been involved exclusively in environmental -- in
8 the environmental business for approximately 40 years,
9 always in the field of natural resources. I worked in
10 the mining industry for a number of years and then took
11 some time in the forest industry working with pulp and
12 paper and -- and sawmills. Did some environmental
13 policy research and then came back to my first love,
14 the mining industry, most recently in Labrador with a
15 project called "Aurora", which is a uranium project in
16 Labrador.

17 I must say -- I must comment, it's a great
18 privilege to work with such a team that I've been
19 attached to here with TMAC. It's an excellent company,
20 and I'm supported by a wonderful team here. And it's a
21 great privilege to be able to work in Nunavut on a
22 project of this kind and a great pleasure to be here
23 today. Thank you very much, Mr. Chairman.

24 THE CHAIR: Thank you.

25 Kitikmeot Inuit Association, introduce your team,
26 please.

1 MR. ROESCH: Hello. I'm John Roesch with
2 the Kitikmeot Inuit Association. I'm the senior Hope
3 Bay project officer, and we have John Donihee here as
4 well, our legal counsel.

5 And did you have any other questions? We didn't
6 have any questions for TMAC, but did you have any for
7 us?

8 THE CHAIR: Thank you. Indigenous and
9 Northern Affairs Canada, will you please introduce your
10 team.

11 MS. COSTELLO: Thank you very much,
12 Mr. Chair. My name is Karen Costello. I'm the
13 director of resource management with the Nunavut
14 regional office with Indigenous and Northern Affairs
15 Canada. I'm joined by staff who have worked on this
16 file. I will ask them to raise their hands as I
17 mention their name. David Abernethy is with our water
18 resources division, and he has been the regional
19 coordinator assigned to this file. He has been working
20 on the Doris file for a number of years and has dealt
21 with the 2013 renewal so he's become very familiar with
22 the file.

23 He has been supported by Sarah Forte, our water
24 management coordinator, and Amjad Tariq our regulatory
25 and science advisor. The Department's interventions on
26 this licence amendment application have been supported

1 by our consultant, Amec Foster Wheeler, and sitting at
2 the back at the table is Jane Doucette. Thanks, Jane.

3 And just because I'm the first Government of
4 Canada rep at the table, I will also introduce Tracy
5 Carroll, who is counsel for all of the Government of
6 Canada, and she is with Justice Canada in Yellowknife.
7 Thank you, Mr. Chair.

8 THE CHAIR: Thank you.

9 Environment and Climate Change Canada.

10 MR. DAHL: Good morning. My name's Mark
11 Dahl. I'm an environmental assessment coordinator for
12 Environment and Climate Change Canada. And today I'm
13 joined by Anne Wilson, who's sitting behind me, and she
14 is the water quality expert working on the file.
15 Thank you.

16 THE CHAIR: Thank you. It is with regret
17 that I must inform you that Fisheries and Oceans Canada
18 will not be in attendance at this public hearing.

19 If there are any other interveners not mentioned
20 who would like to speak, please identify yourself.

21 It is our tradition to give respect to our Elders,
22 therefore at any time during the proceedings an Elder
23 may speak to the application that is before the Board.

24 Are there any members of the general public who
25 would like to identify themselves and provide a brief
26 presentation to the Board during the public hearing?

1 Are there any other representatives from agencies,
2 associations, et cetera, who have not submitted
3 interventions but would like to speak?

4 Before proceeding with the hearing, I would like
5 to request that, if you haven't already done so, all
6 parties in attendance please register and sign in with
7 Ida Porter, NWB's licencing administrator, at the side
8 table at the entrance.

9 Before we begin with the presentation by the
10 application (sic), are there any motions or any
11 objections in relation to the amendment application
12 that is before the Board?

13 On that note, before I go on to the application,
14 it is 10:00 my time, according to my watch. We will
15 take a ten-minute break. Then the application (sic)
16 will then make a presentation. Thank you. See you in
17 ten minutes.

18 (ADJOURNMENT)

19 THE CHAIR: Welcome back.

20 Mr. Roberts, how much time will you need to do
21 your presentation?

22 MR. ROBERTS: John Roberts, TMAC Resources.
23 Mr. Chair, we believe we will take about an hour and a
24 half.

25 THE CHAIR: Thank you.

26 Teresa, please swear in the applicant.

1 MS. MEADOWS: Thank you, Mr. Chair. Teresa
2 Meadows, legal counsel for the Nunavut Water Board. If
3 I can have the witnesses who wish to affirm.

4 SHARLEEN HAMM, Affirmed

5 MS. MEADOWS: Mr. Chair, Teresa Meadows,
6 legal counsel for the Nunavut Impact Review Board.
7 Obviously not moving too quickly this morning.

8 If you can state and spell your name for the
9 record first, please.

10 MS. HAMM: I've never -- Sharleen,
11 S-H-A-R-L-E-E-N; Hamm, H-A-M-M.

12 MS. MEADOWS: Are there other witnesses who
13 wish to affirm? If you can state and spell your name
14 for the record and affirm that you solemnly affirm the
15 evidence about to be given by you shall be the truth,
16 the whole truth, and nothing but the truth.

17 MR. HENRY: Mike Henry, M-I-C-K (sic)
18 H-E-N-R-Y and yeah, I'm -- I affirm.

19 MIKE HENRY, Affirmed

20 MS. MEADOWS: Thank you, Mr. Chair. Teresa
21 Meadows, legal counsel for the Nunavut Impact Review
22 Board (sic). If I can have the witnesses who wish to
23 have their evidence sworn, please place your hand on
24 the Bible which I've put in front of you. Raise your
25 right hand. Do you swear that the evidence about to be
26 given by you shall be the truth, the whole truth, and

1 nothing but the truth, so help you God? And if you can
2 state and spell your name for the record, please.

3 MR. ROBERTS: My name is John Roberts,
4 J-O-H-N R-O-B-E-R-T-S, and I do so swear.

5 MR. RYKAART: My name is Maritz Rykaart,
6 M-A-R-I-T-Z R-Y-K-A-A-R-T, and I do so swear.

7 JOHN ROBERTS, MARITZ RYKAART, Sworn

8 MS. MEADOWS: Thank you, Mr. Roberts. Those
9 are your witnesses for this panel?

10 MR. ROBERTS: John Roberts. Yes, that's
11 correct.

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

14 Ms. Kowbel, it's my understanding that there are a
15 number of exhibits that you wish to file in support of
16 the submissions of TMAC, so perhaps if you can take me
17 through the exhibits that you wish to file.

18 MS. KOWBEL: Christine Kowbel, legal
19 counsel for TMAC. Yes, thank you. The first exhibit
20 is an exhibit that's been filed electronically with the
21 Board. It's just the English copy of the company's
22 presentation.

23 MS. MEADOWS: Thank you, Mr. Chair. Teresa
24 Meadows, legal counsel for the Nunavut Water Board.
25 Let the record show that that will be filed as Exhibit
26 Number 1 being the Nunavut Water Board public hearing

1 Doris Project Water Licence Amendment 2AM-DOH1323, and
2 it is a PowerPoint presentation in English.

3 EXHIBIT 1 - Hard Copy PowerPoint Presentation
4 TMAC Resources Inc. Nunavut Water Board
5 Public Hearing Doris Project Water Licence
6 Amendment 2AM-DOH1323 (English)

7 MS. MEADOWS: Thank you, Ms. Kowbel. The
8 next exhibit?

9 MS. KOWBEL: Christine Kowbel, TMAC. Thank
10 you. The next exhibit is the Inuinnaqtun translation
11 of that same presentation. At this time, I'll also
12 advise that the Inuinnaqtun translation is still in
13 progress and will be provided once available.

14 MS. MEADOWS: Thank you, Mr. Chair. Teresa
15 Meadows, legal counsel for the Nunavut Water Board.
16 Let the record show that the Inuktitut version of the
17 PowerPoint presentation will be marked as Exhibit 2 in
18 these proceedings.

19 EXHIBIT 2 - Hard Copy PowerPoint Presentation
20 TMAC Resources Inc. Nunavut Water Board
21 Public Hearing Doris Project Water Licence
22 Amendment 2AM-DOH1323 (Inuktitut)

23 MS. MEADOWS: The next exhibit, Ms. Kowbel?

24 MS. KOWBEL: Christine Kowbel, TMAC. The
25 next exhibit is the resume of Maritz Rykaart. This
26 document has been provided to the Board, and extra

1 copies are also available on the table for those who
2 wish to review it.

3 MS. MEADOWS: Thank you, Mr. Chair. Teresa
4 Meadows, legal counsel for the Nunavut Water Board.
5 Let the record show that Mr. Rykaart's resume will be
6 filed as Exhibit 3 in these proceedings.

7 EXHIBIT 3 - Hard Copy Resume of Dr. Maritz
8 Rykaart (English)

9 MS. KOWBEL: Christine Kowbel, TMAC.
10 Thank you. The next exhibit is the resume of Dr. Mike
11 Henry. And, again, copies available at the back table
12 for those who wish to review, and copies have been
13 provided for the Board.

14 MS. MEADOWS: Thank you, Mr. Chair. Teresa
15 Meadows, legal counsel for the Nunavut Water Board.
16 Let the record show that Dr. Henry's resume will be
17 filed as Exhibit Number 4 in these proceedings.

18 EXHIBIT 4 - Hard Copy Resume of Dr. Mike
19 Henry (English)

20 MS. KOWBEL: Thank you. Christine Kowbel,
21 TMAC. The next exhibit is actually an update of Slide
22 4 of the presentation that you'll hear from
23 Mr. Roberts. The version that has been provided -- the
24 version that the -- of the presentation that will be
25 viewed this morning has this figure on it. It's
26 just -- and I'll describe it for you. It's just a

1 general description which Mr. Roberts will go through
2 in some detail of the mine process, but we realized
3 that we had forgotten to add that gold comes out at the
4 end of the whole process, so we thought that was
5 important to note so we updated the figure to reflect
6 that.

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

9 Ms. Kowbel, I don't have a hard copy of that
10 single slide so if you can provide it to me afterwards,
11 that will be marked as Exhibit Number 5.

12 EXHIBIT 5 - Hard Copy Single PowerPoint Slide
13 TMAC Resources Inc. Slide Entitled Doris
14 North (Addition of Gold to Process Schematic
15 Diagram) (English)

16 MS. KOWBEL: Thank you. Christine Kowbel,
17 TMAC. The next -- I'm nearly done. The next three
18 filings are all expert reports. And just to give
19 context for the next three exhibits, all three of these
20 exhibits are all -- are all reports that have been
21 shared between KIA, TMAC, and Indigenous and Northern
22 Affairs during their conversations that are ongoing
23 about the reclamation security.

24 Again, Mr. Roberts and Mr. Rykaart -- Dr. Rykaart
25 will speak to that in the presentation. But the first
26 of those is a report by SRK Consulting dated August

1 3rd, 2016. And before I leave you, I'll -- I just
2 wanted to note that if you flip to the back page of the
3 hard copy, there's a reference to a reclaim spreadsheet
4 that is referenced in the memo. The electronic copy of
5 this exhibit filed with the Board has that spreadsheet,
6 but it's just not something that's really practical to
7 print, and so we'd refer everybody to the electronic
8 exhibit if the Board accepts this report. Thank you.

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

11 Ms. Kowbel, what I propose to do is file as
12 Exhibit 7 the electronic version, the reclaim
13 spreadsheet. So this will be -- the memo itself, the
14 hard copy memo will be marked as Exhibit 6, and then
15 Exhibit 7 will be the electronic version of the
16 spreadsheet that is attached that is not actually
17 printed out in the hard copy.

18 EXHIBIT 6 - Hard Copy Memo SRK Consulting,
19 Subject Doris Project: Closure and
20 Reclamation Cost Estimates - Response to
21 INAC's July 22, 2016, Submission (English)
22 EXHIBIT 7 - Electronic Copy Only, Excel
23 Spreadsheet RECLAIM 7.0 File TMAC Response to
24 INAC's Revised Reclamation Cost Estimate
25 Under RECLAIM 7

26 MS. KOWBEL: Thank you. Christine Kowbel,

1 TMAC. The next exhibit that we would like to file --
2 and we're filing this, I guess, on behalf of the
3 Kitikmeot Inuit Association. This is actually their
4 report, but we're just filing it out of convenience.
5 That's a report from BGC Engineering Inc. dated
6 July 27th, 2016.

7 MS. MEADOWS: Thank you, Ms. Kowbel. Teresa
8 Meadows, legal counsel for the Nunavut Water Board. So
9 let the record show that that will -- the BCG (sic)
10 Engineering Inc. report dated July 27th, 2016, will be
11 filed as Exhibit 8 in these proceedings.

12 EXHIBIT 8 - Hard Copy Project Memorandum
13 Prepared By BGC Engineering Inc. for The
14 Kitikmeot Inuit Association, Subject:
15 Draft - Review of Interim Closure Cost
16 Estimate For the Doris North Mine (English)

17 MS. KOWBEL: Thank you. Christine Kowbel,
18 TMAC. And the final filing I have for now, this
19 morning, is a report dated September 7th, 2016, from
20 Brodie Consulting to TMAC.

21 MS. MEADOWS: Thank you, Mr. Chair. Teresa
22 Meadows, legal counsel for the Nunavut Water Board. So
23 let the record show that that will be filed as
24 Exhibit Number 9.

25 EXHIBIT 9 - Hard Copy Letter to John Roberts
26 from Brodie Consulting Ltd. dated

1 September 7, 2016, Re: Review of Reclamation
2 Cost Estimate - Doris North Mine (English)

3 MS. MEADOWS: Thank you, Mr. Chair. Teresa
4 Meadows, legal counsel for the Nunavut Water Board. I
5 have nothing further at this point.

6 THE CHAIR: Thank you.

7 Mr. Roberts, go ahead with your presentation.
8 Presentation by TMAC Resources Incorporated

9 MR. ROBERTS: Thank you, Mr. Chairman. It's
10 John Roberts, TMAC Resources. And thank you very much
11 for the opportunity to present here today. It's -- as
12 I said earlier, it's nice to be back in Cambridge Bay
13 and nice to see many familiar faces around the table
14 and in the audience, many of whom, as you well know, we
15 have been engaged with over the past year or so on the
16 review of the Doris amendment application. We very
17 much appreciate the time that the Board and its staff
18 has taken in this application and also appreciate the
19 work of the many interveners and reviewers that have
20 commented upon our proposals, and we -- and we do
21 believe that their comments and our responses have
22 improved the amendment proposal or application
23 considerably.

24 In my presentation today, I want to describe a
25 little bit about TMAC Resources, who we are, and a
26 really short and brief indication of what is mining. I

1 think it's important for us, as we delve into the
2 various details of an application like this, to
3 recognize what the activity actually is that we're
4 taking on here. And after that, we'll go more
5 specifically into the project for which we are seeking
6 an amendment and have applied for that. And then we'll
7 go to the matter of the -- of our resolution to the
8 various questions that have been asked of TMAC during
9 the course of the last year or so in this review. I
10 believe I have control here. Or maybe not.

11 Mr. Chairman, my apologies for the technical
12 difficulties. John Roberts, TMAC Resources. So this
13 is to tell you a little bit about who is TMAC
14 Resources. TMAC Resources is a small publicly traded
15 Canadian based company that is designed specifically to
16 develop the Hope Bay Green Stone Belt in Nunavut. It
17 is our only property and the focus of all of our
18 activity and attention. As I said the company is
19 publicly traded.

20 Our vision is to do all this while exhibiting
21 respect for the people of the Kitikmeot and indeed all
22 of Nunavut, and also in respect for the land and other
23 natural resources that we find in the area. This is a
24 very deeply held respect in -- inside TMAC and is
25 acknowledged by the KIA in that we have a security
26 agreement with the KIA on developing this land.

1 This is what we're after. This is what we're here
2 for; it's the gold. And strangely enough we left it
3 off the -- a diagram you'll see shortly. I'll take the
4 fall for that. This is -- this happens to be a picture
5 of some visible gold in an ore sample from one of
6 our -- one of our drill holes in the Doris North area.
7 This gold equals jobs and development for Nunavummiut
8 and for Nunavut. And, of course, for TMAC, it
9 represents an opportunity to benefit from that
10 development as well.

11 Now, we extract this gold, of course, by mining
12 it. And mining is actually quite a simple activity
13 that I hope to show you shortly; however, to do mining
14 safely by protecting the land, minimizing impacts,
15 enhancing benefits to people, is actually quite
16 complicated, and that's why we're here today, because
17 the act of mining is complicated. But I think we can
18 think of mining as being a little bit simple, and I
19 hope to show you that with the next figure.

20 So if I can walk through this figure a little bit.
21 You can see here we have a mine, and a mine is a hole
22 in the ground. It can be an open pit, or in our case,
23 it's a -- it's an underground mine. So three things go
24 into that hole: air, because people are down there
25 working; water, because you need water to drill and so
26 on; and, of course, explosives to break the rock. And

1 three things also come out of that hole, and simply put
2 those three things are ore, which is what we're after,
3 and ore is the rock that actually contains the gold.
4 Waste rock is the rock that doesn't contain gold, and
5 we have to move it out of the way so we can get to the
6 ore. The third thing, of course, that comes out is
7 water. The water that we put down has to come back
8 out, and also in case of -- in many cases, the mine
9 leaks water from the surrounding rocks, and we have to
10 get that water out as well. In our case and in most
11 cases, this water is eventually discharged to the
12 environment, and in our case, because it's going to be
13 saltwater, it will be discharged to the Arctic Ocean.

14 Now, what do we do with the ore and the waste
15 rock? The waste rock is, in our case, used as backfill
16 for the mine. Our mining method is such that we open
17 up cavities underground and take the ore out, and in
18 order to continue mining that ore, we have to fill the
19 hole behind us as we progress or else that hole will
20 fall in and be a danger to our miners. So we use
21 backfill, and we'll use the waste rock that came out of
22 the ground. We'll put it back in the mine to support
23 the -- the cavities.

24 The ore will go to the processing plant. We've a
25 processing plant here. It's also called "the mill" in
26 normal terms, and into the mill goes the ore, some

1 reagents or chemicals that we use to help extract the
2 gold, and -- okay, thanks. Oh, good. Sorry.

3 The ore will go into the processing plant as well
4 as reagents and freshwater. We need freshwater as a --
5 to help move the ore around as it's ground up and
6 created -- and separated with the reagents. So a fair
7 amount of work goes on inside that mill where the ore
8 is ground up and -- and treated to get the gold out.

9 From the mill, funnily enough, also come three
10 things: the gold, of course, which is what we forgot
11 before, but that's the reason we're here. That will be
12 flown out typically on our aircraft in normal flights.
13 Also what comes out is tailings, and in our case, there
14 are two kinds of tailings. We have a kind of tailings
15 that is not treated with chemicals. It is very simple,
16 called floatation or gravity tailings, and they will
17 be -- form 94 percent of the -- of the material and
18 will go straight out to the Tailings Impoundment Area
19 which you'll see diagrams of later on. That is carried
20 out by water because water is one of the things that
21 comes out of the mill.

22 And the reclaim -- and the water that separates
23 then as the tailings settle, the water is reclaimed and
24 brought back to the mill and recycled and thereby
25 minimizing the amount of water that we need to process
26 the -- the tonnes that we have. And this -- this is a

1 major reason why we're not asking for additional water
2 under the current licence but rather maintaining the
3 same volume from the previous licence.

4 I said that this amount of tailings is about
5 94 percent in our case. 6 percent of the tailings will
6 go back into the mine as backfill, and these are the
7 tailings that are actually treated with the reagents,
8 the chemicals that separate the gold from the rock.
9 These tailings will go back with the waste rock into
10 the mine as backfill to support the mine.

11 Discharging this -- tailings and water and
12 separating the water for reclaim will generate -- this
13 is done in a -- in a fairly large area that's subject
14 to precipitation, and we will have to discharge the
15 excess water so that this basin doesn't overflow, and
16 that excess water is our effluent, and that is the
17 water that is governed by the Metal Mining Effluent
18 Regulation that we'll talk about a little later. So I
19 hope that provides a simplistic description of what
20 we're actually doing, and we'll show some -- we'll show
21 various activities that are -- that include that work.

22 Now, to introduce you to the Doris Mine site.
23 This is an aerial shot taken about three years ago
24 looking to the north in the Arctic Ocean. This is
25 Doris Lake right here, the Arctic Ocean is up here, and
26 Cambridge Bay is just over there somewhere. This is

1 the mill pad area of the Doris Mine. We have the camp,
2 fuel storage, power house. The mill building, which is
3 included in a subsequent picture, is being built and
4 completed here as we speak. The Doris Mine itself is a
5 portal that goes into this rock outcrop and goes down
6 several hundred metres into the ore zone.

7 The actual ore body -- the Doris North ore body is
8 here. Subterranean here underneath the area about 200
9 to 400 metres down. New -- additional ore is available
10 in the Doris connector and central zones in the -- that
11 lie beneath Doris Lake and are the subject of this
12 amendment application. The Doris Mine ventilation
13 raise is located here, and this is where the air that I
14 spoke of in the previous slide is delivered to the mine
15 by a large fan system.

16 The -- ultimately the tailings area is over here,
17 and we have already constructed the north dam, and that
18 is being operated. It's a frozen-core dam, and we'll
19 hear some more about that later on. At the south end,
20 which is down here, under this application, we will be
21 constructing the south dam.

22 The effluent that we speak of will be pumped to
23 Doris -- sorry, from the Doris Mine to the Arctic Ocean
24 in Robert's Bay where we have our port. This port is
25 comprised of a jetty and some fuel storage facilities
26 and various other accoutrements of a normal port.

1 We're proposing to bring the effluent pipeline to this
2 outcrop, this headland, and 2.3 kilometres out into the
3 bay to a sufficient depth that it can be discharged
4 safely.

5 One thing I'd like to note is that the footprint
6 you see here, in addition to a proposed new pad located
7 here, is approximately the entire future extent for the
8 life of mine at Doris. Because the waste rock which we
9 are currently storing in this area will go back under
10 the mine, there's no need to grow this pad to a large
11 extent. It may grow by small amounts with small -- as
12 things emerge, but really this is the full extent of
13 the area. And I took a tour of many of the people who
14 were here yest -- today around that site on Sunday, and
15 it took us about an hour to walk and talk all the way
16 around this area right here, including a quick visit
17 inside the mill.

18 Too many buttons to push here. This one. So with
19 that, I wanted to spend a few moments on the history of
20 this site. As many of you will know and as is evident
21 from the record that Mr. Chairman read into the -- the
22 history of this project, it's been around for quite a
23 long time. And indeed from about 1988 to 1999 the
24 project was owned by BHP, BHP Billiton. And we can
25 simplify their ownership by saying they did a very good
26 job of exploring the Hope Bay Belt. The Hope Bay Belt,

1 as you will know, is an 80 kilometre by 20 kilometre
2 Green Stone Belt which is highly prospective for
3 mineral finds.

4 In 1999, BHP sold the property to a company called
5 "Miramar", and we can thank Miramar for getting the
6 first project certificate and the water licence for
7 this -- this belt. And indeed it's the -- a different
8 generation of that water licence that we're working
9 with today.

10 In 2007, Newmont, a large American gold company,
11 bought the project, and we can thank Newmont for
12 building some truly world-class mining infrastructure
13 in the area. Extraordinarily well-designed, very
14 stable. It has not moved or failed in any way that I
15 can observe or we can observe through our regular
16 inspections. So we're very happy to be able to stand
17 on that infrastructure and proceed with TMAC's
18 activity. TMAC bought the facilities in 2013 after
19 Newmont decided to not continue. But in truth, we do
20 stand on the shoulders of these previous owners. They
21 all contributed tremendously to the value and the
22 prospectivity of this belt.

23 It's TMAC's job, as we see it, to build and
24 operate this facility to the benefit of Nunavummiut and
25 as well to TMAC as a company. So we are in the process
26 right now of completing that -- the mill building that

1 you saw in the earlier diagram. And, in fact, on
2 Sunday when we were there, the first components of the
3 mill were being hauled in as we stood in the gallery
4 looking at it come in the building, so quite a good
5 moment to be present there.

6 A little bit of TMAC history here. As I said,
7 TMAC purchased the project in March of 2013 so about
8 three and a half years ago. It was in care and
9 maintenance at that time, and since then we have
10 continued the care and maintenance of the facility but
11 then brought it into an operating state last year. We
12 have explored, modified mine plans, modified tailings
13 plans, and modified water management plans in
14 accordance with the needs of the -- of the site.

15 We've sought amendments to the project
16 certificate, and we expect to have that process
17 finalized shortly. We've commenced mining, mining to
18 stockpile ore for the start of the mill. The mill has
19 been designed and was delivered, and as we saw on
20 Sunday, it sits in orange boxes on our site waiting to
21 be opened up and installed in the facility. All the
22 time we are -- want to maintain a high environmental
23 standard and providing increased amounts of employment
24 to Nunavummiut.

25 Our first pour, as you can see at the bottom, is
26 intended to be in January 2017. In April -- by April

1 2017, we intend to have the mill fully functional and
2 operating smoothly and in full commercial main-plate
3 production.

4 As I said earlier, Doris ore body is located as we
5 see here. The Doris North Project was wholly in
6 permafrost. This whole area, as you well know, is --
7 is permafrost. Underneath the lake is the Doris
8 connector and Doris central. We were successful with
9 our exploration and determined there is more gold
10 than Doris -- in the Doris North Project that we would
11 like to mine, and hence we needed to change the
12 permits, and that's the process we're involved in
13 today.

14 So I would -- in looking at this drawing which is
15 an overview of the amendment changes, and it is a
16 slightly small picture of a rather large area so the
17 developments look a bit small. But I would -- excuse
18 me. I would refer you to the banners at the back of
19 the room which replicate this picture with labels and
20 so on in three languages, and you can see in a little
21 more detail what these features actually are. But I'll
22 walk through them very quickly. Well, I'll follow the
23 notes here perhaps.

24 Our changes to the amendment include a six-year
25 mine life mining -- mining under Doris Lake, as I said.
26 Moving to a total of 2.5 million tonnes of ore, and

1 that, of course, results in 2.5 million tonnes of
2 tailings. We'll have open-air tailings disposal as
3 opposed to underwater tailings disposal. Our camp will
4 be larger, and all waste rock will now go underground
5 and wastewater and groundwater will be discharged to
6 the ocean. We believe that this reduces risk to the
7 environment and will provide authorizations that are
8 practicable and can be implemented.

9 This is a picture inside the mill probably about
10 three or four months ago. As I said, we'll be
11 increasing the mine life, volume of ore. We've went --
12 we've gone through this, and so the only thing I will
13 add here is that, as I said, we are installing a new
14 mill. This is a slightly different process than what
15 Newmont had proposed, and it is being installed as we
16 speak.

17 One of the features of this facility, as you will
18 know, cyanide is used in the processing of gold ore as
19 gold does -- will only dissolve in a solution of
20 cyanide. And so that is used and recirculated inside
21 the mill. Once it's done, the cyanide is destroyed.
22 We will use a sulfur dioxide and oxygen process to
23 destroy the cyanide in the 6 percent of the tailings
24 that is actually exposed to cyanide. Those tailings
25 will then be dried and included in the waste rock that
26 goes back underground. So no cyanide will be

1 discharged into the surface environment.

2 Again, a little more summary of the project
3 changes. And tailings, we talk a lot about tailings.
4 Tailings are the finely ground rock material that's
5 left over once you take the gold out. It has to be
6 disposed of on the site because it's a very large
7 volume, and there are -- there are well engineered,
8 understood, and practical ways of containing these
9 tailings in a safe manner for the environment.

10 As I said, we will have 2.5 million tonnes of
11 tailings, and this is a schematic of the way in which
12 we will place the tailings. We have the north dam that
13 you saw in the photograph, and we will have the south
14 dam that we have not seen yet because it's not yet
15 built. The interim dyke is a structure placed in the
16 middle, more or less, of the Tailings Impoundment Area.
17 And the tailings will be placed behind the interim
18 dyke, and the purpose of that is to contain the
19 tailings so that when we reclaim the area, it's a
20 controlled surface controlled by the interim dyke. And
21 the water will seep through the interim dyke. It's not
22 meant to contain water. Water will seep through the
23 interim dyke into the reclaim pond, and this will be
24 used, as I said, in the mill.

25 In terms of waste rock, we have decreased the
26 overall volume of waste rock that was intended to be

1 mined in the previously project, and that's because of
2 the -- a different way of approaching the excavation of
3 the mine itself. We've improved the handling to allow
4 for very efficient use and for it to be hauled back
5 underground for disposal. It, of course, will be
6 stored onsite temporarily during operations and will
7 go -- and all of the material will be underground by
8 the time you get to closure of the mine. And as I
9 said, I would reiterate, it needs to go in the ground
10 as a part of the mining activity and is not in and of
11 itself a reclamation activity.

12 A little more information on tailings. This is a
13 picture of the north dam, and as you can see, it --
14 it's a -- it's a fairly significant structure that has
15 very flat side slopes which means it's very stable.
16 And it's actually a frozen core dam so there's -- are
17 facilities on the site to ensure that the core remains
18 frozen, and therefore the dam can hold back the water
19 that you see here because this level will rise somewhat
20 during operation.

21 This is the road that will take us out to the
22 south dam. This is a schematic of the area. This is
23 the north dam at this end, the south dam at this end,
24 and the interim dyke located here with the road all the
25 way down. This black spot here is a quarry that will
26 be used to construct those facilities.

1 Disposal of tailings here is on the land, not
2 under the water. The original licence has tailings
3 disposal proposed for this area and would be underwater
4 with a larger volume. We need more area so we have --
5 are compelled to use the land for the tailings, and
6 this would then be completely covered at closure.

7 In terms of water management, we have the -- have
8 to manage surface water and groundwater, and we have to
9 collect it and dispose of it as needed. Because we're
10 mining in unfrozen ground underneath the -- underneath
11 Doris Lake, we have to manage more groundwater. That
12 water will be somewhat salty, and therefore it's our
13 intention to dispose of that to the ocean. The
14 previous proposal was to dispose of wastewater in the
15 freshwater of Doris Creek, and we think it's a better
16 idea for saltwater to go to the ocean.

17 We'll also collect all site water and send it to
18 the TIA, and this -- all of the site water is collected
19 in this sedimentation pond and then pumped off to the
20 Tailings Impoundment Area. We will have a new
21 pollution-control pond at Pad U, which is a new
22 facility designed in the -- into the amendment, and we
23 will dispose excess Tailings Impoundment Area water and
24 groundwater to the ocean. This is overseen by
25 Environment and Climate Change Canada through the Metal
26 Mining Effluent Regulation and also by INAC through

1 their land-use lease and land-use plan for the
2 discharge pipeline. There's no change in the water
3 sources or water volumes to be withdrawn from the --
4 from Doris Lake or Windy Lake. The Windy Lake is for
5 drinking water, and Doris Lake is for processed water.
6 Water from the mill will come from the reclaim pond and
7 from Doris Lake. For waste management, we will create
8 a landfill, as I showed you a moment ago, in -- within
9 the basin of the Tailings Impoundment Area from a
10 worked-out quarry.

11 Again, continuing our summary of the project
12 changes. At the port, we will increase our lay-down
13 area because we find that it's a bit constricted for
14 the amount of equipment that comes in. We'll create
15 new pads in this area here and a small expansion of the
16 pad area that already exists adjacent to our jetty, and
17 a -- and a short piece of roadway to carry our effluent
18 pipeline out to this outcrop where we'll enter the
19 ocean and travel approximately 2-and-a-half kilometres
20 out to its final discharge point. The camp will
21 increase in size to 280 beds. It's currently at about
22 180.

23 For explosives, we will store only. We do not
24 intend to mix explosives on the site. The closure cost
25 estimate is an item of some discussion, and we'll have
26 some more discussion about that a little later. I'm

1 going the wrong way.

2 This project will provide significant benefits to
3 the Kitikmeot. There will be up to 280 jobs on the
4 site, and through the IIBA that we've concluded with
5 the Kitikmeot Inuit Association, there are Inuit
6 employment targets, and these will be set and adhered
7 to by TMAC and in -- with the oversight of the KIA.

8 Approximately \$550 million is being spent to
9 construct and bring this facility into operation. And
10 I would note that in the IIBA, Kitikmeot-based industry
11 or businesses have preferred opportunities on 14
12 different types of categories of work. So we look
13 forward to filling those complements with Kitikmeot
14 industries.

15 On this site, we have a list of high-level changes
16 that TMAC believes need to be made to the licence as a
17 result of the amendment application. Prior to the end
18 of these hearings, we will be submitting a markup of
19 the water licence which reflects the amendment
20 application and identifies obsolete clauses for removal
21 and flags certain terms and conditions to further --
22 for further consideration by the Board which TMAC is of
23 the view will add sizable, administrative -- or is of
24 the view adds sizable and administrative and
25 operational challenges that have little or no
26 environmental benefit, and therefore we propose that

1 they be removed.

2 TMAC is also suggesting some options to allow the
3 Board a thorough review of management plans and
4 modifications while balancing TMAC's need for
5 predictable timelines as the project advances through
6 the next phases.

7 So let's get into some more details. Back in June
8 2015, Mr. Chairman, as you pointed out, we submitted
9 our application for an amendment of this project
10 certificate and water licence. It was a substantial
11 set of documents that included a project summary, an
12 outline of the application package, description of all
13 the proposed changes, specific applications to the
14 Nunavut Water Board, the Nunavut Impact Review Board,
15 and the Nunavut Planning Commission. We outlined the
16 existing conditions and the project interactions with
17 the government and -- sorry, with the environment and
18 any potential effects. We also included some revised
19 management plans. Design details for the proposed
20 changes were also included and also some information
21 about our -- about TMAC itself.

22 So this is meant to be a bit of a snapshot of the
23 Water Board process. The red text indicates where we
24 are today. A meeting with the Water Board and parties
25 to discuss the remaining issues before the public.
26 "The parties" in this case refers to those

1 organizations involved in the process thus far,
2 including the KIA, Government of Nunavut, Industry --
3 sorry, Indigenous and Northern Affairs Canada,
4 Environment and Climate Change Canada, Department of
5 Fisheries and Oceans, Transport Canada, and Natural
6 Resources Canada.

7 "The public" in this case includes Inuit and many
8 of the Elders who have approached our hearings and our
9 many meetings, and thank everybody for their input.

10 This whole process has been going -- ongoing for a
11 number of years, and TMAC and previous owners, it --
12 have been considering this for approximately six years.
13 Lots of work has been done, and we all better
14 understand and have improved the design. The current
15 application was submitted just over a year ago.
16 Throughout the whole process, TMAC and previous owners
17 have been talking to the public and the NIRB and
18 parties to better understand all of the issues and
19 consider these in the -- and these have been considered
20 in the project design.

21 This represents the issues that were -- have been
22 presented in the Nunavut Water Board process. This
23 is -- this list does reflect the issues originating in
24 the technical meetings and is in the prehearing
25 conference report, and we'll go through all of these in
26 detail as we -- I will do so a little later. But you

1 can see that we've characterized them in terms of water
2 and waste on this drawing and in terms of closure and
3 management plans on this one, and finally in terms of
4 water, again, which looks like a duplicate -- okay.
5 Oh, sorry. This is another duplicate. This is where
6 we actually begin to start to talk about water. Thank
7 you.

8 So let's focus on the water issues. Of interest
9 is a site-wide water and load balance, groundwater
10 quality and volume, of course. Robert's Bay discharge,
11 aquatic monitoring, effluent discharge, marine water
12 quality objectives, water and sewage, Doris Lake
13 outflow, and water crossings. All issues of water
14 interest. The site-wide water balance is a computer
15 model and is one of the most important documents in the
16 submission. It looks at water quality and the quality
17 over the life of the mine to inform design and
18 management. It was submitted with the application and
19 updated throughout the process based on party questions
20 and comments and describes how we manage and protect
21 water.

22 So as you can see, we have organized the slides by
23 issue. So I just want to note that we prepared and
24 filed this presentation several weeks ago, and it was
25 based on our understanding of the status of the issues
26 at that time. On September 10th, we -- INAC filed a

1 followup written submission which confirmed that a
2 number of issues proposed or previously noted as
3 unresolved were now resolved.

4 It also flagged several issues that had some
5 additional questions. As I go through the following
6 slides, I will flag for the Board and the audience
7 where TMAC and INAC have had additional relevant
8 discussions in relation to those issues that INAC has
9 flagged as unresolved as of last week.

10 To start with, INAC raised a new -- a new issue
11 regarding calibration of the water and load balance.
12 TMAC clarified that this will be calibrated annually,
13 and this clarification will be reflected in an addendum
14 to the water management plan that will be submitted as
15 an exhibit later in this hearing. Accordingly, we now
16 believe that this matter is resolved.

17 In terms of water and sewage treatment, the
18 existing water and sewage treatment plant -- or sewage
19 treatment plant has been replaced. The Nunavut Water
20 Board was notified and the routine update to the
21 management plan submitted. There's no need for other
22 water treatment so we believe this matter is now
23 resolved.

24 The aquatic effects monitoring plan is designed to
25 study areas of water that could be negatively affected
26 by the mine. It provides an early warning -- pardon

1 me. My apologies, Mr. Chairman.

2 The aquatic effects monitoring plan measures water
3 quality, sediment creatures, and ice thickness.
4 Numerous changes that reflect the fact that effluent
5 from the operation is no longer to be discharged to the
6 freshwater were made in aquatic environment management
7 plan. The water level of Doris Creek will be monitored
8 because of -- sorry, of Doris Creek will be monitored
9 and Doris Lake because some water will leak into the
10 mine. This is an issue marked previously as "resolved"
11 that required further discussion last night. The
12 discussion has resulted in both clarification and
13 changes to the AEMP. Most additional recommended
14 parameters will be collected and reported in the
15 appendices to -- of the AEMP.

16 Also, TMAC will maintain existing Doris Lake
17 monitoring station and related sampling frequency.
18 This will also -- this will result in a revision of the
19 AEMP which, as before, will be filed with the Board
20 prior to the close of this hearing. Our understanding
21 is that this commitment -- INAC now considers the --
22 this issue to be resolved.

23 There is a risk to the level of the lake water in
24 Doris Lake, and we will therefore monitor that level
25 continuously. If the water levels are affected by
26 mining under the lake, then there are action levels

1 that are included in the plans. Monitoring Doris Lake
2 outflow is to -- is an issue that was understood to
3 have been resolved yet remained an issue as indicated
4 in INAC's September 10 submission. We've had further
5 discussion on this, and there's yet some further
6 discussion to be clear that we have resolved this;
7 however, we believe that measuring -- that calculating
8 the relationship between the Doris Lake level discharge
9 and Doris Creek flow is a suitable way to monitor the
10 Doris Creek flows and timing and is not necessary nor
11 suitable to monitor Doris Creek flows directly. TMAC
12 hopes this resolves this matter.

13 Robert's Bay discharge is an important element of
14 the proposed amendment. Obviously this water goes to
15 the saltwater. It is our understanding that the
16 Nunavut Water Board's jurisdiction is on freshwater in
17 Nunavut, and accordingly, the discharge of this water
18 is outside the jurisdiction of the Nunavut Water Board;
19 however, all aspects of this discharge are regulated by
20 Environment and Climate Change Canada for the quality
21 of the effluent, by the Department of Fisheries and
22 Oceans for its potential effects on fish habitat; by
23 Transport Canada for its potential effects on navigable
24 waters, and by the Industry and Northern -- sorry,
25 Indigenous and Northern Affairs Canada for -- by -- for
26 land use and -- and the land-use lease. Excuse me a

1 moment.

2 Mr. Chairman, I spoke earlier -- I spoke earlier
3 of mine entering -- of water entering the mine from
4 Doris Lake. Our modeling of the geology and the mining
5 of Doris -- of the Doris Mine underneath the Doris Lake
6 indicates that some water from the lake may flow
7 through cracks in the rock into the mine. This water
8 will contain salt because much of the groundwater in
9 this part of Nunavut is salty, and therefore this salt
10 will come into the mine. This water will be quite
11 salty at first. As you can see from this graph, this
12 is the -- a number of days of operation, and very early
13 in the operation salt goes to quite a high
14 concentration before being basically rinsed out of the
15 rocks and falls to lower concentrations. This water
16 will be collected in some -- in the mine and pumped out
17 so that it does not flood the mine. This will --
18 originally intended to be sent directly to Robert's Bay
19 but will temporarily be stored in the Tailings
20 Impoundment Area.

21 Just to explain briefly about why this happens, as
22 you know, the ground around the Doris Mine is
23 permafrost, permanently frozen with ice lenses and very
24 cold rocks. However, underneath lakes the land is not
25 frozen, and in a deep lake such as Doris Lake, that
26 unfrozen area extends all the way down past the bottom

1 of the permafrost extent. Underneath shallow lakes
2 such as the Tailings Impoundment Area, the water body
3 is not sufficiently large to fully melt the permafrost
4 so it's -- this is called a closed or isolated talik.
5 This is called an open talik.

6 The significance for the mine is that if the mine
7 were here, water from this lake can flow through cracks
8 in the -- in the land, in the rock, and into the mine
9 this way because it's higher. This is a -- this is a
10 relatively small flow and forms a part of the water
11 that will come into our mine. Also, there are cracks
12 in the rock from here, and that's why the -- we can get
13 water flowing in from the lake. The Doris North
14 facility would be located in -- in frozen ground here,
15 and because the water is frozen, it's a dry mine.
16 The -- underneath the Doris Lake, however, there's
17 flowing water.

18 It's important to note, by the way, as we're -- as
19 we have this drawing in front of us that with a closed
20 talik at the Tailings Impoundment Area there's no
21 opportunity for any contaminants, should there be any,
22 to flow from there out of the frozen area into the
23 other lakes in the vicinity. In terms of -- so I think
24 I've described how water will get into our mine.
25 That's part of the story.

26 The -- another part of the story is the fact that

1 that water is saltwater. Now, normally you can
2 discharge saltwater to the ocean with no difficulty;
3 however, there is a feature of the Metal Mining
4 Effluent Regulation that requires the water to be
5 tested to be nontoxic, and basically you put a little
6 fish in the water and see if it survives. If it
7 survives long enough, you pass the test.

8 However, the -- as written, the current Metal
9 Mining Effluent Regulation requires that that fish be
10 freshwater fish, and therefore if you put a freshwater
11 fish in saltwater, he will die because of the salt, and
12 it is not an appropriate test for our effluent.

13 Environment Canada is very well aware of this
14 problem with the Metal Mining Effluent Regulation.
15 It's a problem that exists for other mines in Nunavut,
16 including Agnico Eagle's properties in the Kivalliq,
17 and they are working hard to bring new -- a new test
18 for saltwater species in -- into play. However, in the
19 meantime, that means we can't discharge to the ocean
20 our saltwater from the -- from underground. That's why
21 we will store it in the Tailings Impoundment Area for a
22 time period that will allow Environment Canada to
23 finish their work. We anticipate that a year or 18
24 months will be adequate for this. And during mining,
25 we will be trying to minimize the inflow of water to
26 the mine by doing risk-zone mapping and working to

1 limit the infiltration of water by grouting or
2 concreting the rocks ahead of us as we mine forward.
3 We'll monitor the water quality and the water quantity
4 that comes from the mine.

5 This is an item that we previously understood to
6 have been largely resolved but was flagged by INAC as
7 an unresolved matter in the September 10th submission.
8 We are suggesting that the groundwater monitoring occur
9 under the groundwater monitoring plan as opposed to
10 directly in the project licence -- in the water
11 licence. Reporting under that plan of groundwater
12 quality will occur as part of our discharge compliance
13 program, and that will be reported on a monthly basis
14 to the Metal Mining Effluent Regulation. We are also
15 prepared to report these results on a monthly basis to
16 the Water Board for their information and annually as
17 part of our regular reporting to the Nunavut Water
18 Board. We believe this is now resolved with all
19 parties.

20 There are a number -- because we are building some
21 additional roads in -- as part of the amendment, there
22 are two water crossings that need to be addressed.
23 This photo shows one of those water crossings in the
24 vicinity of our Robert's Bay access road. The water
25 crossings must not negatively affect fisheries, so the
26 crossings must be -- are regulated by the Department of

1 Fisheries and Oceans. TMAC has made submissions to the
2 Department of Fisheries and Oceans on these crossings
3 and has received letters of advice from them. The DFO,
4 in fact, has recently confirmed that these works will
5 not result in serious harm to fisheries and therefore
6 do not require a Fisheries authorization. The DFO
7 review is now complete, and we believe these matters
8 are resolved.

9 With that I will move to issues presented in the
10 process that refer to waste-related issues, and as you
11 can see, the -- many of these deal with waste rock and
12 tailings. In terms of waste rock, as I said, waste
13 rock is that rock that does not have gold in it and is
14 in the way so we take it out. This will be temporarily
15 placed on the surface in a designated area, and as I
16 said, at our mine, we will need to use it underground
17 so there will be none left on the surface at the end.
18 The added benefit of this is that there will be no
19 potential for acid-rock drainage from waste rock
20 following closure. We don't expect to use any of this
21 rock for construction on the surface, but if we should
22 choose to do so, there is a protocol for ensuring that
23 it will not cause acid-rock drainage problems. We
24 intend to use it all underground.

25 Occasionally small amounts of fuel or oil spill
26 onto the ground at the site. This material is picked

1 up and either treated or stored onsite, and eventually
2 it too may be used to backfill the mine in the
3 permafrost areas. The same goes for spilled explosives
4 materials that may occur in the mine.

5 Also, as I indicated earlier, detoxified tailings
6 will be disposed of underground with the waste rock as
7 backfill. Now, we've analyzed the effects of this and
8 don't find any negative effects. We believe that this
9 matter is also resolved.

10 Now, just to remind you again of the Tailings
11 Impoundment Area, this -- and the tailings -- the
12 tailings is certainly our major volume of waste. And,
13 again, it's going to be disposed of on the land in the
14 southern part of the Tailings Impoundment Area. And
15 this is permitted under the Metal Mining Effluent
16 Regulations that are -- that are administered by
17 Environment and Climate Change Canada. It's called a
18 Schedule 2 assignment of this lake as a waste
19 management area. When you place tailings, you run the
20 tailings out in a slurry. You think of it as muddy
21 water with -- so water with a lot of solids in it
22 that's pumped through a pump line, and the -- and the
23 pump line will travel -- there we are -- travel
24 along -- along the roadway out to the south dam and be
25 disposed of out from these spigots in various locations
26 in order, ultimately, to create a landform, when

1 finished, that is self-draining and stable. So this
2 landform will drain to the west and to the north, and
3 ultimately the water will report into the reclaim pond.

4 As I said, this tailings management area has
5 already been in use -- has already been approved for
6 use. Our floatation tailings will report to that area
7 and will be discharged. The reclaimed water will go
8 back to the mill for use. I think I've described this
9 already. Tailings operations are described in the
10 tailings area, operations, maintenance, and
11 surveillance manual, also known as the tailings
12 management plan, and we believe that matters here are
13 also resolved pending approval of the tailings
14 management plan by the Board as part of this licence.
15 Oh, no. Back here. Sorry.

16 Tailings monitoring: Tailings geochemistry is one
17 of those items that we have marked as resolved and yet
18 discussed with INAC again last night as a result of
19 their September 10th submission. INAC sought
20 clarification on a component of our tailings
21 geochemistry monitoring indicating this issue as
22 unresolved. We have since clarified that confirmatory
23 monitoring of tailings geochemistry will be carried out
24 throughout operations. An addendum to the tailings
25 management plan will be submitted as an appendix to
26 this document to clarify this in the plan, and we now

1 understand that this issue is resolved.

2 Because the tailings will be disposed of on the
3 surface, on the land, they are exposed to the wind, and
4 as they dry, they can create dust. Dust suppression
5 can be used to minimize the dust, and our preferred
6 dust-suppression method will be water that we will use
7 on a normal basis, but if that is insufficient, we
8 would wish to use approved chemicals. There are a
9 number of chemicals that are listed for tailings
10 management in the tailings management plan, and others
11 may also be used as may be approved by the Nunavut
12 Water Board.

13 This was flagged as -- by INAC in their September
14 10 submission as being unresolved, and we proposed that
15 dust suppressants approved for use anywhere in Nunavut
16 by the Government of Nunavut or the Nunavut Water Board
17 or other relevant body should be considered suitable
18 for use at Doris and that no site-specific approval
19 relating to dust suppressants should be required. In
20 our view, this is a reasonable approach to use dust
21 suppressants and should be adopted by the Board.

22 This picture is merely to demonstrate that the
23 interim dyke is constructed of runoff quarry fill with
24 a granular filter zone at the upstream edge of the
25 structure. It will be placed in-dumping rock into the
26 Tailings Impoundment Area. As I said, the interim dyke

1 is an internal structure within the Tailings Area that
2 confines the tailings' solids to a smaller area. It
3 facilitates easier and more cost-effective closure.

4 We believe that the details of this structure,
5 which have been the subject of extensive conversation
6 with INAC, are now resolved, which brings us to
7 closure, and we are also approaching closure of the
8 presentation, Mr. Chairman.

9 There are a number of matters important in
10 closure, and that includes Tailings Area water quality,
11 groundwater quality, tailings cover, the security cost
12 estimate, and the interim closure and reclaim -- and
13 reclamation plan. Each of these was discussed in some
14 detail during the last months. In terms of the
15 tailings cover, there'll be a rock cover designed to
16 prevent wind and water erosion. It considered the
17 potential for and effects of frost heave and the boils,
18 and the final design would be submitted just prior to
19 construction. We believe this matter is resolved.

20 In terms of Tailings Area water quality, inputs
21 are monitored under the water management plan, and
22 seasonal discharge will occur to Robert's Bay, and that
23 will be monitored under the Metal Mining Effluent
24 Regulation and also under the management plan as
25 indicated earlier.

26 At closure, the entire contents of the -- of water

1 in the Tailings Impoundment Area will be discharged to
2 Robert's Bay on the presumption it is compliant, of
3 course, with the Metal Mining Effluent Regulations,
4 which we believe it to be. And then the area will be
5 allowed to naturally refill for an -- a period
6 estimated at approximately five years. This water will
7 then be tested to ensure that it meets discharge
8 criteria set for post-closure period, and at which
9 point, the dam will be breached or removed. That is a
10 slot will be cut in the dam so that water can flow
11 naturally, and discharge will return for the Tail Lake
12 outflow to Doris Lake and onward to Doris Creek.

13 Post closure we will -- it is intended to visit
14 the monitoring frequency at the time of licence renewal
15 in 2023, which is approximately the time that this
16 whole adventure will be ongoing. We believe this --
17 these matters to be resolved.

18 There were questions as to the groundwater quality
19 around the Tailings Impoundment Area and the potential
20 for discharge of that water to Doris Lake and causing
21 an impact. And as I showed earlier with the drawings,
22 it has been indicated that it would be minimal flow
23 from the mine to Doris Lake -- oh, sorry -- and also
24 from the Tailings Impoundment Area. There would -- and
25 upon closure, the mine will flood with water from Doris
26 Lake, and we do not believe there would be any impacts,

1 and we've -- to Doris Lake on water quality from the
2 material in the mine. We believe this matter to be
3 resolved.

4 We come now to the matter of security cost
5 estimate, obviously a very important item for everybody
6 involved. The quantum of the security cost estimate is
7 an issue that has been resolved between TMAC and the
8 Kitikmeot Inuit Association, but it remains unresolved
9 with INAC. Once the finalized cost estimate has been
10 agreed upon with INAC, we will be able to reissue a
11 revised closure plan with the modest adjustments we
12 would expect.

13 Now, TMAC is aware that reclamation security is
14 very important, and that it is important to get the
15 estimate right. Despite extensive engagement with INAC
16 over the last year and particularly in the last several
17 months, comprised of over 20 engagements commencing
18 in -- back in August 2015, this included phone calls,
19 document exchanges, in-person meetings with
20 opportunities to engage with TMAC's reclamation expert.
21 There were two site visits from INAC and their
22 reclamation expert.

23 The KIA, TMAC, and INAC have submitted original
24 and revised cost estimates. TMAC's estimate was
25 prepared by our independent professional expert,
26 Dr. Maritz Rykaart, who sits -- of SRK Consulting, who

1 sits on my right here. We have filed a summary of his
2 extensive experience as an exhibit, and Dr. Rykaart's
3 professional opinion on matters relating to reclamation
4 and closure have been accepted by the Nunavut Impact
5 Review Board and the Nunavut Water Board on numerous
6 occasions, as well as other northern environmental
7 assessment and water boards. Dr. Rykaart is a
8 professional engineer registered to practice in
9 Nunavut, the Northwest Territories, the Yukon, British
10 Columbia, and Manitoba and is the engineer of record on
11 the design of our Tailings Impoundment Area, including
12 the north dam.

13 Now, despite the fact that there's a difference in
14 the quantity of the cost, there is alignment between
15 TMAC and INAC on the direct costs, that is the actual
16 cost of doing the work, required to close this
17 facility. Despite our best efforts and intent, INAC
18 and TMAC are still \$7.8 million apart in our respective
19 estimates. The KIA has provided an assessment of the
20 estimates by -- of these estimates by its independent
21 professional reclamation expert, Geoff Claypool, who is
22 a professional engineer with BGC Engineering Inc. It
23 confirmed that Dr. Rykaart's estimate is appropriate.
24 And despite our confidence, despite TMAC's confidence
25 in Dr. Rykaart and Mr. Claypool's expertise, given the
26 difference between TMAC and the INAC estimate, in

1 September we took the additional step of obtaining a
2 third-party review focused on the differences between
3 INAC's and TMAC's -- and that is Dr. Rykaart's cost
4 estimate, and we retained Mr. John Brodie for this
5 task. Some of you may know that Mr. Brodie is very
6 well-known in this room and to the Board as the author
7 of the reclaim model that INAC has adopted in its
8 closure policy and is the standard for cost estimation
9 of reclamation in the north.

10 Mr. Brodie, in fact, developed the initial model
11 for -- that is now reclaim and continues to maintain it
12 and has appeared in front of this Board on behalf of
13 INAC previously. Mr. Brodie's report has been filed as
14 an exhibit with the Board and concludes that it is
15 Brodie -- and I quote: (as read)

16 It is Brodie Consultants' opinion that the
17 estimate for reclamation security provided by
18 SRK is reasonable and appropriate. [End
19 quote]

20 He goes on to confirm that, and I quote again:
21 (as read)

22 SRK's estimate uses current reclaim-unit
23 costs with supplemental quotes for key items,
24 including fuel and shipping. The level of
25 detail is suitable for this stage of the
26 project, and there does not appear to be any

1 rationale for greater security provision.

2 [Closed quote]

3 Now, at this point I'm going to hand the microphone to
4 Dr. Rykaart to provide the Board with an overview of
5 his approach to preparing the security estimate, as
6 well as an overview of the concerns that Dr. Rykaart
7 and TMAC have with the estimate that has been prepared
8 by Amec in -- on behalf of INAC.

9 MR. RYKAART: Maritz Rykaart. Mr. Chair,
10 members of the Board, I'd like to start by explaining
11 to you some background as to how SRK Consulting goes
12 about developing security closure cost estimates. We
13 feel that providing you with this background is
14 important in terms of understanding some of the
15 differences which I will outline later on.

16 SRK develops closure cost estimate as a routine
17 part of our practice. We do this based on a first
18 principle's approach. What I mean by that is that we
19 take the activities of a closure plan, and we break it
20 down into the very specific individual work items that
21 is necessary to do the work. By doing that, we can
22 establish exactly what equipment is needed to do the
23 activities, we can establish exactly what manpower is
24 needed to do the activities, and then we can assign
25 costs in terms of labour and equipment rates.

26 Doing this allows us to develop a very

1 comprehensive -- okay. In doing that we can develop a
2 very comprehensive and a very detailed closure cost
3 estimate. This is different than the reclaim model
4 approach which is adopted normally in this part of the
5 world. The difference between the reclaim model and
6 the first principle's approach that SRK adopts is that
7 reclaim develops the cost based on standard unit rates
8 for specific activities. The unit-rate approach is not
9 wrong, but the challenge for the unit-rate approach is
10 that it is not site specific and does not recognize the
11 specific uniqueness of every project.

12 The SRK approach of first principles is considered
13 significantly more robust and generally more accurate
14 than the reclaim model. This is, however, not just our
15 opinion as professional engineers. This is a supported
16 fact as can be seen from the report that Mr. John
17 Brodie produced and that has been submitted as evidence
18 whereby Mr. John Brodie acknowledged that the SRK work
19 is substantially more detailed and rigorous and
20 support than -- than the reclaim approach.

21 In using this approach, we also -- we developed
22 the direct costs. Mr. Roberts explained to you that
23 the direct costs are the actual work activities
24 necessary to complete the closure activities. There is
25 agreement between the SRK closure cost and that
26 developed by Indigenous and Northern Affairs Canada,

1 their consultant, Amec Foster Wheeler.

2 In other words, we agree that the actual
3 activities needed to carry out the closure activity in
4 terms of physical work that needs to be done such as,
5 for example, building a tailings cover, is the same.
6 The difference in the SRK cost associated with the
7 direct costs and those by Amec Foster and (sic) Wheeler
8 was a few thousand dollars on a total of about
9 \$16 million, therefore very, very close. There is,
10 however, a \$7.8 million difference in the indirect
11 costs. These indirect costs are the costs attributed
12 to a project associated with other activities such as
13 providing camp support; providing equipment to site,
14 mobilization, demobilization; as well as project
15 management; engineering design; safety and security
16 costs, et cetera.

17 SRK's original cost estimate submitted in 2015 as
18 part of the amendment application was a total of about
19 \$25 million for the security estimate. Following
20 submissions by Indian (sic) and Northern Affairs Canada
21 through their consultant Amec Foster Wheeler
22 discussions were held prior to the technical hearings
23 at which time the TMAC cost estimate was increased to
24 \$29.7 million. The reason for increasing these costs
25 were to acknowledge many of the concerns that INAC had
26 with the original TMAC cost estimate. TMAC

1 subsequently agreed to add in an
2 18-month-interim-care-and-maintenance period. TMAC
3 agreed to use all new camp rental facilities for both
4 interim-care-and-maintenance phase, as well as
5 active-closure phase. TMAC agreed to bring in all new
6 fuel for all activities. TMAC agreed to additional
7 post-closure monitoring. And, in addition, TMAC
8 corrected a mistake in their cost estimate where labour
9 for pump technicians were not included.

10 Yesterday Indian and Northern Affairs Canada
11 provided TMAC with their revised cost estimate. This
12 cost estimate is a total of 37.5 million which is the
13 \$7.8 million difference that I've pointed out. We
14 reviewed this cost estimate very carefully, and SRK, in
15 our professional viewpoint, is confident that the SRK
16 estimate of 29.7 million remains valid, and I'd like to
17 point out some of the reasons for this.

18 There is a \$3.9 million difference associated with
19 supplying camp facilities on the site during the
20 closure activities. The way this number is calculated
21 is to determine how much manpower is needed on the site
22 during the closure period. SRK, based on their
23 detailed cost model, developed a detailed schedule
24 which balances manpower as well as equipment, has
25 determined that about 4,800 man days are required to
26 complete the work. This is spread out over a period of

1 about two-and-a-half years. This includes a 10 percent
2 contingent for project personnel.

3 Amec Foster Wheeler's equivalent man days for the
4 project is 13,700 man days. This is a substantial
5 difference. Their breakdown provided allows for about
6 5,600 man days associated with completing the actual
7 work activities of closure. The remaining
8 approximately 8,000 hours is associated with nonworking
9 staff. This means that for every one working personnel
10 doing closure activities there is 1.4 nonworking
11 personnel onsite. So if there was a crew of 10 people
12 onsite operating equipment or performing different
13 labour activities there is 14 other people onsite
14 carrying out nontechnical tasks, including project
15 management, project oversight, camp support, as well as
16 inspections and unidentified visits.

17 This complement of 1.4 to 1 is not reasonable and
18 is not justifiable. This is not normal in any project,
19 whether it's a construction project or a closure
20 project. To further illustrate why we believe that
21 this is not reasonable, of this 8,000 man days, which
22 is included for nonworking staff, it includes an
23 allowance of about 1,900 man days for visitors to site
24 during closure activities. This equates to three
25 people onsite visiting the closure activities at any
26 given time while closure is happening.

1 Amec Foster Wheeler's rationale for this is it is
2 an allowance for people to carry out inspections, water
3 quality sampling, and other similar activities. A
4 fully operational mine like TMAC has to carry out
5 similar types of inspections and expect visits. These
6 visits and expect -- and similar activities, however,
7 does not come close to that amount of manpower. There
8 is never that amount of visitors on an active mine
9 site, not to speak of a closed mine site undergoing
10 closure activities.

11 A second major difference between the SRK cost
12 estimate and that provided by Amec Foster Wheeler
13 relates to the mobilization and demobilization of
14 equipment to carry out the activities. This difference
15 amount (sic) to about \$980,000, almost a million
16 dollars. As I've explained, SRK's cost estimate is
17 based on a very rigorous manpower and equipment loading
18 schedule developed from first principles. This
19 includes mobilizing and demobilizing equipment in three
20 different stages, one associated with interim care and
21 maintenance, one associated with the first stage of
22 closure activities, and a second associated with
23 mobilization and demobilization of equipment needed to
24 breach the north dam.

25 Amec has not developed an equivalent schedule, and
26 therefore there is no justification for how they've

1 determined their fleet. Notwithstanding the fact that
2 Amec has not provided justification for their selection
3 of a fleet, SRK's total fleet being mobilized is in
4 actual fact greater than that proposed by Amec Foster
5 Wheeler. SRK is proposing 23 pieces of equipment where
6 Amec Foster Wheeler is proposing 20 pieces of
7 equipment. One would therefore intuitively expect that
8 SRK's mobilization and demobilizing costs should be
9 greater, but this is not true. The reason why there is
10 such a substantial difference is that Amec Foster
11 Wheeler has, in our opinion, incorrectly allowed for an
12 additional \$565,000 for mobilizing and demobilizing
13 equipment for the breach of the north dam after the TIA
14 facility has refilled.

15 In addition, this cost has been assigned under the
16 water management tab of reclaim which makes it a direct
17 cost which is not appropriate. The rest of the
18 difference of about \$350,000 is associated with the
19 fact that Amec Foster Wheeler has used the incorrect
20 shipping rates for mobilizing and demobilizing
21 equipment. In their assumptions, they have stated that
22 they used the same staging point as SRK has, and that
23 they are using NTCL shipping rates for demobilizing
24 equipment. Those shipping rates are substantially
25 reduced for backhaul of equipment as opposed to moving
26 equipment north. SRK pointed out these errors, but

1 Amec chose not to correct those errors, and we do not
2 understand why.

3 The next item of substantive difference relate to
4 about \$400,000 plus an additional 13 percent of
5 management and overhead costs between the SRK and Amec
6 Foster and Wheeler costs associated with interim care
7 and maintenance. During this -- during this period,
8 the primary activity is water management while the camp
9 is being held. The water management activity during
10 this stage entails simply movement of water collected
11 in the pollution control pond to the Tailings
12 Impoundment Area. This is a sporadic pumping of water
13 only after precipitation events of very short-lived
14 duration.

15 Amec Foster Wheeler initially stated that they
16 needed people onsite for eight months of the year to
17 pump this water. TMAC advised Amec that this part of
18 the world there's probably about four months of
19 nonfreezing water in these ponds that can be pumped.
20 Nonetheless, TMAC agreed to allow, in the interim care
21 and maintenance period, pumping for six months of the
22 year. Amex Foster Wheeler subsequently reduced their
23 allotment of ten months to eight months and justified
24 their reason for the extra time as overlap and training
25 for the pump technicians operating this pump.

26 Given the nature of the activity, this seems

1 hugely unreasonable and not justified. Another
2 significant difference between the two cost estimates
3 is about \$450,000 associated with fuel being shipped to
4 site. Both parties agree on the quantity of fuel that
5 is needed to carry out the closure activities. In
6 fact, this number was calculated based on first
7 principles by SRK and Amec accepted that quantity.

8 The difference is associated with the cost of
9 fuel. TMAC has based their cost of delivery of fuel to
10 the project site based on a long history of delivered
11 cost since construction of the project started in 2007.
12 This includes a time period where fuel costs have had
13 record highs in the industry. The reclaim model has a
14 significantly higher cost as a unit cost for fuel
15 shipping to northern sites, but as previously stated,
16 those reclaim costs are generic and intended to cover
17 multiple conditions.

18 In the interview that SRK had with Mr. John Brodie
19 when he carried out his review on behalf of TMAC, Mr.
20 Brodie questioned the fuel cost that SRK had used, and
21 he concluded that SRK's approach and estimate was more
22 accurate than that provided in reclaim, and therefore
23 he accepted that the SRK estimate was appropriate.

24 The remaining differences between the SRK and the
25 Amec Foster and Wheeler cost estimate relate to a
26 series of smaller items. I want to highlight just

1 three of these just by way of example to illustrate
2 some of the assumptions being made by Amec which SRK
3 does not agree with. By way of example, Amec has
4 allowed a total of \$180,000 plus a 13 percent overhead
5 and project management cost for a snow machine during
6 interim-care-and-maintenance period. I would like to
7 remind you that this activity happens over the summer
8 months. Secondly, there is already a dozer onsite to
9 remove snow, and therefore there's truly no
10 justification for providing a snow machine, especially
11 not something that costs the same as operating a dozer.

12 If a small snow machine was needed for a crew
13 onsite, which is no more than three people at most,
14 then a commercial snow machine can be bought for a
15 capital price of less than \$10,000; therefore, this
16 cost is simply not justifiable.

17 Amec has also allowed a cost of \$280,000 plus a 13
18 percent project management and overhead fee for
19 inspection and maintenance of water management
20 structures by external consultants during interim care
21 and maintenance. As I explained earlier, the activity
22 that happens during this time is pumping of water from
23 the pollution control pond to the Tailings Impoundment
24 Area. This amount of inspection by external
25 consultants is not necessary nor required. Consultants
26 do not inspect pumps on behalf of clients. This is

1 done by trained pump technicians who are onsite and are
2 being paid for under the cost estimate.

3 Mr. Chairman, these example (sic) highlight the
4 reason why the \$7.8 million difference between the TMAC
5 and the INAC cost estimate exist. SRK has provided
6 comprehensive details of all our assumptions and all
7 our calculations pertaining to our estimate. We've
8 provided that in written form as well as electronic
9 form in terms of all our calculations. Based on the
10 evidence that we've seen from the information provided
11 by Amec Foster Wheeler, on behalf of INAC, it is our
12 professional opinion that many of the assumptions made
13 by Amec, as illustrated, are erroneous. A lot of the
14 background information is unfounded and unsupported,
15 and therefore we cannot suggest to TMAC that that cost
16 estimate needs to be accepted.

17 We have considerable confidence in SRK's cost
18 estimate, which has been supported by the two
19 independent other technical reviews which has -- this
20 has underwent. Thank you.

21 MR. ROBERTS: John Roberts, TMAC Resources.
22 Thank you, Dr. Rykaart.

23 With that I will move on to the next topic which
24 is management plans. TMAC has provided management
25 plans ...

26 THE CHAIR: I have 12, which should be

1 lunchtime. Maybe to give yourself some rest we will
2 break for lunch to about 1:30. We'll see you back here
3 at 1:30, and you can continue your presentation then.

4 Is that okay with you?

5 MR. ROBERTS: Certainly, Mr. Chairman. We
6 can -- my voice can use a rest.

7 THE CHAIR: We'll see you back here at
8 1:30.

9 (LUNCHEON ADJOURNMENT AT 12:00 AM)

10 (PROCEEDINGS RECOMMENCED AT 1:41 PM)

11 THE CHAIR: Welcome back. Mr. Roberts,
12 whenever you're ready, please carry on with your
13 presentation.

14 MR. ROBERTS: Thank you, Mr. Chairman. John
15 Roberts, TMAC Resources. I believe my voice did get a
16 good rest over lunch. Thank you very much.

17 So when we left off, we had finished our
18 conversation about reclamation estimates and matters
19 concerning -- concerning reclamation. I wanted to turn
20 now to some final comments about management plans that
21 TMAC has provided as a part of the amendment process.
22 And you can see from this slide that we have provided
23 new management plans on aquatic effects monitoring,
24 groundwater management plan, tailings management plan,
25 water management plan, and a waste rock and ore
26 management plan.

1 Our management plans are intended to help us
2 operate and to continue to implement the existing
3 measures that are already in our requirements under the
4 licence. The revised plans have been changed. For
5 example, the aquatic effects plan has been changed to
6 recognize that the discharge is now to Robert's Bay and
7 not to freshwater. The waste rock and ore management
8 plan has been changed to recognize the disposal of
9 detoxified tailings underground. And the water
10 management plan has added the interim water management
11 strategy that I spoke of before where we store the
12 saltwater in the salt mine water in the Tailings
13 Impoundment Area. We have -- existing plans are being
14 drafted to reflect this transition and are to be
15 submitted. This is old.

16 We intend to -- sorry, let me go back. We intend
17 to reissue the aquatic environment plan this week and
18 to address some comments made by Environment and
19 Climate Change Canada very recently so we will have
20 that finalized --

21 Is it this week or before the end of the hearing?

22 MS. HAMM: Before the end of the hearing.

23 MR. ROBERTS: Before the end of the hearing
24 we will have this revised and in your hands. So we
25 believe with the submission of the various management
26 plans and the adjustments that have been made in

1 conversation with the various reviewing parties, that
2 these matters are resolved.

3 So all of our outstanding issues have --
4 pertaining to water and waste have been resolved, and
5 all of our outstanding issues with respect to closure
6 and the quantum of security remain unresolved. And as
7 you heard today, we have made our presentations to the
8 Board with respect to our view of that appropriate
9 amount of money for reclamation security.

10 We look forward to the Board's very careful
11 examination of the evidence before you, and TMAC
12 remains hopeful that a defensible security amount can
13 be reached. Following the resolution of that security
14 amount, TMAC will issue a revised closure plan which we
15 expect to be a very quick process, a very short time to
16 provide that, and we'll address any minor technical
17 changes that may arise from the adjustment in the
18 security amount.

19 Finally, we also look forward to the approval of
20 the management plans submitted along with this
21 application, and before, with the issuance of the
22 licence so that we can proceed with those at the moment
23 that the licence is issued.

24 So our next steps are to finalize this public
25 hearing with the Water Board, and with the leave of the
26 Water Board we hope that we will be able to close the

1 file and proceed to your decision-making processes. We
2 look forward to having the new water licence and the
3 new project certificate granted in relatively short
4 order, and we wish to hurry and complete our
5 construction of the project and bring it in to full
6 operation with the first pour of gold in January of
7 2017. So we have a very active fall before us.

8 And I want to close particularly with this
9 beautiful picture of Robert's Bay and our lay-down
10 areas and thank you everybody once again, Mr. Chairman,
11 for the kind attention you've afforded us today and the
12 opportunity to make this presentation and to submit our
13 applications to the Board. We thank you very much, and
14 we're open for my questions. Thank you.

15 THE CHAIR: Thank you.

16 Any questions to the applicant by -- I'll start
17 with Kitikmeot Inuit Association? Sorry.

18 MS. KOWBEL: Thank you, Mr. Chair.
19 Christine Kowbel, legal counsel for TMAC. Before the
20 opportunity for questions, I was hoping to ask to file
21 a -- one further exhibit, and that's a CV for Mr. John
22 Brodie, and I'm requesting that be marked as an
23 exhibit, and I'll leave that to you.

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

26 Ms. Kowbel, I don't have a copy of it in front of

1 me, so perhaps if I can ask, it's not been circulated
2 before -- Mr. Brodie is not going to be offering
3 evidence in this proceeding other than the report that
4 was filed in the exhibit; is that correct?

5 MS. KOWBEL: Christine Kowbel, legal
6 counsel for TMAC. Yes, that is correct. Mr. Brodie is
7 not attending these hearings and is filing his report.
8 I should also note that this summary is missing some of
9 Mr. Brodie's more recent experience, and so -- but we
10 thought it was still use -- worthwhile to file it with
11 the Board so that there was a sense of his background.

12 MS. MEADOWS: Thank you, Ms. Kowbel. So
13 perhaps if I can poll the parties to see if there are
14 any objections to filing Mr. Brodie's CV
15 notwithstanding the fact that he's not appearing.

16 MR. ROESCH: This is John Roesch for the
17 KIA. We have no objection to the submission.

18 MS. MEADOWS: Thank you. If I can have
19 INAC.

20 MS. COSTELLO: Thank you, Mr. Chair. Karen
21 Costello for Indigenous and Northern Affairs Canada.
22 We have no objections.

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

25 Mr. Dahl?

26 MR. DAHL: Mark Dahl for Environment and

1 Climate Change Canada. No objections.

2 MS. MEADOWS: Thank you, Mr. Chair. Teresa
3 Meadows, legal counsel for the Nunavut Water Board. So
4 let the record show that we will be marking
5 Dr. Brodie's CV as Exhibit Number 10 in this
6 proceeding.

7 EXHIBIT 10 - Hard Copy Resume of Dr. John
8 Brodie (English) (Updated Resume filed on
9 September 14, 2016, as Exhibit 30)

10 THE CHAIR: Thank you. Kitikmeot Inuit
11 Association, any questions to the applicant?

12 MR. ROESCH: This is John Roesch for the
13 KIA. We have no questions for TMAC or comments.
14 Thank you.

15 THE CHAIR: Thank you. Next we have
16 Environment Canada and Climate Change (sic). Any
17 questions to the applicant?

18 MR. DAHL: Mark Dahl for Environment and
19 Climate Change Canada. No questions. Oh, one moment
20 please.

21 Environment and Climate Change Canada Questions TMAC
22 Resources Incorporated

23 MS. WILSON: Hi. I'm Anne Wilson, water
24 quality with Environment Canada. And I did just want
25 to get one question and answer on the record from TMAC,
26 and that is in respect of the Tailings Impoundment Area

1 capacity for holding the saline water.

2 Earlier this morning, John mentioned the number of
3 18 months as an estimate of when it might be reasonably
4 expected that the MMER could be changed to accommodate
5 direct discharge to the marine environment. If there
6 is any delay to that time frame and if your chloride
7 levels don't decrease as predicted to the point where
8 the effluent would pass a rainbow trout bioassay, I
9 would just like to have confirmation that the TIA
10 capacity would accommodate further holding times?

11 MR. ROBERTS: Mr. Chairman, thank you, and
12 thank you, Anne, for the question. TMAC and its
13 predecessors has been involved with this question in
14 various forms since 2010. This is not a new thing that
15 has emerged in the last little while, although the
16 regulatory reality, I think, has risen relatively
17 recently. The -- we have been working with Environment
18 Canada to ensure that -- that they are aware of the
19 problem, and I give Environment Canada considerable
20 credit that they have identified and understood the
21 problem. They've received input, and they are working
22 vigorously to solve the matter. It -- I am aware that
23 they have selected a species that will be used to carry
24 out the saltwater test, and that they're working very
25 aggressively on the -- on a timeline to solve the --
26 to produce the regulation that will provide a test in

1 pretty short order.

2 I would also say that in terms of -- so I guess
3 what I really want to say here is I really don't think
4 that Environment Canada's going to fail us on this.
5 What I can say in terms of the -- our ability to hold
6 water, we do have 18 months of available volume if we
7 do not make any discharges, and that is 18 months from
8 the point at which we start discharging, which is not
9 today but rather about the end of the year. So we have
10 until mid 2018 approximately to -- as the -- the time
11 which we can contain the water in question. And as I
12 said, I really can't imagine that Environment Canada
13 would not be able to get this rather small technical
14 change done in that time frame.

15 MS. WILSON: Thank you, Mr. Chairman. Anne
16 Wilson, Environment Canada.

17 When we were on our site tour on Sunday, there was
18 mention of the possibility that more mining could be
19 done in the taliks so I was wondering if that would --
20 sorry -- it would be more surficial so that you
21 wouldn't get the deep saline groundwater. Is that
22 something that will affect the holding capacity?

23 MR. ROBERTS: Mr. Chairman, when TMAC -- and
24 thank you again, Anne, for the question. When TMAC
25 became aware of this problem approximately this time
26 last year, or perhaps -- perhaps it was a little later

1 than that actually, we devised a strategy that had
2 three approaches that we hoped would solve our problem
3 with respect to this.

4 The first was to work closely with Environment
5 Canada to raise the matter and work with our colleagues
6 at Agnico Eagle who share the problem, and to encourage
7 Environment Canada to work quickly to bring a new test
8 into service. And as I just stated, I can't believe
9 they would fail us in that. The second part of the
10 strategy was, of course, the one that we have -- are
11 planning to implement once we start discharging, and
12 that is to store the saline groundwater in the Tailings
13 Impoundment Area.

14 The third leg of that strategy stool was to
15 explore further underground in areas that were not
16 outside the permafrost, so in other words in dry areas
17 where we would not encounter talik water. To explore
18 in those areas to see if there was additional ore
19 around some early indications that could delay the
20 timing of the onset of saline water.

21 Earlier this summer TMAC announced by way of press
22 release to the markets and the public that we had, in
23 fact, had some success in identifying additional ore in
24 an area that we know as "below the dyke". And that's
25 not the interim dyke in the Tailings Area. It's a
26 geological structure in the mine that looks very

1 attractive for mining and represents an opportunity to
2 further delay the onset of saltwater inflow.

3 However, at this point, that -- those findings --
4 showings have not been sufficiently delineated to be
5 brought into our reserve or our mine plan, although I
6 will tell you that we are very hopeful and very
7 confident that we can do that. But as yet, that has
8 not been done, and we cannot therefore suggest that we
9 have a solution in that line as yet until the mining
10 plan has been so revised.

11 So I would say that we have actually been
12 relatively successful in all three of our approaches to
13 this, by finding some more ore in dry ground, by having
14 a strategy where we have 18 months of storage in our
15 Tailings Impoundment Area, and we're quite confident
16 that Environment Canada will be able to meet their
17 objective of providing a new toxicity standard by that
18 time.

19 MS. WILSON: Thank you, Mr. Chair. I'm
20 just going to move on to another question that is more
21 of an administrative nature with respect to water
22 licence. In most water licences in Nunavut from mining
23 operations, the Board has the ability to amend the
24 schedules without considering an amendment of the water
25 licence. Now, because that isn't in TMAC's current
26 licence -- I know you want to move a lot of your

1 monitoring and reporting into your management plans,
2 which makes sense as long as they can be reported.

3 I think it would be probably constructive if the
4 Board would consider having the option for the
5 schedules to be amended without opening the licence up
6 and wanted to see if that was something TMAC supported?

7 MR. ROBERTS: Mr. Chairman, John Roberts,
8 TMAC Resources. And, again, thank, Anne, for the
9 question. We absolutely support that. We think it
10 would be much more efficient for the Water Board and
11 all concerned if the schedules of sampling and such
12 would be -- can be modified without opening the licence
13 for amendment. Thank you.

14 MS. WILSON: Thank you. Anne Wilson. No
15 more questions.

16 THE CHAIR: Thank you. Next we have INAC.
17 Indigenous and Northern Affairs Canada Questions TMAC
18 Resources Incorporated

19 MR. ABERNETHY: Thank you, Mr. Chair. David
20 Abernethy with Indigenous and Northern Affairs Canada.

21 I have a question for clarification, and that
22 relates to the deposition of tailings in the Tailings
23 Impoundment Area prior to the interim dyke's
24 construction, the completion of its construction. And
25 for ease of reference, it's -- I'll point out the slide
26 that TMAC provided. The issue is issues under "waste",

1 and its tailings management. I believe it's around
2 Slide 35, so if possible, if that diagram could be
3 shown, it would be helpful. Yeah, that's it.
4 Thank you.

5 The question that I have is just clarification of
6 how tailings will be prevented from going past the
7 footprint of the interim dyke prior to the completion
8 of its construction. I understand that the south dam
9 will be constructed this winter, and TMAC, the
10 licensee, will not be depositing tailings from that
11 area because it will be constructed, that being the
12 south dam. So points on eastern shore will be used to
13 deposit tailings.

14 Now, the point to the farthest left -- or north, I
15 believe, is 650 metres away from where the interim dyke
16 will be constructed, and my understanding is that
17 tailings can move up to a kilometre when they're placed
18 in the -- in the water. So I'd like further
19 understanding on how TMAC will work to prevent tailings
20 from travelling further north past where the interim
21 dyke will be constructed.

22 MR. ROBERTS: Mr. Chairman, John Roberts,
23 TMAC Resources. I will make an approach to this, and
24 then I will defer to Dr. Rykaart who has designed this
25 plan, and thank you, David, for the question.

26 Essentially the approach here is that the -- we

1 anticipate that tailings will not make the full extent
2 of the length of the area shown for approximately
3 2.5 years assuming deposition starting at the southern
4 end of the Tailings Area. So we would very much
5 anticipate discharging along this side of the area
6 while the south dam is being constructed and ensuring
7 that the tailings area is advanced to the south so that
8 it will not encroach upon the foundation of the
9 proposed interim dyke. And with that little
10 introduction, perhaps I'll turn it over to Dr. Rykaart
11 to give a little more detail.

12 MR. RYKAART: Maritz Rykaart. Mr. Chairman,
13 I will have -- I think the first piece of the question
14 that I'll respond to is the comment that Mr. Abernethy
15 made in terms of -- it's their understanding that
16 tailings can move up to one kilometre, and therefore
17 how will TMAC ensure that the tailings does not move
18 beyond the point of the interim dyke.

19 To clarify, tailings -- the tailings deposition
20 strategy will not allow the tailings to move one
21 kilometre. What happens is the tailings deposition
22 strategy for this project is what's called a single
23 pipe's spigot system. In other words, the entire
24 tailings stream at any given time is deposited from an
25 end of the pipe, and as soon as you deposit that
26 stream, the tailings will flow out of the pipe. The

1 tailings will flow because the tailings in the pipe is
2 hydraulic. In other words, it's mixed with water.
3 During the first year of operation, that tailings will
4 have a solids content of about 35 percent. In other
5 words, 35 percent of the material in the pipe is sand,
6 and the rest is water. So it's a slurry.

7 In the second year, as the second mill module
8 comes online and the production rate is increased to
9 2,000 tonnes per day, that solids content reduces to
10 65 percent solid content. In other words, that slurry
11 contains less water, and it becomes a thicker
12 consistency.

13 Once that slurry leaves the pipe, what happens is
14 the sand settles out, and it's -- and the heavier
15 particle settles out immediately right below the pipe,
16 and then the finer particles take some distance and
17 flows with the water and settles out.

18 And the distance that will travel will vary. The
19 first day you deposit tailings it might travel only a
20 couple of metres. After you've created sufficient
21 landscape for that tailings so that there's a long
22 continuous beach, it can travel a long distance. And
23 based on the deposition plan that was developed for
24 this project, we can move tailings a distance of about
25 a kilometre depending on a specific discharge point.

26 On this slide, what you see is the deposition-plan

1 strategy based on the six-figured points that's been
2 placed. One, two, three, four, five, and six. These
3 have been designed to create a land form that allows
4 free drainage of the facility at closure. The reason
5 we (sic) got to continue moving these locations is the
6 tailings will not form a landscape unless you make it
7 form that landscape. But in the original plan, if we
8 can start on the south dam, we'll deposit these
9 tailings, it will move down, and then ultimate at the
10 very end of the mine life, we'll have this discharge
11 point, which is the very last discharge point, which is
12 in actual fact the closest discharge point to the
13 tailings dyke. The distance that this travels is less
14 than a kilometre, but the only reason it can travel
15 that far is because of the geometry of the facility
16 that's been created by that point in time.

17 As Mr. Roberts just explained and as Mr. Abernethy
18 correctly pointed out, when TMAC starts tailings
19 deposition in January 2017, this dam will be under
20 construction so we will not be able to place spigot
21 points here as shown. Therefore we'll start by placing
22 sphered points at this location. We can now replace
23 those tailings there for many months up to a year
24 without those tailings ever reaching this point. It
25 will take us about four months to build this dam which
26 is well within that time frame, and as long as we have

1 the dam in place, we'll be relocating the discharge
2 point to the dam.

3 So I hope that clarifies the process. I hope that
4 answers Mr. Abernethy's question about how we will
5 ensure that tailings cannot travel to the interim dyke.

6 MR. ABERNETHY: Thank you, Mr. Chair, David
7 Abernethy with Indigenous and Northern Affairs Canada.
8 And thank you, Mr. Roberts and Mr. Rykaart; that does
9 answer my question.

10 THE CHAIR: No more question?

11 MR. ABERNETHY: David Abernethy, no more
12 questions.

13 THE CHAIR: Thank you. Next we -- any
14 question from the general public to the applicants?

15 Any questions to the applicant from the general
16 public? No.

17 Staff, questions to the applicant?

18 MR. HOHNSTEIN: Thanks, Mr. Chair. Dave
19 Hohnstein here. I think if we could have maybe ten
20 minutes to put together a few questions, we'll have a
21 few questions for the applicant.

22 THE CHAIR: Okay.

23 (ADJOURNMENT)

24 Nunavut Water Board Staff Questions TMAC Resources
25 Incorporated

26 MS. AREDES: Sonia Aredes from the Nunavut

1 Water Board. The question is about the decrease on the
2 monitoring of the decrease of the outflow levels in
3 Doris Lake, more hydrometrical (sic) station in Doris
4 Creek that was requested by INAC. I understand that
5 TMAC wants to do calculation to see how the outflow
6 decrease. That is very important for the fish. And
7 how is (sic) going to prove TMAC that the values of the
8 calculation represent the real decrease or not of the
9 Doris Creek?

10 MR. ROBERTS: Mr. Chair, John Roberts, TMAC
11 Resources. The method of identifying the flow from
12 Doris Creek is by way of a calculation of an -- it will
13 probably be a weir equation, W-E-I-R, out of the --
14 over the sill that defines the outlet of Doris Lake.
15 This was requested by INAC in a previous response to --
16 I believe in the NIRB process, and TMAC accepted that.
17 So we anticipate that that will be the process we would
18 use.

19 I would note that in terms of the potential effect
20 of the decrease of a -- of a potential decrease in
21 Doris Lake levels and its effect on fish in Doris
22 Creek, the modeling that we identified spoke more about
23 a -- the presence or absence of flow and the delay of
24 the onset of flow in the freshet period. That is if
25 the water in the lake declines over the winter, then it
26 will take a while to fill up on freshet, and we'll be

1 delayed in discharge -- in the start of discharge at
2 Doris Creek. That is the more important parameter, as
3 we understand it, and similarly the water may freeze
4 and close off outflow earlier in the fall at that time.

5 We understand from our fisheries studies now that
6 the Doris Creek itself is a fairly bank-full stream,
7 and we do not anticipate that the amount of flow is
8 particularly critical to the fish itself but rather
9 whether or not it flows. So we would anticipate that
10 measuring the actual flow volume is not the most
11 critical aspect but rather when it starts and when it
12 ends.

13 MS. AREDES: When it start and when it ends
14 will be consequence -- it will be affected by Doris
15 Lake in certain way?

16 MR. ROBERTS: That's correct.

17 MS. AREDES: Okay. Next question is
18 referred to the memo provided about the closer -- the
19 cost estimate, the post-closure tab, Item 2.4. INAC
20 assume a discount rate of zero percent, and SRK is
21 suggesting that 2 percent discount rate is more
22 appropriate. Why is that?

23 MR. ROBERTS: John Robert, TMAC Resources.
24 Mr. Chairman, I'll defer this question to Dr. Rykaart.

25 MR. RYKAART: Maritz Rykaart. Mr. Chairman,
26 when one does closure and reclamation cost estimates,

1 it is standard practice to apply discount rates to
2 financial numbers, especially in the post-closure
3 monitoring phase. The reason to do that is
4 post-closure monitoring period can often be quite long.
5 In the case of the Doris North Project, it is a
6 ten-year period after the final closure activities has
7 been done. And applying a discount rate, therefore,
8 ensures that unnecessary cash flow is not exerted by
9 the proponent.

10 The reclaim model has that ability in it. It
11 allows a proponent to submit the discount rate, and
12 that is the reason why SRK has recommended that. The
13 discount rate of 2 percent is very low. Industry
14 practice, not government organizations -- but
15 proponents normally use discount rates of between 5 and
16 7 percent. So 2 percent is considered low but
17 appropriate.

18 MS. AREDES: And how much usually use
19 government for discount rate?

20 MR. RYKAART: Maritz Rykaart, Mr. Chairman,
21 I don't know what the current government regulations
22 are regarding discount rates. All I can tell you is in
23 our experience we have seen that those rates are
24 normally in the range of between 1 and 3 percent, but
25 it is an economic number, and therefore it depends and
26 varies over time.

1 MS. AREDES: Thank you.

2 MR. HOHNSTEIN: Thank you, Mr. Chair.

3 It's David Hohnstein, Nunavut Water Board. I've got
4 one question. I think it's more of a followup to some
5 of the discussions that have taken place and the
6 submissions from INAC with respect to dust control and
7 dust suppression at the site, and, you know, I know
8 there's been references to using materials that have
9 been used elsewhere in the north, in Nunavut, in
10 Northwest Territories.

11 I was wondering if you might be able to provide us
12 with a little bit of, I guess, assurance or experience
13 with dust suppressants used on tailings facilities. I
14 know through our work with the Board we've had
15 discussions with other sites. I can, you know, use
16 examples. Lupin, Meadowbank, that use subaerial
17 deposition and have in the past and, you know, have had
18 some issues through INAC enforcement, you know, just
19 having to deal with dust suppression at -- at the site.

20 So I was wondering if there was a little more
21 information that could be provided. And I think the
22 last response we -- we did see from TMAC was that, you
23 know, preference was to use materials that have been
24 used elsewhere and not look to the Water Board for any
25 kind of approval for those materials.

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

1 Roberts, TMAC Resources. And thank you, David, for the
2 question. I guess the -- I'll speak to the approvals
3 idea that we are presenting here, and then I'll defer
4 to Dr. Rykaart again to speak a little bit more about
5 materials.

6 Our current plan is to use water primarily as our
7 dust suppressant of choice, but we recognize that there
8 may be other needs as time goes on, and that's where
9 we'll get to Maritz's comments. But in terms of
10 approvals, we are of the belief that if there are dust
11 suppressants approved for use in Nunavut, then those
12 are the ones that would be -- assuming that they would
13 be appropriate for use on tailings, that they would be
14 the ones that would be first used.

15 In our submission, we presented the names of three
16 different dust-suppressant substances, and we proposed
17 to assess those when needed, once we have a sufficient
18 sample of tailings that the manufacturers of those
19 substances could use for -- for testing purposes.
20 We've asked that we -- that things that are approved
21 for -- and used elsewhere in Nunavut because we see
22 this is a potential administrative nightmare that I
23 think the Board would be wise to avoid by approving --
24 or whatever body would be appropriate to approve such
25 a -- the use of such a product -- approve it just once
26 for service in Nunavut. And hence we suggested that if

1 something is already approved and suitable for use,
2 then we would not feel the need to seek specific --
3 site-specific approval on our site. So that was -- the
4 logic there is the administrative efficacy piece of the
5 logic.

6 I'll turn to Maritz there, and maybe Maritz could
7 speak a little bit more about dust-suppressant products
8 and their use in his experience.

9 MR. RYKAART: Maritz Rykaart. Mr. Chairman,
10 I refer you to the tailings operating maintenance and
11 surveillance manual, which is one of the management
12 plans that has been submitted as part of this
13 application. At the -- there's an appendix to that
14 tailings operations maintenance and surveillance
15 manual, and that appendix relates specifically to dust
16 suppressants. In there we list three different dust
17 suppressants which are currently being used at active
18 and closed mine sites in northern climates in Canada.
19 The three products that's listed there, and these are
20 the commercial names for them, are Soil Cement, EK35,
21 and a product called Dust Cap. These products are used
22 at a number of different mine sites, and those mine
23 sites are listed in a table that's provided. That
24 information also contains the -- some details about the
25 products, as well as product-specific specification
26 sheets are included in that tailings operation

1 maintenance and surveillance manual. So we know these
2 products are being used. We know they're being used by
3 mining companies in similar climate regimes as Doris is
4 proposed for.

5 We also asked each of these manufacturers to
6 provide us with details of how these products might be
7 used at Doris given the specific tailings conditions.
8 Each of these suppliers told us they would be very
9 happy to provide specific application details and
10 performance specifications; however, to do that, they
11 would do specific testing on the actual tailings. As
12 no tailings is currently available, that testing cannot
13 yet be done.

14 So before TMAC would use any of these three
15 products, they would get the testing done and get the
16 manufacturers to provide specifics on application rates
17 and mixing rates.

18 MR. HOHNSTEIN: Thanks, Mr. Chair. David
19 Hohnstein. Just one more maybe clarification. I'll
20 probably go back to the documentation to check it as
21 well. But the application that you're referring to, is
22 this on, I guess, active tailings deposition, or is it
23 for sort of an interim closure for maintaining the
24 tailings and preventing -- or applying dust
25 suppression?

26 MR. RYKAART: Maritz Rykaart. Mr. Chairman,

1 these products are being used for both those
2 applications. They're used on closed facilities or
3 facilities that are under care and maintenance, as well
4 as under active operations, and some of these products
5 are also used for other applications such as road-dust
6 control, et cetera.

7 MR. HOHNSTEIN: David Hohnstein, Nunavut Water
8 Board. Thank you, Mr. Chair. No further questions.

9 THE CHAIR: Thank you. Any questions from
10 Board members to the applicant? Any questions?
11 Nunavut Water Board Questions TMAC Resources
12 Incorporated

13 MR. MRAZEK: Thank you, Mr. Chairman. Ross
14 Mrazek, Nunavut Water Board. One question to the
15 applicant. You mentioned this morning that the first
16 gold break is expected to be born (sic) in January
17 2017. Do you have any additional estimate of the
18 production for the next year? Thank you.

19 MR. ROBERTS: John Roberts, TMAC Resources,
20 Mr. Chair.

21 And thank you for the question. I can -- I can
22 tell you that if -- I probably said that we would plan
23 our first pour in January 2017. We hope it's gold.
24 And once the mill is stabilized, we -- we're very
25 confident it will be gold, and we anticipate that the
26 amount of gold that would be produced would be

1 approximately 500 ounces a day, which comes up to
2 approximately, I think, 160,000 ounces a year, I
3 believe, is the number that we have.

4 Mr. Chairman, John Roberts again. Just a
5 clarification. Was that ounces you were interested in,
6 sir, or tonnes?

7 MR. MRAZEK: Either way it's fine.

8 MR. ROBERTS: Just to -- John Roberts, TMAC
9 Resources. Just to follow up on the tonnes, we'll
10 start with a thousand tonnes per day, and the mill that
11 was delivered just last month will deliver a thousand
12 tonnes per day of ore that we believe will be about 500
13 ounces per day -- sorry, yeah, 500 ounces per day of
14 gold. And by 2018, we will have a second mill onsite
15 in the same building that will double our production to
16 2,000 tonnes per day, and then, therefore, probably
17 about a thousand ounces per day.

18 MR. MRAZEK: Thank you.

19 THE CHAIR: Thank you. Next we have
20 Kitikmeot Inuit Association. Will you come up to the
21 microphone.

22 Teresa, you want to swear in the witnesses,
23 please.

24 MS. MEADOWS: Thank you, Mr. Chair, Teresa
25 Meadows, legal counsel for the Nunavut Water Board. If
26 I can have the witness state and spell his name for the

1 record, please.

2 MR. ROESCH: Yes. My name is John Roesch
3 for the Kitikmeot Inuit Association. J-O-H-N, Roesch,
4 R-O-E-S-C-H.

5 MS. MEADOWS: Thank you, Mr. Roesch. If I
6 can you have you put your left hand on the Bible and
7 raise your right hand.

8 JOHN ROESCH, Sworn

9 MS. MEADOWS: Thank you, Mr. Roesch. It's
10 my understanding that you have two exhibits to file in
11 advance of your submissions, and that would be the
12 technical submission for Doris North Type A water
13 licence amendment application filed by the Kitikmeot
14 Inuit Association, and I also have a copy of the same
15 presentation in -- translated into Inuktitut; is that
16 correct?

17 MR. ROESCH: Yes, that is correct.

18 MS. MEADOWS: Thank you, Mr. Roesch. Let
19 the record show that those will be filed as Exhibits
20 Number 11 and 12 respectively in this public hearing.
21 Thank you, Mr. Chair. I have nothing further.

22 EXHIBIT 11 - Hard Copy PowerPoint
23 Presentation Kitikmeot Inuit Association
24 Technical Submission, Doris North Type A
25 Water Licence Amendment Application (English)
26 EXHIBIT 12 - Hard Copy PowerPoint

1 Presentation Kitikmeot Inuit Association,
2 Technical Submission, Doris North Type A
3 Water Licence Amendment (Inuktitut)

4 THE CHAIR: Thank you, Teresa. Please go
5 ahead with your presentation.

6 Presentation by the Kitikmeot Inuit Association

7 MR. ROESCH: Hello, my name is John Roesch.
8 I'm the Senior Hope Bay Project Officer For the
9 Department of Lands and Environment for the Kitikmeot
10 Inuit Association. I am responsible for the project
11 oversight for the KIA and provide input into the
12 regulatory process on the Hope Bay project to both the
13 NWB and NIRB.

14 In performing this role, I manage KIA's
15 consultants who are subject-matter experts in the area
16 of wildlife, fisheries, aquatic environment, and
17 geotechnical engineering.

18 Oh, the mouse. Okay. Thank you. That's my
19 pointer. Okay. Thank you. Let's see here. There we
20 go.

21 This presentation follows the order presented in
22 KIA's technical submission as prescribed by the NWB.
23 It focuses on the key issues associated with mine
24 infrastructure and the water licence changes, water
25 quality prediction, site water, and load balance. The
26 issue: The water quality monitoring does not consider

1 the effects of climate change and varying hydrological
2 conditions.

3 Our recommendations were to update the site water
4 quality water -- water quality model to include climate
5 change as per the latest IPPCC (sic), define
6 hydrological conditions modelled and how that will
7 affect the water load balance. TMAC has run variable
8 hydrological models based on a 1953 to 2014 data.
9 Water quality results of the sensitivity analysis was
10 reviewed at the technical meeting in January. The
11 review of changes in wet and dry conditions indicate no
12 impact on the load balance model or effluent quality.
13 This issue is resolved.

14 Water quality predictions, site water and load
15 balance: another issue on this is the water and load
16 balance model uses medium values to predict water
17 quality and loadings which may underestimate potential
18 effects to surface water. Our recommendation was to
19 use the 75th percentile on concentrations as input
20 values into the model to considered enriched
21 conditions.

22 TMAC had run a sensitivity analysis of the water
23 and load balance using the 75th percentile for
24 background concentrations and other input source terms.
25 The results indicate low toxicity levels below Canadian
26 Council of Ministers of the Environment in Mining

1 Mineral Effluent Regulation Guidelines (sic). This
2 issue is resolved.

3 Again, site-wide water load balance, another
4 issue. The model did not predict cyanide mercury, and
5 selenium in the TIA and mercury in the effluent
6 discharging to Robert's Bay from the marine outfall box
7 due to high detection limits or lack of data. Our
8 recommendation was complete additional analysis for
9 mercury and selenium using low level detection limits.
10 Also obtain additional information to predict cyanide
11 concentrations in the source terms.

12 TMAC updated the modeling to include cyanide,
13 selenium and mercury in the TIA and point of discharge
14 to Robert's Bay. Results indicate concentrations for
15 cyanide, copper, mercury, and selenium were extremely
16 low. This issue is resolved.

17 On the issue of hydrology, there was little
18 discussion on how groundwater inflow at 3,000 cubic
19 metres per day will be handled, including post closure.
20 We recommended that TMAC provide additional details
21 regarding the variance in the volume and quality of
22 groundwater to be managed and, management of
23 groundwater inflows during mining operations to provide
24 assurance that the watering rates would effectively
25 handle groundwater inflows. The response: TMAC
26 provided the requested information to KIA's

1 satisfaction, and this issue was resolved.

2 The next issue was potential interaction with the
3 marine environment. Saline groundwater and water from
4 the TIA have the potential to interact with the marine
5 environment. This concerns the variability of TIA
6 discharge, salinity levels, and chemical differences
7 between saline groundwater and seawater. We
8 recommended variance in water discharge. Chemical
9 differences and potential impact on seawater should be
10 addressed in further detail. TMAC provided information
11 on groundwater quality, and saline variation of ocean
12 discharges was found to be below Canadian Council of
13 Ministers of the Environment Guidelines. This issue is
14 resolved.

15 The next issue: Robert's Bay discharge and
16 aquatic environment monitoring program. The Robert's
17 Bay hosts nine waterfowl and at least two mammal
18 species that feed on benthic food items like bivalves.
19 Update the aquatic and environment monitoring plan in
20 Robert's Bay to protect wildlife. The aquatic
21 environment monitoring plan changes should include
22 increased sampling locations and frequency for diffuser
23 outfall.

24 The sensitivity analysis of the water load balance
25 indicates the TIA effluent concentrations are below the
26 CCME and Mining Mineral (sic) Effluent Regulations.

1 Hydrodynamic modeling of discharge indicates dilutions
2 of greater than 180 to 1 within 1 metre of the diffuser
3 and dilutions of 1000 to 1 to 10,000 to 1 at a distance
4 of 250 metres from the diffuser. Proposed sampling
5 locations in Robert's Bay and the TIA were reviewed and
6 found adequate for the AEMP. This issue is resolved.

7 The next issue is on mixing-zone delineation. The
8 methods used to predict water quality in Robert's Bay
9 does not determine the size and properties of the
10 mixing zone where water quality will be above the
11 Canadian Council of the Environment Guidelines. The
12 size and shape of the mixing zone where water quality
13 will be above CCME Guidelines should be modeled and
14 presented using 75th percentile concentrations. TMAC
15 used a three-dimensional hydrodynamic modeling to
16 simulate mixing zones, plume movement, and predict
17 water quality concentrations using 75th percentile
18 concentrations. All marine CCME water quality
19 requirements were met within 1 metre of the diffuser
20 with water quality similar to baseline conditions. The
21 issue is resolved.

22 The next issue was prediction of environmental
23 effects on water quality. A water quality model is
24 needed to determine the concentrations of nitrate in
25 the mixing zone and between deep and surface layers.
26 Enriched nitrate in the surface layer may cause

1 excessive algae growth. Update site water -- water
2 quality model to include the mixing zone modeling in
3 Robert's Bay that predicts the concentrations of
4 nitrate in other parameters in the mixing zone deep
5 layer and surface waters.

6 TMAC has provided modeling results on plume size,
7 shape, and concentration in Robert's Bay at Melville
8 Sound. Nitrate and other parameters were found to be
9 well below the Canadian Council of the Environment
10 Guidelines with the plume trapped well below the
11 surface water layer. This issue is resolved.

12 The next issue: contaminants of potential concern
13 in Robert's Bay. This concerned how will future
14 projects affect water quality in Robert's Bay? Our
15 recommendation to TMAC is that TMAC should provide a
16 discussion of how CCME water quality criteria in
17 Robert's Bay will meet -- be met after Phase 2 starts.
18 Additional studies for the TIA and Robert's Bay will be
19 addressed in Phase 2 environmental impact statements.
20 This issue was discussed and resolved by KIA and TMAC
21 at the January technical meeting. Concerning waste
22 rock tailings, we have no issues.

23 The next issue was TIA expansion capacity. The
24 question was does the TIA have sufficient capacity for
25 Madrid and Boston projects? Our recommendation: TMAC
26 should provide an assessment of TIA capacity for future

1 projects and should include these projects in the CEA.
2 The response was that additional studies for TIA and
3 Robert's Bay will be addressed in Phase 2 of the
4 environmental impact study. This issue was discussed
5 and resolved by KIA and TMAC at the January meeting,
6 and the issue is resolved.

7 The next issue was TIA wildlife attraction and
8 deterrence. We were concerned about attraction to and
9 the consumption of tails or vegetation impacted by
10 tailing leachates by wildlife. Our recommendation is
11 that there would be an adaptive management program with
12 several details on frequency thresholds and methods of
13 monitoring and mitigation.

14 TMAC has agreed to develop a monitoring plan to
15 detect wildlife attraction in feeding in or near the
16 TIA in combination with other monitoring based on
17 results will conduct a risk assessment and implement a
18 wildlife deterrence as necessary. This issue was
19 discussed thoroughly and was resolved by KIA and TMAC.

20 The next issue was the TIA NPAG tailings cover
21 depth. The issue is that the proposed .3 metre depth
22 of quarry rock cap for the tailings beach upon closure
23 is not sufficient. Using 75th -- our recommendation
24 was to use the 75th percentile leach as input values
25 into the model when predicting containment release from
26 the TIA. TMAC had recalculated the tailings beach

1 source terms using the 75th percentile leach rates from
2 the humidity cell tests. The results of the new model
3 indicate that the 0.3-metre tailing cover is adequate
4 in the development of boils on its surface is low.
5 This issue is closed -- or resolved, I should say.

6 Okay. The next issue the TIA floatation tailing
7 dustfall in leaching. The issue was attraction to
8 consumption of tails or vegetation impacted by tailing
9 leachate by wildlife. Our recommendation: an adaptive
10 management program with several details on frequency,
11 thresholds, and methods of monitoring and mitigating.
12 Our response is the review of the TIA water quality
13 from the sensitivity analysis indicated that tailings
14 were very low in concentrations of toxic substances and
15 were well below the Canadian Council of the Environment
16 Guidelines. This issue was discussed thoroughly and
17 was resolved by KIA and TMAC.

18 The next issue, the TIA elevated parameters of
19 potential concern upon closure. Our issue was water
20 and load balance model uses medium values to predict
21 water quality and loading which may underestimate
22 potential effects to surface water. Again, we
23 recommended the use of the 75th percentile
24 concentrations as input values into the model to
25 consider enriched conditions. TMAC had run a
26 sensitivity analysis of water and load balance using

1 the 75th percentile for background concentration and
2 other input source terms. The results were found to be
3 low in Canadian Council of the Environment and Mining
4 Mineral Effluent Regulations and Guidelines (sic), and
5 the water was nontoxic to caribou and birds. The issue
6 is resolved.

7 The next issue on waste rock and tailings, we have
8 no issues with this.

9 The next issue is the Doris Lake water levels.
10 The issue we brought forward was groundwater inflows
11 will affect the Doris Lake water levels; potential
12 effects on fisheries, in particular spawning habitat
13 and egg incubation are currently unknown. Our
14 recommendation was to have -- additional work was
15 completed in 2015 that -- to characterize the fish
16 habitat around Doris Lake. It is recommended that this
17 baseline information be presented and used to update
18 the effects, assessment, and guide mitigation, and
19 monitoring plans as needed.

20 TMAC has completed additional data collection to
21 quantify effects to fish and fish habitat in Doris
22 North -- in Doris Lake. This information was reviewed
23 and assessed by us, and the issue is resolved.

24 Concerning the next few issues of -- or items is
25 that construction operation of Robert's Bay discharge
26 and pipeline, road and water crossings, sediment

1 quality, effluent buoyancy, and dust suppressant of
2 tailings, we had no issues. Concerning water
3 treatment, water and sewage treatment, we had no
4 issues. Concerning the management plans and reports
5 and the contents of the plans, we had reviewed this,
6 and we have no issues.

7 Again, concerning updates to plans and approval of
8 plans, we have no issues.

9 This statement I had presented at the NIRB public
10 hearing, and I'll present it here. The KIA receives
11 monetary compensation through a variety of agreements,
12 direct compensation through the framework agreement and
13 the IIBA for land access, quarry materials and water
14 usage, which is covered. Royalties from gold
15 production plus shareholdings in TMAC, NTI also gets a
16 royalty on profit under its Mineral Rights Agreement
17 with TMAC Resources Inc. All this creates a
18 substantial benefit to Inuit in the region.

19 And this -- our framework agreement does cover --
20 for the purposes of the water licence, water usage is
21 covered under this for the purposes of the licence --
22 water compensation under the licence has been covered
23 by the framework agreement.

24 So in our statement here, the KIA has resolved all
25 technical issues brought forward to the technical
26 meeting through our ongoing collaboration with TMAC

1 Resources Inc. The final resolution of the reclamation
2 security is still pending at this time of our
3 submission.

4 In addition to the technical issues raised, the
5 KIA has signed with TMAC a comprehensive framework
6 agreement for land, compensation of water, and the
7 Impact and Benefits Agreement. The IIBA addresses
8 Inuit interest in the areas of employment, contracting,
9 and training in relation to the Hope Bay project as a
10 whole through its entire lifespan. Under the IIBA, the
11 Inuit environmental advisory committee has been
12 established with TMAC which complements KIA's current
13 environmental activities in the Department of Lands and
14 Environment.

15 The IEAC allows for local community to have input
16 directly to TMAC on environmental concerns. Through
17 the implementation committee with KIA and TMAC
18 representatives, measures of employment, business
19 development, and training are being developed which
20 fulfills our social economic obligations under Nunavut
21 Land Claims Agreement.

22 The KIA currently has \$3.49 million in letters of
23 credit and an 8 million corporate guarantee and a
24 general security agreement to back up the corporate
25 guarantee giving KIA a claim on TMAC's assets. The
26 current amount of security of 11.49 million is

1 inadequate security for the Doris North Mine site,
2 given project changes and development. The KIA's
3 engineering consultant has reviewed TMAC and INAC's
4 reclamation cost models. TMAC's cost estimate or
5 quantum of 28.94 million for security is reasonable,
6 and the split in land and water is about 84 percent and
7 16 percent, as per our memorandum from BGC Engineering.
8 A contingency of 20 percent exists within TMAC's
9 reclamation estimate residual risks and cost escalators
10 as well as questions raised by KIA's consultant were
11 discussed with TMAC and their engineering consultant.
12 All questions were satisfactorily answered, and the KIA
13 accepts and supports TMAC's reclamation cost estimate
14 for the Doris North Mine site.

15 INAC's engineering consultant has a reclamation
16 cost estimate of 44.12 million, which is substantially
17 higher than TMAC's estimate. This is primary due to
18 indirect costs being 175 percent higher than TMAC's
19 estimate of indirect costs. INAC's estimate uses a
20 five-year time horizon for reclamation in contrast to
21 TMAC's approximately two-year time horizon for
22 performing reclamation work.

23 INAC's estimate is about 50 percent, the
24 productivity of TMAC's estimate, which KIA finds
25 questionable. The INAC estimate acknowledges that
26 98 percent of the quantum is associated with the

1 Inuit-owned land while only 2 percent is Crown land.
2 The 43.42 million of IOL security has a split of
3 land/water liability of 45 percent and 55 percent
4 respectively, which the KIA finds unreasonable given
5 our experience with Newmont and Orbit 25 brine spill at
6 Boston camp in July of 2011. Drilling fluid containing
7 potassium chloride had spilled onto the land and
8 subsequently entered a nearby water body. About 1,200
9 square metres of tundra was damaged due to elevated
10 chloride levels. The deteriorious (sic) substance had
11 entered the water body and dissipated quickly in a few
12 days with no loss of fish or damage to aquatic -- to
13 the aquatic environment.

14 Environment Canada at the time had charged Newmont
15 in Orbit Garant with breaking federal environmental
16 laws. Both Newmont and Orbit Garant agreed to
17 contribute to the -- Environment Canada's environment
18 fund. No reclamation work was done by the federal
19 government to the lakes since no damage was done.

20 The KIA investigated possible means of land
21 reclamation. If no actions were taken, it would take
22 15 to 20 years for the land to recover through natural
23 re-vegetation. Human intervention would require
24 experimentation in the restoration of the tundra and
25 remediation work based on the experimental results.
26 The human intervention and reclamation of land would be

1 about \$3 million. This clearly illustrates that the
2 liability is primarily with the land and not water.
3 INAC's split of land and water liability of 45 and 55
4 percent would expose KIA to an excessive amount of risk
5 as landowner.

6 The KIA strongly believes that, given the
7 substantial benefits to the Inuit and that all
8 technical issues have been resolved, that the amendment
9 to the Doris North Type A water licence is warranted.
10 This pending satisfactorily resolving the split of land
11 and water liability with INAC. If the split of land
12 and water liability is not resolved, KIA still supports
13 the amendment of the water licence and will exercise
14 the conditions of its framework agreement in the
15 commercial lease to TMAC to meet its reclamation needs.

16 I -- the KIA recommends the approval of TMAC
17 application for the amendment of the Type A water
18 licence for the Doris North Mine site. We thank you,
19 and we are open to any questions.

20 THE CHAIR: Thank you. Before I move on
21 to the questioning to the Kitikmeot Inuit Association,
22 I think this would be an opportune time for a health
23 break. 15 minutes.

24 (ADJOURNMENT)

25 THE CHAIR: Welcome back. Next we -- as I
26 indicated earlier, we'll have questioning to KIA by the

1 applicant. Any questions to the Kitikmeot Inuit
2 Association by the applicant?

3 MR. ROBERTS: Thank you, Mr. Chairman. John
4 Roberts, TMAC Resources. We have no questions for the
5 KIA, but we would like to take the opportunity to thank
6 the KIA for their continuing support of the project and
7 also to highlight the attributes of the relationship
8 that we have with the KIA, which we find to be very
9 productive and very helpful.

10 We have -- as you know, we have concluded the
11 framework agreements with the KIA that includes an
12 IIBA, and as John outlined, the inclusion of an Inuit
13 environmental advisory council, and all those things
14 are part, I think, of a -- of a beneficial and ongoing
15 and growing relationship of trust that helps us as --
16 as we proceed working with this landowner to develop
17 the land. We value that relationship very much, and we
18 look to it being continued and very productive, and
19 thank you very much for that.

20 Mr. Chairman, that's -- those are my remarks.

21 THE CHAIR: Thank you. Environment Canada
22 and Climate Change, any questions to the Kitikmeot
23 Inuit Association?

24 MR. DAHL: Mark Dahl, honestly no
25 questions this time.

26 THE CHAIR: Honestly?

1 INAC?

2 Indigenous and Northern Affairs Canada Questions the
3 Kitikmeot Inuit Association

4 MS. COSTELLO: Thank you, Mr. Chair. Karen
5 Costello for Indigenous and Northern Affairs Canada.
6 I'm just seeking a little bit of clarification from the
7 Kitikmeot Inuit Association on their determination of
8 the apportionment of security. Regardless of what the
9 quantum is, in their -- the information that they have
10 presented in -- and this morning they filed a document
11 which, because we've been here, we haven't had a chance
12 to fully review from BGC, but I was hoping that they
13 could clarify how they made that determination of the
14 84/16 split. Thank you, Mr. Chair.

15 THE CHAIR: Thank you.

16 MR. ROESCH: This is John Roesch here for
17 the KIA. BGC Engineering had reviewed both SRK's cost
18 model and had looked at INAC's and even SRK's
19 comparison of their model to INAC's model. Their
20 assessment was first based on a direct and indirect
21 estimate, and with the direct-cost estimate, they
22 looked at what were land components, in their opinion,
23 and what were water. And for the indirect, they
24 basically spread it in proportion to what they had done
25 with the direct. So that's how they came up with an
26 84 percent and 16 percent split. And I had provided

1 this information in advance to both INAC and TMAC
2 several, several days ago, and INAC -- I mean, TMAC
3 submitted it as part of their presentation at this
4 meeting. And the NWB has a copy too because I know
5 TMAC was submitting it as part of their proposal. So
6 it's all in that memorandum from our engineering
7 consultant.

8 And we strongly believe at the KIA that INAC's
9 split of land to water of 45 percent to 55 percent
10 exposes the KIA to an excessive amount of risk as
11 landowner. And I gave a very clear reason from our
12 history as why we believe this isn't equitable.
13 Because damage to the land takes a long time to recover
14 compared to the water, and the costs of reclaiming land
15 in the north are very high due to logistics of bringing
16 people up here. So it's a very clear example to show
17 that a 45/55 percent split is not equitable for us.

18 And we find how INAC's consultant came up with
19 that split to be questionable, and there are details
20 that we understand are proprietary with their
21 consultant which we do not have access to. So we made
22 our comments, and our engineers made their comments
23 based on available information, and that's what you
24 have.

25 THE CHAIR: INAC.

26 MS. COSTELLO: Thank you very much,

1 Mr. Chair. Indigenous and Northern Affairs appreciates
2 the clarification provided by the Kitikmeot Inuit
3 Association, and we will be considering that and
4 reviewing that further, and we hope to be able to speak
5 to that when we address reclamation cost estimates
6 later during this hearing. Thank you.

7 THE CHAIR: Thank you. Any further
8 questions from INAC? No? Thank you.

9 The public, any questions from the general public
10 to Kitikmeot Inuit Association?

11 Staff?

12 Nunavut Water Board Staff Questions Kitikmeot Inuit
13 Association

14 MS. AUTUT: Thank you, Mr. Chair.
15 Stephanie Autut with the Nunavut Water Board. Although
16 you referenced water-user compensation being part of
17 the framework agreement, can KIA confirm that, as
18 required of the Board under Section 63 of the Nunavut
19 Waters and Nunavut Surface Right Tribunal Act, there
20 are no outstanding issues of water-user compensation?

21 MR. ROESCH: John Roesch here for the KIA.
22 Yes, I can confirm there are no outstanding issues
23 concerning water compensation under the water licence.
24 We have covered it under our framework agreement and
25 our annual payment.

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

1 Stephanie Autut, Nunavut Water Board. No further
2 questions from staff.

3 THE CHAIR: Thank you. Any further
4 questions from staff?

5 MS. AREDES: Sonia Aredes, Nunavut Water
6 Board. No further questions. Thank you.

7 THE CHAIR: Board members, any question?
8 Thank you.

9 Next we have Environment Canada and Climate Change
10 to do your presentation.

11 And, Teresa, please swear in the witnesses.

12 MS. MEADOWS: Thank you, Mr. Chair. Teresa
13 Meadows, legal counsel for the Nunavut Water Board. If
14 I can have the witnesses state and spell their name for
15 the record, please.

16 MR. DAHL: Mark Dahl, M-A-R-K, D-A-H-L.

17 MS. WILSON: Anne Wilson, A-N-N-E,
18 W-I-L-S-O-N.

19 MS. MEADOWS: Do you wish to be sworn of
20 affirmed?

21 MS. WILSON: Sworn.

22 MARK DAHL, ANNE WILSON, Sworn

23 MS. MEADOWS: Thank you. It's my
24 understanding, Mr. Dahl, that you have exhibits to be
25 filed in respect of your submission, the first being
26 the PowerPoint submission but that there's been a

1 little bit of a difficulty in printing with respect to
2 the translated copies of the presentation, and so we
3 will await those being filed later today when you have
4 the print copies of those; is that correct?

5 MR. DAHL: The -- Mark Dahl for
6 Environment Canada. The presentations are bilingual.
7 The English/Inuinnaqtun is problematic. The
8 English/Inuktitut is fine, and it's here.

9 MS. MEADOWS: Thank you, Mr. Chair. Legal
10 counsel for the Nunavut Water Board. So let the record
11 show we will be marking those as the next two exhibits
12 in this hearing, and then when you have the corrected
13 copy, you can provide me with the hard copy.
14 Thank you, Mr. Chair.

15 EXHIBIT 13 - Hard Copy PowerPoint
16 Presentation Environment and Climate Change
17 Canada's Final Presentation Regarding
18 Amendment No. 1 to Doris North Project Type A
19 Water Licence 2AM-DOH1323
20 (English/Inuinnaqtun)

21 EXHIBIT 14 - Hard Copy PowerPoint
22 Presentation Environment and Climate Change
23 Canada's Final Presentation Regarding
24 Amendment No. 1 to Doris North Project Type A
25 Water Licence 2AM-DOH1323 (English Inuktitut)
26 Presentation By Environment and Climate Change Canada

1 MR. DAHL: Mouse and presentation.

2 Good afternoon, Mr. Chair and Board members and
3 everyone else. My name is Mark Dahl, and I will be
4 presenting on behalf of Environment and Climate Change
5 Canada, or ECC, today. My role on this file is the
6 coordination of a team of experts reviewing water
7 quality and waste management aspects of TMAC's
8 application. I am accompanied by Anne Wilson who is a
9 water quality expert on this team. In this
10 presentation, I'll briefly outline Environment and
11 Climate Change Canada's mandate, highlight the relevant
12 legislation and give an overview of our role in the
13 process. Anne will then summarize the status of the
14 issues raised by ECC during the review of the amendment
15 proposal.

16 So how do you advance? As an expert department,
17 Environment and Climate Change Canada reviews
18 development proposals for potential environmental
19 impacts and provides scientific advice to regulators
20 and Boards such as the Nunavut Water Board on issues
21 falling within our mandate.

22 The Department of the Environment Act gives the
23 ECCC -- oops, yes -- responsibilities for environmental
24 management and protection. Through this Act,
25 Environment and Climate Change Canada is mandated to
26 preserve and enhance water quality and to conserve and

1 protect Canada's water resources. Sometimes it works.
2 Sometimes it doesn't.

3 More broadly speaking Environment and Climate
4 Change Canada also has responsibilities for weather
5 forecasting, regulation of boundary waters, and general
6 coordination of federal environmental policies and
7 programs. For a water licence, the Department focuses
8 on protecting water quality as well as on effective
9 waste management and the protection of air quality as
10 they relate to water quality. ECCC relies on several
11 acts to deliver on its mandate, but in the context of
12 this review, the most important of these acts is the
13 Fisheries Act and the Canadian Environmental Protection
14 Act. Environment and Climate Change Canada shares the
15 administration of the Fisheries Act with the Department
16 of Fisheries and Oceans. ECC's responsibilities under
17 the Fisheries Act includes Section 36 of the Act which
18 is a key pollution-prevention provision that prohibits
19 the introduction of harmful substances into waters
20 frequented by fish.

21 Environment Canada -- sorry, Environment and
22 Climate Change Canada also has pollution-prevention
23 responsibilities under the Canadian Environmental
24 Protection Act, or CEPA, which in -- this Act enables a
25 number of regulations, guidelines, and codes of
26 practice that are designed to protect the environment

1 from the introduction of toxic substances. It is from
2 this perspective that the Department provides
3 recommendations and advice to the Nunavut Water Board
4 and the Nunavut Impact Review Board.

5 Hang on. Sorry. Technical difficulties again.

6 ECC has participated in all phases of the Doris
7 North water licensing process, including the review of
8 the original project way back in 2007 and before.
9 During the review of both the original project and the
10 amendment application, ECCC has provided scientific
11 expertise regarding water, sediment, and effluent
12 quality.

13 When reviewing the TMAC amendment application,
14 Environment and Climate Change Canada identified some
15 issues that we felt needed to be addressed to ensure
16 that the environment was protected. ECCC and TMAC have
17 worked together to resolve those issues, and we look
18 forward to ongoing discussions regarding monitoring and
19 mitigation. The issues that Environment and Climate
20 Change Canada identified related to four general
21 themes. These themes were monitoring site locations in
22 the receiving environment, predicting and understanding
23 effluent composition, the parameters to be monitored in
24 the effluent and in the receiving environment, and the
25 management of mine water.

26 Anne Wilson will now take over and provide an

1 overview that were raised and the status of these
2 issues. Thank you.

3 MS. WILSON: Thank you. Anne Wilson with
4 Environment and Climate Change Canada. And I don't
5 usually sit close enough to the mic, so I'll try and be
6 mindful.

7 The first slide that I'll speak to deals with the
8 monitoring program for Robert's Bay, and while I'll
9 acknowledge this is a little bit downstream of what the
10 Water Board looks at, it also speaks to our confidence
11 that what the proponent is doing upstream at the mine
12 site is appropriate and that there won't be any harm.

13 We had raised concerns with the ability of the
14 initial proposal for the monitoring program to detect
15 effluent effects in the marine environment. Ongoing
16 work has been done on the marine study design in
17 collaboration with the aquatic monitoring framework
18 working group and with Environment and Climate Change
19 Canada's environmental effects monitoring staff, as
20 is -- we'll also be monitoring under the Metal Mining
21 Effluent Regulations. TMAC has revised the study
22 design and has collected baseline data this summer, and
23 at this point, Environment and Climate Change Canada
24 considers these concerns resolved.

25 Our next slide is in respect of predicting
26 effluent composition. Effluent is made up from a

1 number of sources, whether it's water -- contact water
2 collected on the surface or water that comes in from
3 the underground mine or water that's been used and goes
4 through the process plant. ECCC had previously raised
5 concerns about tracking the quality of various
6 components contributing to the effluent chemistry.
7 This has been resolved through TMAC providing the site
8 water and load balance earlier this year, and TMAC is
9 committed to update their modeling on an annual basis
10 which will entail ongoing monitoring of the source
11 constituents that make up the effluent, and accordingly
12 we feel that this one is considered resolved.

13 Moving now to the monitoring parameters, which are
14 under the aquatic effects monitoring program as well as
15 the various management plans dealing with groundwater
16 and site water. We've had a lot of discussions on what
17 will be monitored, how often it will be monitored, and
18 how it will be reported.

19 In June, TMAC convened a technical meeting, and
20 following on discussions at and after that meeting
21 we're satisfied that the aquatic effects monitoring
22 program includes appropriate parameters, appropriate
23 sites, and sufficient frequency. We do appreciate
24 TMAC's collaborative approach, and we look forward to
25 the next iteration of the aquatic effects monitoring
26 plan.

1 I did want to note that with respect to the
2 reporting of the monitoring results we would support a
3 requirement in the amended water licence for data to be
4 submitted monthly to the Nunavut Water Board so that it
5 can be on the public registry and available to all the
6 parties. This would be for the monthly mine water
7 outflow quality, for the full characterization of
8 effluent quality, and for the quarterly quality of the
9 TIA characterization, the expanded suite sampling.

10 Next is mine water management, and, of course,
11 this has been a topic of a lot of attention in our
12 department. Because effluent will be discharged to the
13 ocean, it will be regulated under the Metal Mining
14 Effluent Regulations. Initially the mine water's going
15 to be very saline and, as described by John previously,
16 would not pass the prescribed toxicity test that
17 requires rainbow trout to be used. Unfortunately, the
18 Metal Mining Effluent Regulations have no wiggle room
19 on that as they are written now.

20 To address that, a marine test using stickleback
21 is being developed. An invertebrate test is also under
22 development. And there have to be changes to the
23 regulations to allow use of other test protocols.
24 These changes are underway. Until all this can occur,
25 interim water management will be needed.

26 Next slide. Actually you can go to the next one.

1 I jumped head. As outlined by TMAC, the water
2 management approach will be to use the Tailings
3 Impoundment Area to hold the saline effluent until it
4 can be discharged to Robert's Bay. This is
5 contingent -- the discharge is contingent on finalizing
6 the bioassay test-reference methods, and ECCC does not
7 anticipate delays with this.

8 There is some uncertainty with the timing of the
9 amendment of the regulations, and while TMAC's
10 expectation is reasonable -- and as John said, ECCC is
11 moving as quickly as possible to meet that goal -- the
12 timelines are not fully within Environment Canada --
13 and Climate Change Canada's control. There's public
14 consultation involved. And so those issues we would
15 say were substantially resolved absolutely to the
16 extent that we can influence them, but ...

17 I'd just like to say thank you very much to the
18 proponent and their consultants for very collaborative
19 working relationship and to the Board. I love coming
20 to Cambridge Bay, and it's wonderful to be a part of
21 these proceedings in such a constructive venue.
22 Thank you.

23 THE CHAIR: Thank you. Thank you,
24 Environment Canada. Questions to Environment Canada
25 from the applicant?

26 MR. ROBERTS: Mr. Chairman, John Roberts,

1 TMAC Resources. I wonder if I could have a moment to
2 confer with my colleague. I do have a question.

3 THE CHAIR: Don't hesitate to ask for a
4 short break if you need more time.

5 TMAC Resources Incorporated Questions Environment and
6 Climate Change Canada

7 MR. ROBERTS: Mr. Chairman, we're ready.
8 John Roberts -- excuse me. John Roberts, TMAC
9 Resources. My question is for Ms. Wilson. Anne, I
10 wonder if you could confirm that Environment and
11 Climate Change Canada has identified no difficulties,
12 no technical difficulties in the development of test
13 species for the -- for the saline toxicity test?

14 MS. WILSON: Thank you. Anne Wilson,
15 Environment and Climate Change Canada. My
16 understanding is that the development is well underway.
17 In fact, a poster is going to be presented on the new
18 test method at the upcoming Canadian exotoxicity
19 workshop next weekend, which tells me it's out in the
20 public, and we're happy to have it that way. That
21 would be for the fish method.

22 There would also have to be an invertebrate
23 species test method, and that is following on the first
24 one. It's not quite as far along.

25 MR. ROBERTS: Thank you, Mr. Chairman and
26 Anne. That was helpful. I have another

1 comment/clarification. To clarify, the reporting
2 request that Environment and Climate Change Canada has
3 put forward to share various monitoring data with
4 Nunavut Water Board and others -- to clarify that the
5 request in particular for the effluent discharge in
6 that part of the request, we agreed to provide that, by
7 all means, to the Water Board and others who may be
8 interested, but we would suggest that that should not
9 be a part of the water licence. The reason being that
10 if it becomes a condition of the water licence it is
11 enforceable and given that that is part of Environment
12 Canada's jurisdiction under the MMER, we feel that
13 would be a double-jeopardy situation, and we don't feel
14 it should be a part of the water licence accordingly.
15 Thank you.

16 MS. WILSON: Thank you. Anne Wilson,
17 Environment and Climate Change Canada. I appreciate
18 the position that TMAC is in there. The MMER reporting
19 is between the regulatory information system and the
20 proponent, and that data isn't available to anyone
21 else. So the issue is that the operational information
22 that will help the rest of us know if things are going
23 as expected and if we, you know, have any red flags
24 coming up for future reviews, it would need to be on
25 the public registry of the Water Board.

26 Typically that would have been under the Schedule

1 J reporting and month -- in a monthly report, and in
2 any event, I would expect, as TMAC has committed to and
3 is typical in licences, an annual rollup of all the
4 data, but I don't understand why there would be a
5 concern with having that as a licence condition.

6 MR. ROBERTS: Mr. Chairman, I'd reiterate
7 that we understand the request for information, and
8 we're happy, as I said, to provide that information.
9 We -- I would note that the -- there is no doubt a very
10 good reason why Environment Canada does not want the
11 effluent information from various mines across the
12 country to be in the public domain and, therefore, why
13 it's secreted away inside Environment Canada's system.
14 So that being said, as -- and I'm not quite sure what
15 that is. I suspect there's a very good legal reason.
16 But in any event, we are happy, as I said, to provide
17 that information, but once again, we feel it's
18 inappropriate in the water licence as should -- should
19 there be a noncompliance issue, that is a
20 compliance that is a matter of -- for dealing with with
21 Environment Canada. And since that discharge goes into
22 saltwater and the Water Board's jurisdiction is, I
23 understand, to be freshwater, then I don't believe it's
24 appropriate to have a condition of the licence that
25 would deal with an area of discharge that is not within
26 the Water Board's jurisdiction.

1 So perhaps I could seek some clarification from
2 the Board's or the Board's counsel on the jurisdiction
3 of the Water Board in this matter.

4 MS. MEADOWS: Thank you, Mr. Chair. Teresa
5 Meadows, legal counsel for the Nunavut Water Board.
6 It's always a dangerous thing when everyone is looking
7 at the Board's legal counsel to explain the Board's
8 jurisdiction to them on these issues.

9 I think -- I think there's a general sense that
10 the reporting from a convenience perspective in terms
11 of the use of the Water Board's public registry as a
12 mechanism for communicating that information generally
13 is sort of accepted on a voluntary basis, if that's
14 correct, from TMAC's perspective. Their hesitation,
15 however, if I'm understanding it correctly, is that
16 they do not want it as a term or condition of the
17 licence that would be in and of itself enforceable and
18 in some respects potentially giving jurisdiction to the
19 Board over a discharge into the marine environment
20 notwithstanding the fact that we do not have
21 jurisdiction over discharges into the marine
22 environment.

23 That being said, I think the question of whether
24 or not something that has been agreed upon sort of in
25 these proceedings ends up being rolled into a schedule,
26 in terms of reporting, I would have the -- I would

1 share the same hesitation of including that in the
2 schedule given that the Board does not have
3 jurisdiction to require monitoring or effluent criteria
4 in the marine environment. The question always becomes
5 then why is it, you know, a term or condition in a
6 licence?

7 So what I would suggest, however, is because there
8 is agreement here you may want to enter into a
9 voluntary agreement that basically says you'll provide
10 that information in the form of your annual report or
11 your monthly reports under the licence, but then it's
12 an agreement between you and Environment and Climate
13 Change Canada and is not a term or condition of the
14 licence expressly.

15 Thank you, Mr. Chair.

16 MS. WILSON: Anne Wilson, Environment and
17 Climate Change Canada. I just want to make sure it's
18 clear that I'm not asking for anything that wouldn't
19 normally be reported under Schedule J monitoring. And
20 with respect to the jurisdictional issue, I think we've
21 got a nice precedent with the Iqaluit and Rankin water
22 licences. Both of those licences have monitoring
23 required of the upstream effluent and have no
24 end-of-pipe criteria or marine monitoring requirements.

25 The issue, of course, would be if there was any
26 spill, any monitoring -- sorry, any water quality data

1 would be useful in those events, and it would seem
2 reasonable that any data for -- the water quality data
3 for effluent in the process plant or leaving the
4 process plant or in the TIA or leaving the TIA would be
5 within the regulated area.

6 So that -- those are just my thoughts on that.
7 But some of the aspects that would be of strong
8 interest would be the groundwater monitoring data which
9 would, in -- if they weren't moved into a monitoring
10 plan -- sorry, and management plan, would be included
11 under one of the schedules and would routinely have
12 monthly reporting. So it's just I didn't want to lose
13 access to the ongoing data that we normally get to look
14 at.

15 MR. ROBERTS: Mr. Chairman, can we have a
16 break to confer, please, ten minutes?

17 THE CHAIR: How much time do you need?
18 Five? Ten?

19 MR. ROBERTS: Five minutes.

20 THE CHAIR: Five minutes.

21 (ADJOURNMENT)

22 MR. ROBERTS: Mr. Chair, we are ready. I'll
23 ask our legal counsel to respond.

24 MS. KOWBEL: Christine Kowbel, TMAC. So
25 with the -- I guess with the backdrop that TMAC has
26 agreed to provide this information as a matter of

1 course, the fact that there are discharge -- there are
2 reporting requirements outside the Board's jurisdiction
3 that have been reflected in Schedule J's -- in other
4 water licences in Nunavut is, in our view, irrelevant
5 because it may well be that there are examples in other
6 licences, but, to us, the key question is whether
7 there's jurisdiction over the reporting requirement.
8 And in this case, I think we've heard from the Board's
9 counsel, and the Board is of the view that it is not,
10 and TMAC's of the firm view that this -- that this is
11 not -- this -- because of the ultimate discharge
12 location, this is not a reporting requirement that is
13 supported under the Act.

14 I also wanted to remind the Board and to remind
15 Environment Canada this is all information that will be
16 submitted to Environment Canada as part of the MMER
17 reporting requirements, and so there's no information
18 that Environment Canada wouldn't have even if there was
19 not a commitment from TMAC -- or not an agreement with
20 TMAC to provide this information under the water
21 licence to the Water Board.

22 And so I guess that is our final view of these
23 things, that this reporting requirement should not
24 be reflected in Schedule J of the licence, and in our
25 view, it would be beyond the jurisdiction of the Board
26 to include this reporting requirement within the water

1 licence. Thank you.

2 MS. WILSON: Anne Wilson, Environment and
3 Climate Change Canada. And the parts of the monitoring
4 data that are separate from the MMER and have nothing
5 to do with the MMER are the ones that are of interest
6 for me to be reported monthly. So those would include
7 things like the mine water outflow quality. Did we get
8 it right as far as the salinity? Are things going as
9 predicted? Other things would be parameters that are
10 being monitored under the water management plan that
11 aren't even required by the Metal Mining Effluent
12 Regulations. So this is entirely separate in my mind
13 from the MMER. The MMER data I don't ever see. That's
14 between the company and the part of Environment Canada
15 that deals with that, so I'm not even looking at that
16 as being part of this issue. It's more to keep myself
17 educated on what is going on with the water quality on
18 the parts that are eventually going to be of
19 environmental concern, whether it is on the surface at
20 the mine site or ultimately into some receiving
21 environment.

22 I don't want to beat this one to death too much
23 more. I think the Board has heard both our sides on
24 this, and we'll just leave it with them. Thanks.

25 MR. ROBERTS: Mr. Chairman, John Roberts,
26 TMAC Resources. I would like to make one final

1 statement on this as well. And as we have said, we are
2 happy to provide that information to Ms. Wilson for her
3 edification and comfort, but we do not see any reason
4 why that should be a part of the water licence. Thank
5 you.

6 THE CHAIR: Anything else?

7 MS. WILSON: Anne Wilson, Environment and
8 Climate Change Canada. I trust that what John meant to
9 say would be to the public registry, not to myself
10 personally; right?

11 MR. ROBERTS: It can go to the public
12 registry but I'll wager it'll be a short subscription
13 list.

14 THE CHAIR: Thank you.

15 Kitikmeot Inuit Association, any questions to
16 Environment Canada climate change?

17 MR. ROESCH: This is John Roesch for the
18 Kitikmeot Inuit Association. We have no questions for
19 Environment and Climate Change Canada. Thank you.

20 THE CHAIR: Thank you.

21 INAC?

22 MS. COSTELLO: Thank you, Mr. Chair. Karen
23 Costello for Indigenous and Northern Affairs Canada.
24 We have no questions for Environment and Climate Change
25 Canada. Thank you.

26 THE CHAIR: Thank you, INAC.

1 Any questions to Environment Canada from the
2 general public? No.

3 Staff?

4 MS. AUTUT: Thank you, Mr. Chair.
5 Stephanie Autut, Nunavut Water Board. The staff have
6 no questions for Environment and Climate Change Canada.
7 Thank you.

8 THE CHAIR: Thank you. Board members?
9 Thank you. Thank you, Environment Canada.

10 Next we have on the agenda INAC to do their
11 presentation. Teresa, please swear in the witnesses.
12 Thank you, Teresa. I have just been informed that
13 INAC's presentation is about an hour and a half so what
14 we'll do now is we will adjourn until tomorrow morning
15 so INAC can do their presentation tomorrow morning.
16 Because we have the evening session tonight, it would
17 be highly desirable for you to do your presentation in
18 the morning at 9. And we'll adjourn for now, and then
19 we'll do our community session tonight at 7.

20 MS. COSTELLO: Thank you, Mr. Chair. Karen
21 Costello, Indigenous -- for Indigenous and Northern
22 Affairs Canada. We very much appreciate the Board's
23 consideration with respect to the length of our
24 presentation. We'd be happy to present -- be ready to
25 present for 9 AM tomorrow morning. Thank you.

26 THE CHAIR: We'll see you at 7 tonight.

1 Thank you.

2 (DINNER ADJOURNMENT AT 4:23 PM)

3 (PROCEEDINGS RECOMMENCED AT 7:15 PM)

4 Community Session

5 Opening Remarks by Nunavut Water Board Chair

6 THE CHAIR: Good evening, everyone, and
7 welcome to the community session on the Nunavut Water
8 Board's public hearing in relation to an amendment
9 application filed by TMAC Resources Incorporated with
10 the Nunavut Water Board for Water Licence 2AM-DOH1323.
11 My name is Thomas Kabloona, and I am the Chair of
12 the Nunavut Water Board, and I will be chairing
13 tonight's session. Today's session is part of the
14 Nunavut Water Board's public hearing to consider
15 amendments to this licence which authorizes the use of
16 water and deposit of waste associated with Doris North
17 Gold Mine project. This public hearing marks the final
18 opportunity for TMAC, interveners, and members of the
19 community to present their comments, issues, the
20 questions about the amendment application to the Board
21 before the Board and makes its decision.

22 The Nunavut Water Board appreciates you all
23 turning out to participate in this important meeting.
24 Before we proceed with today's session, please let us
25 begin with a prayer, and I will ask Henry Ohokannoak to
26 do the opening prayer, please.

1 (Opening Prayer)

2 THE CHAIR: Thank you. For those of you
3 who were not here this morning when we started the
4 public hearing, I have a few brief housekeeping
5 introductory remarks, and then I will turn the
6 microphone over to the staff of the Nunavut Water Board
7 to provide everyone with a summary of the Water Board's
8 process in general in relation to this amendment
9 application to the applicant, TMAC Resources
10 Incorporated, to present the amendment application and
11 to the interveners in this application, the Kitikmeot
12 Inuit Association, Indigenous and Northern Affairs
13 Canada, and Environment Canada (sic) Climate Change
14 Canada to present summaries of their technical-review
15 comments.

16 Now, on to a few brief housekeeping items. There
17 will be interpretation available throughout the
18 hearing, and earpieces are available from the table
19 located to my right. Channel 2 is English, and
20 Channel 4 is Inuinnaqtun. When you are speaking into
21 the microphone, please turn off your earpiece to avoid
22 feedback.

23 Secondly, the Board appreciates it if everyone
24 signs in on the sign-in sheet located at the tables
25 just as you come in. This is an important record of
26 the hearing, and we appreciate your help in making sure

1 it is complete. The washrooms are located just as you
2 enter the hall, and there are exits located just where
3 you come in and at the back of the hall. There will be
4 coffee, tea, and snacks located at the tables on the
5 right side of the hall. During breaks, please help
6 yourself to the food provided. There are agendas for
7 the hearing available at the table as you come in.
8 Please pick one up and follow along.

9 Now I would like to introduce all the Board -- all
10 of the Board and staff before we proceed to the
11 presentations in the agenda. I will be chairing this
12 panel, and with me today are members of the panel -- or
13 Board members Ross Mrazek to my right and Makabe Nortok
14 to my left. Several staff members who have contributed
15 to the NWB's administration and the technical review of
16 the application are present along with legal counsel to
17 the Board. I will introduce the individuals attending
18 today. When I say their name, I ask that you wave so
19 that people know who you are.

20 Stephanie Autut, Executive Director; Dave
21 Hohnstein, Director of Technical Services; Ben Kogvik,
22 secretary/interpreter to the Board; Sonia Aredes,
23 Technical Advisor; Ida Porter, Licensing Administrator;
24 and Teresa Meadows, legal counsel to the NWB. We have
25 two interpreters helping us this evening. In addition
26 to Ben Kogvik, secretary to the Board and interpreter,

1 we also have Henry Ohokannoak who is from Cambridge
2 Bay. For audio support we have Ryan Dempster from Pido
3 Productions with us. If you experience any
4 difficulties with your headsets, he will be able to
5 provide assistance. To ensure an accurate record of
6 these proceedings are kept, we have with us a court
7 reporter, Sara Anderson, from Dicta Court Reporting
8 Incorporated. To assist Sara, I ask that all parties
9 please state their name prior to speaking.

10 Tonight's session will involve presentation by the
11 Nunavut Water Board's technical staff and the
12 presentation by the applicant, TMAC Resources
13 Incorporate, and presentation by the interveners,
14 Kitikmeot Inuit Association, Indigenous and Northern
15 Affairs Canada, and Environment and Climate Change
16 Canada.

17 Following each presentation, I will invite anyone
18 who wishes to ask questions or provide the panel with
19 their comments to step up to the microphone and speak
20 on the record. I encourage everyone with questions
21 please step up and ask, but to make sure our
22 public-hearing record is accurate and to assist our
23 court reporter and interpreters before speaking, please
24 wait until you have a microphone to speak and state
25 your name and speak directly, clearly, and slowly into
26 the microphone. Please be mindful of the interpreters

1 as you go and avoid the use of acronyms and
2 abbreviations if you can. We appreciate your
3 participation, assistance, in making sure we're all
4 heard and understood in this hearing.

5 I will now turn the microphone to Board's
6 technical staff to walk you through how this
7 application has progressed to this point.

8 MS. AREDES: Good night.

9 MR. HOHNSTEIN: Good night?

10 MS. AREDES: Good evening. This is a short
11 presentation about the TMAC application for the
12 amendment of the Water Licence Type A relative to the
13 Doris North Project. The list of the topics in the
14 presentation is first about the Nunavut Water Board
15 background information. Second, we're going to talk
16 about the authorizations that the Nunavut Water Board
17 may issue, Nunavut Water Board Type A licensing
18 process, licences issued to the project. Then we go
19 directly to the project and the licence issued to the
20 project, Doris North Project overview, a scope of the
21 application, application status, and next steps.

22 Okay. The Nunavut Water Board is an institution
23 of public government established under Article 13 of
24 the Nunavut Land Claim (sic) Agreement, has
25 responsibilities and powers over the regulation use and
26 management of freshwater in the Nunavut settlement

1 area. Objectives of the Nunavut Water Board are to
2 provide for the conservation and utilization of waters
3 in Nunavut, except in national parks, in a manner that
4 provide optimum benefit for the residents of Nunavut in
5 particular and Canadians in general.

6 Based on its mandate, the Nunavut Water Board may
7 issue any of the following authorizations to regulate
8 the use of water and/or deposit of waste for activities
9 or undertakings occurring within the Nunavut settlement
10 area. The Nunavut Water Board may issue approval
11 without a licence, a Type B water licence, and a Type A
12 water licence. This week's public hearing and
13 community session are for a Type A water licence
14 application filed to amend the Type A water licence for
15 the Doris North Project, 2AM-DOH1323. This is a
16 schematic of the -- of the licensing process for a
17 Type A licence.

18 Once the application is received, the technical
19 staff perform a preliminary technical review, and after
20 a preliminary technical review and if the application
21 is complete, it goes for a notice of application and
22 requests for technical review. Parties submit written
23 representation. We have the technical meeting and a
24 community meeting, and after that, we have a prehearing
25 conference. A prehearing conference decision is
26 issued. If directed in the prehearing conference

1 decision, it will require the applicant to provide
2 additional information.

3 After that, after the prehearing conference, we
4 give a notice of -- of public hearings that is with 60
5 days of minimum. During the notice -- or during this
6 time, parties exchange written interventions, where in
7 this moment here, that is Nunavut holds a public
8 hearing and a community meeting, and where the Board
9 will issue a decision to approve or to not approve the
10 application.

11 So if the Nunavut Water Board issue a decision to
12 approve the application, it goes to the Minister. The
13 Minister can approve the issuance of the water licence
14 or cannot approve the issuance of the water licence.

15 Licence issued to the project: The first licence
16 issued to the project was also a Type A
17 2AM-DOH713 (sic) issued by the Nunavut Water Board on
18 September 19, 2007, and expired in September 2013.
19 This licence authorized use of 480,000 cubic metres of
20 water per year and deposit of waste in support of
21 mining and milling undertaking.

22 This licence has three approved amendment (sic).
23 The Number 1 authorized relocation of explosive mixing
24 and storage facility; the Amendment Number 2 authorizes
25 infrastructure expansion; and the Amendment Number 3
26 issued by the Board authorize change in waste rock

1 management.

2 The current licence is 2AM-D0H1323 that was issued
3 by the Nunavut Water Board on August 16, 2013, and will
4 expire on August 15, 2023; authorizes the same quantity
5 of water that the previous licence and subaqueous
6 deposition of tailing into the Tailings Impoundment
7 Area, TIA; the controlled discharge of effluent from
8 the TIA to the Doris Creek is the place where Doris
9 North Project is.

10 This is a place where the Doris North Project is.
11 This is a view of the Doris North Project. Doris North
12 Project is located on Inuit-owned land in the Kitikmeot
13 Region south of Robert (sic) Bay approximately
14 125 kilometres south of Cambridge Bay. It's an
15 underground gold mine. First was planned two years of
16 life of mine and use as water source Doris and Windy
17 Lakes. It's -- the processing is milling with cyanide
18 leaching process. The gold dore bar are the final
19 product.

20 The project was under care and maintenance from
21 2009 until summer 2015. Construction restarted in
22 summer 2015, and the company expect to start operation
23 in January 2017.

24 TMAC apply (sic) for an amendment on June 2015,
25 and this amendment of the water licence take into
26 account TMAC mine plan change. One is an extension in

1 the life of the mine from the two to six years and an
2 increase in the milling rate up to 2,000 tonnes per
3 day. Between 1,000 and 2,000 tonnes per day.

4 The proposed amendment changed the type and the
5 quantity of waste to be generated and the water and
6 waste management strategies. Because of the mining
7 below the Doris Lake, during the mining, they will --
8 the company expect to find saline groundwater, some --
9 and the amount of saline mine water -- saline mine
10 water they will find is around 3,000 cubic metre per
11 day.

12 Other -- the company expects to modify the
13 tailings deposition strategy to include a combination
14 of backfill underground and subaerial deposition
15 between the Tailings Impoundment Area.

16 So the company's proposing to discharge up to
17 7,000 cubic metres per day of effluent from the
18 Tailings Impoundment Area to Robert's Bay. The current
19 licence authorizes discharge to Doris Creek. The
20 effluent -- this discharge is not under the
21 jurisdiction of the Nunavut Water Board because it's
22 on -- in the sea.

23 So consequence of the change in the mine plan,
24 there is going to be an increase in waste rock,
25 domestic waste, hazardous and nonhazardous waste and an
26 increase in -- because of the -- increase of the life

1 of the mine and increase in the milling rate.

2 Between the proposed change during closure and
3 reclamation, the -- they expect to cover the tailings
4 with rock and breaching of the dam. The TIA effluent,
5 once compliant, will discharge and go into Doris Creek
6 post closure. The waste rock will be disposed of
7 underground, none on surface, some can be in
8 construction.

9 The application was submitted to the Board on
10 June 15, 2015, so TMAC, once submit the application,
11 states its decide (sic) for -- to have a -- coordinate
12 process between the Nunavut -- to Water Board and the
13 NIRB, Nunavut Impact review. In that way, this licence
14 process has been managed like a coordinate (sic)
15 process.

16 On November 4, 2015, the Nunavut -- the NIRB and
17 the Nunavut Water Board provided notice of TMAC's
18 submission and called for a technical review.

19 On January 28/29, 2016, the Nunavut Water Board
20 hosted the technical meeting and community session in
21 Cambridge Bay following the NIRB's technical meeting.
22 On June 24, 2016, the Nunavut Water Board held a
23 prehearing conference via teleconference.

24 On July 7, 2016, the Nunavut Water Board issued a
25 prehearing conference decision report and notice of
26 public hearing. All submissions are on the Nunavut

1 Water Board FTP site available to the public.

2 Throughout the review process, the applicant, the
3 Kitikmeot Inuit Association, Indigenous and Northern
4 Affairs, Environment and Climate Change Canada,
5 Fisheries and Ocean (sic) have all contributed in
6 assisting the Nunavut Water Board moving the
7 application to this stage of the process. The Nunavut
8 Water Board recognize and appreciate the participation
9 of the various parties and requests that they continue
10 to do so and work together for the remaining stages of
11 the process.

12 Okay. This meeting is for the Nunavut Water Board
13 to obtain feedback and comment related to the
14 application from the members of the community. The
15 Nunavut Water Board encourage everyone in attendance to
16 ask questions about the Nunavut Water Board process
17 application and related issues. If you would like to
18 provide your question in written form, please contact
19 Ida.

20 This is the Nunavut Water Board staff contact
21 information that were already introduced by the Chair.
22 Stephanie Autut, Executive Director; David Hohnstein,
23 the Director of Technical Services; Ben, Director on --
24 Board Administration and Communication; and Ida Porter,
25 Licence Administration -- Administrator. Thank you.

26 THE CHAIR: Thank you. Any questions from

1 community members to the Nunavut Water Board? Any
2 questions from interested parties to the Nunavut Water
3 Board? No.

4 Next we have the applicant.

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

7 Mr. Roberts, it's my understanding that you have
8 two presentation -- two hard copies of the presentation
9 materials that you're going to present in association
10 with the community session, and is it your intention to
11 mark those as the next two exhibits in the public
12 hearing?

13 MR. ROBERTS: John Roberts, TMAC Resources.
14 Yes, it's our intention to have those marked as
15 exhibits. Thank you.

16 MS. MEADOWS: Thank you, Mr. Roberts. Let
17 the record show that these will be marked as Exhibits
18 Number 15 and 16 in this public hearing. Thank you,
19 Mr. Chair. Nothing further from me.

20 EXHIBIT 15 - Hard Copy PowerPoint
21 Presentation TMAC Resources Inc. Nunavut
22 Water Board Hearing Doris Water Licence
23 Amendment 2AM-DOH1323, Community Presentation
24 (English)

25 EXHIBIT 16 - Hard Copy PowerPoint
26 Presentation TMAC Resources Inc. Nunavut

1 Water Board Public Hearing Doris Project

2 Water Licence Amendment 2AM-DOH1323

3 (Inuktitut)

4 THE CHAIR: Thank you, Teresa.

5 Go ahead.

6 Presentation by the TMAC Resources Incorporated

7 MR. ROBERTS: Thank you, Mr. Chair. My name
8 is John Roberts, and I'm vice president environment for
9 TMAC Resources. I'd like to address the members of the
10 community, Elders, and the other participants in this
11 hearing, and to describe a little bit about the Doris
12 project that TMAC something is carrying out in the Hope
13 Bay Belt. I'll move through fairly quickly. I have a
14 number of slides. The content of some of these slides
15 was already covered by the Water Board's presentation
16 so I will move fairly quickly along those and add a
17 little colour where I can.

18 First of all, who is TMAC Resources? TMAC
19 Resources is a Canadian-based exploration and
20 development company. It's based in Toronto, and it's
21 publicly traded, being listed on the Toronto Stock
22 Exchange. It is comprised of a highly experienced team
23 of exploration geologists and develop -- people with
24 experience in developing and working in the Arctic in
25 the mining business in remote circumstances.

26 Hope Bay is the only project that TMAC has. It is

1 the sole focus of the company and is -- and is the --
2 attracts all of our attention. We're very proud to be
3 in Nunavut and particularly proud of the partnership we
4 have forged with the Kitikmeot Inuit Association. We
5 have concluded commercial lease arrangements, framework
6 agreement, and IIBA with the Kitikmeot Inuit
7 Association, and we value very greatly the strong
8 working relationship we have with that organization.
9 Our vision is to promote responsible development in and
10 support of sustainable development for the Kitikmeot
11 Region, and Nunavut, and with our landowner and
12 community partners.

13 TMAC is here to mine gold in Hope Bay. The -- you
14 can see here a -- from a sample of rock from the Hope
15 Bay Belt, Doris Mine, that this is a -- that there's
16 gold in those rocks. This is what it looks like. What
17 it means is jobs for Nunavummiut, development for
18 the -- for the territory, and, of course, benefits for
19 TMAC as well.

20 Let me spend a moment on this slide to speak
21 hopefully to the relative simplicity of mining. While
22 the mining business is complicated and doing all this
23 properly, maybe -- entail many steps, mining itself is
24 fairly simple. A mine, of course, is a hole in the
25 ground from which an -- into which go three things:
26 air, water, and explosives. Explosives to break the

1 rock, water to keep things wet, and air to -- for the
2 miners.

3 From that hole in the ground come three things:
4 waste rock, and that's the rock that does not have any
5 gold in it; or that's the rock that does have gold in
6 it and we separate that as it comes out of the -- of
7 the mine; and water that we put down in the mine but
8 also water that make leak into the mine from the
9 surrounding rocks.

10 This water is -- typically finds its way in
11 discharge out to the environment after treatment
12 perhaps or maybe not, depending on the situation. But
13 in any event, it's disposed safely to the environment.
14 The ore is -- needs to be processed. The -- as you --
15 as you recall from this drawing, ore is contained in
16 the rock, so we need to get the rock away from the gold
17 or the gold out of the rock, and that's done in a
18 processing plant. The ore goes into the processing
19 plant -- processing plant, along with reagents and
20 freshwater and out comes gold, of course, and tailings.
21 Tailings are the finely ground pieces of rock that are
22 left over after the gold is removed. In our case, we
23 have two streams of tailing, one of which goes to the
24 Tailings Impoundment Area. That's about 94 percent.
25 And the other 6 percent goes back for backfill into
26 the -- into the mine, along with waste rock that also

1 goes back into the mine. We need this to mine safely,
2 to fill the mine back up in order to mine safely, and
3 at the end of our mine life, there will be no waste
4 rock left on the surface.

5 The reclaim -- the water that goes out of the
6 processing plant is separated in the Tailings
7 Impoundment Area and recirculated into the processing
8 plant so as to minimize our use of freshwater. Excess
9 water is discharged to the environment after -- in a
10 same manner after being treated, if necessary, or
11 perhaps directly if it meets the applicable standards.
12 That's a fairly simple description of what mining
13 actually is.

14 This is the same picture I believe that -- or more
15 or less the same picture that Sonia showed me -- showed
16 us just a moment ago. The Doris North Mine site is
17 located here on the shores of Doris Lake. The camp,
18 power plant, and fuel supply in the mill building,
19 which we'll have a picture of later, ore pile,
20 waste rock stockpile, there will be more waste rock
21 here, and the Doris Mine Portal in this rock here.

22 This is -- I said air went into the mine. This is
23 where the ventilation goes down through the mine.
24 Tailings go to the Tailings Impoundment Area behind
25 the -- the north dam, and there will be other dams that
26 will contain the tailings in that area. Excess water

1 will be discharged, as Sonia said, to the -- to
2 Robert's Bay along a pipeline that travels along the
3 road and down to about here and then about 2 kilometres
4 out in the bay to a satisfactory depth to ensure safe
5 disposal.

6 This is a close-up of the Robert's Bay area, and
7 as we said before, the proposed development will have
8 new ore pads -- or sorry lay-down pads in this
9 vicinity, and also the tailings line will -- or the
10 discharge line, effluent discharge line will follow
11 along out here and out into the ocean.

12 In Robert's Bay, we have our fuel storage, our
13 port where we receive freight and fuel -- this is one
14 of the freighters that came in this year -- and other
15 fuel storage and general lay-down areas. As you
16 progress south from Robert's Bay and the shore of the
17 Arctic Ocean, you pass our airstrip, and our -- the
18 road forms part of the airstrip. This is a 5,000-foot
19 airstrip, about the same size as the -- as the airstrip
20 here in Cambridge Bay.

21 At the end of the airstrip, our lay-down areas,
22 there's another one just up here about the same size,
23 and all of this -- these sea containers are -- contain
24 the products and equipment and -- and consumables that
25 we use to mine gold in Doris.

26 As you can see, there are a lot of crushed rock

1 pads constructed for the mill site and for roadways and
2 the lay-down areas I showed you in Cambridge -- in
3 Robert's Bay and at the airstrip. Virtually all of
4 that rock came from this. We call it Quarry Number 2.
5 The quarry contains a great deal more available
6 building material, and this will be one of our major
7 sources of building material for the foreseeable
8 future. There will be a new one that will be in the
9 area of the Tailings Impoundment on the other side of
10 Doris Lake.

11 This is a picture of the mill building that we're
12 currently constructing. This picture was taken
13 probably --

14 MS. HAMM: July 16th.

15 MR. ROBERTS: -- July 16th. Says right
16 there. I was going to say two months ago. Not too
17 bad. And you can see here that some of the control
18 equipment that will -- the switchgear that will run the
19 processing facilities has already been moved into
20 the -- into the -- into the building.

21 On Sunday when we were there with a tour of many
22 of the people who are with us today, the first
23 processing pieces of equipment were being hauled into
24 the mill. So things are moving quickly at Hope Bay
25 toward production.

26 Again, too many things to operate here. This is

1 our camp and workshops area. A bit of a close-up, you
2 can see the camp is here. There's also a combination
3 just here, and this building here has been converted
4 from office space to accommodation as well. This is a
5 warehouse area and a geological processing area where
6 we do our samples. Up here is a power plant and the --
7 and fuel storage for that power plant as well.

8 This is the mine portal, and the portal is just as
9 you go in there it looks kind of flat, but it's
10 quickly -- dives down at about a 15 percent slope down
11 a couple hundred metres into the earth. It accesses
12 the ore body, and trucks bring the ore and the waste
13 rock from this -- from this portal.

14 This gives you an idea, a bit of a close-up, of
15 the Tailings Impoundment Area at the north end. This
16 is the north dam, a very highly engineered structure
17 that is carefully monitored to be sure that it is --
18 remains intact and good and strong and will retain
19 water as we place tailings in the far north end of that
20 area.

21 In the past, you will have heard of Doris North.
22 This is the ore body that comprises Doris North, and
23 Doris North is entirely in the permafrost area and was
24 the subject of the previous water licence. The
25 proposed amendment will allow TMAC to mine additional
26 ore in the Doris connector and Doris central areas, and

1 these are the areas that are underneath Doris Lake and
2 from which we would anticipate some leakage of water
3 into the mine that would then have to be managed.

4 Because of the use of -- the appearance of this
5 water from the under -- under-lake mining, those --
6 this is the reason that we need to -- or one of the
7 reasons that we need to change our licence and seek --
8 seek amendments. This picture is intended to show the
9 various facilities that need to be built to create an
10 economic mining adventure in the -- in the Doris area,
11 and, remember, we need to mine more gold so 2
12 hundred -- 2.5 million tonnes, and we'll be mining in a
13 new area under the lake, and it will have a longer mine
14 life.

15 The tailings area, as you can see, will be placed
16 in the -- at the south end of the Tailings Impoundment
17 Area. All the red on this are new facilities based on
18 the requirements for the amendment. Another vent raise
19 is going to be required here on this outcrop because
20 the mining will be occurring in this area. Another
21 vent raise right here, a new pad to -- to add to the
22 lay-down area. Some more lay-down area here. As I
23 said, some more roadway here to the west of Robert's
24 Bay and then straight out with the pipeline to the
25 disposal area. One of the key things about our new
26 tailings disposal will be that it will not be under the

1 water but will be on land and in water, and this
2 will -- is a major change to the -- to the proposal.

3 A little bit of history on the project. Many of
4 you will know there have been several owners, and each
5 of these owners has contributed a particular component
6 of the life of the mine. BHP Billiton spent about 11
7 years here on the site exploring and generated some
8 very good exploration information on where the gold is
9 on the belt.

10 Miramar permitted the first Doris North water
11 licence and received approval from this Board. Newmont
12 then spent some time building the wonderful
13 infrastructure that you've seen pictures of here just a
14 moment ago and decided on -- in 2013, that they would
15 not continue that activity. Rather they -- they sold
16 the business to TMAC Resources, a company, as I said,
17 that was specifically permitted and designed to build
18 and operate the mining -- the mine at Doris Lake.

19 Sonia said -- told a little -- in a great deal of
20 more detail about the Water Board process. This is a
21 snapshot and shows that we have conducted a number of
22 studies and submitted an application for review by NIRB
23 and the Water -- and the various parties and then
24 moving onto -- to passed the project certificate to the
25 Water Board so we can get a water licence. And we'd
26 like to thank the many parties that was -- that have

1 been involved in the reviewing of this work, and those
2 parties include the Kitikmeot Inuit Association, the
3 Government of Nunavut, Indigenous and Northern Affairs
4 Canada, Environment and Climate Change Canada,
5 Department of Fisheries and Oceans, Transport Canada,
6 and Natural Resources Canada.

7 So I think the -- an important message there is
8 that the project has been given very careful scrutiny
9 by the experts and regulators of all those
10 organizations, and overall that has -- that, along with
11 our responses to -- to their comments, has improved the
12 application and the proposal as we have gone forward.

13 TMAC is quite proud of the agreements that I
14 referred to earlier with the Kitikmeot Inuit
15 Association. These are agreements with the KIA and the
16 NTI to support development at Hope Bay for the next 20
17 years. TMAC provided the agreements and that include
18 the IIBA and water compensation and wildlife and other
19 compensation programs and payments of -- for annual
20 implementation payments for -- for the access to the
21 land. In return, KIA provides that access and advice
22 on how to develop the -- the work in a socially
23 economic beneficial way and also in a -- in a way that
24 protects the environment and natural resources of the
25 area.

26 We believe there are substantial benefits for

1 Kitikmeot and Inuit in general. The IIBA is within
2 the -- with the KIA will provide Inuit employment
3 targets that will be set with the KIA. A total of
4 \$550 million will be spent on the construction and
5 initial operation of the facilities, and
6 Kitikmeot-based industries will have preferred business
7 opportunities for 14 types of work on the site.

8 In addition, royalties and fees will be paid to
9 the KIA and the NTI, and plus tax revenues will
10 increase to the Government of Nunavut and, of course,
11 the Government of Canada. Another picture from inside
12 our mill, this time not dated but sometime before July
13 2016.

14 In terms of project changes, we are changing the
15 mine life that's going -- becoming a six-year mine life
16 as opposed to a two-year mine life. We'll have a --
17 the volume of ore will increase to 2.5 million tonnes.
18 This will also increase the amount of tailings to 2.5
19 million tonnes. I've talked about the two vent raises.
20 We will increase the milling rate to 2,000 tonnes per
21 day in two steps: 1,000 tonnes per day in 2016 and
22 increasing to 2,000 tonnes per day at the end of 2017.

23 Water supply will be continue to taken from Doris
24 Lake for industrial purposes, but we anticipate no
25 change in the permitted value that we will ask for. A
26 reclaim pond will be established in the Tailings

1 Impoundment Area that will provide us with reclaimed
2 water. Cyanide used in the processing of rock to
3 extract gold will be chemically destroyed, and material
4 containing that, the second stream of tailings, will be
5 disposed of underground and away from the surface
6 thereby reducing the risk to the environment.

7 Tailings will be placed in the Tailings
8 Impoundment Area area, as I said. Again, it will be
9 placed in a -- in a fashion on the surface of the land
10 of 2.5 million tonnes. Near the south dam, we will
11 begin to deposit tailings here and move northward.
12 This will be contained by an interim dyke approximately
13 midway in the Tailings Impoundment Area. And what this
14 will do is create a relatively safe and stable surface
15 for ease of reclamation of the site. The reclaim pond
16 will be downstream of the interim dyke, and we'll have
17 water flowing back and forth to the mill.

18 Let's have a look at some of the water management
19 features on the site. This is our sedimentation pond,
20 and all the contact water from the milling facilities
21 reports to this pond before it is hauled or pumped to
22 the Tailings Impoundment Area for -- for disposal and
23 into the reclaim pond. Groundwater from the mine will
24 also be pumped from the mine and eventually to the
25 Tailings Impoundment Area.

26 The tailings -- the salt groundwater will be

1 intended to -- was originally intended to go to the
2 ocean. It will go -- temporarily to be stored in the
3 Tailings Impoundment Area and later on will also be
4 hauled or pumped to the ocean.

5 In terms of waste management, we will have a
6 nonhazardous waste landfill located in the Tailings
7 Impoundment Area in a worked-out quarry that will be
8 used to build the other facilities. Just to remind you
9 of where the -- where the project changes are, it's
10 in -- it's in this particular area, and then we -- and
11 we need, again, to be mining additional ore under here
12 and also to mine this ore.

13 Other changes, and I went quickly through before,
14 we have lay-down area and work area around the --
15 around the -- the port. We have -- the camp size will
16 increase to approximately 280 beds. Explosive storage
17 will now occur in the Tailings Impoundment Area, and
18 there's, of course, a closure cost estimate. The
19 picture shows, as I pointed out earlier, some new
20 lay-down areas that will be constructed. New lay-down
21 area here. Work area. And a small road that will take
22 the disposal pipeline, the effluent pipeline, out to
23 Robert's Bay where it enters the bay and -- and out
24 2 kilometres to the discharge.

25 It's our intention to continue to implement
26 existing measures that protect the environment but to

1 revise plans for water management, aquatic effects
2 monitoring, and for waste rock and ore management to
3 accommodate the changes that we've made to the various
4 mining activities and the locations of that. We have
5 to change the water management plan because we have now
6 groundwater entering the system. We changed the
7 aquatic effects monitoring plan to recognize that we
8 will no longer discharge water to freshwater but rather
9 directly to the ocean. And the waste rock and ore
10 management plan will be changed because all waste rock
11 will now be used for backfill and ultimately will --
12 will find its way back into the mine.

13 We have developed some new plans as well for
14 Tailings Area, operations, maintenance, and
15 surveillance, and also for groundwater management. The
16 groundwater is a -- certainly a -- an important issue,
17 and we will be having various induction activities in
18 the mine by drilling forward and grouting areas of high
19 risk to minimize groundwater inflow.

20 In terms of issues that have been raised in the
21 Nunavut Water Board process, for water, we have a
22 number of lists here. These were brought forward since
23 the -- since the technical meetings in January, and all
24 of these matters have now been resolved in our
25 discussions with the various reviewers, and these
26 include site -- the site-wide water balance,

1 groundwater, Robert's Bay discharge, effluent discharge
2 criteria, Doris Lake levels, and water crossings,
3 et cetera.

4 Similarly, issues raised through the technical
5 meeting and review process regarding waste management,
6 including tailings management, the interim dyke filter,
7 dust suppression on the -- on the tailings area, waste
8 rock use, and underground disposal of oil-impacted
9 materials have all been dealt with directly with the
10 reviewers and have been resolved.

11 There are also issues brought forward regarding
12 closure, Tailings area, water quality, groundwater
13 quality, tailings cover, security cost estimate, and
14 interim closure and remediation methods, and these have
15 been resolved with the exception of the security cost
16 estimate. There remains some outstanding difference in
17 the estimated closure cost between TMAC and INAC, and
18 this continues and will be -- we hope to be resolved
19 before the end of this -- of this hearing.

20 In terms of management plans, as I said, we have
21 submitted a variety of management plans, and I've
22 outlined the -- the changes that are -- that have
23 driven those -- those new plans. We anticipate that
24 the Board, as it considers this application, will find
25 in itself to prove -- to approve these plans so that we
26 can operate the mine in a safe and environmentally

1 responsible way and in compliance with various
2 regulations and procedures.

3 So, Mr. Chairman, our next steps, as you well
4 know, is to complete this Water Board public hearing
5 and look forward to your consideration and
6 recommendation of a revised water licence to the
7 Minister of -- or Indigenous and Northern Affairs
8 Canada. At the same time, we are anticipating soon the
9 project certificate that will come through the NIRB
10 process. We also intend this year to complete
11 construction of the mill building that I showed you
12 earlier and hopefully to pour our first gold in January
13 2017. Mr. Chairman, those are my remarks, and I'd be
14 happy to respond to questions from the public or
15 others. Thank you very much.

16 THE CHAIR: Thank you. Any questions to
17 TMAC from the public or interested parties?

18 Next we have Kitikmeot Inuit Association.

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

21 Mr. Roesch, it's my understanding that you have
22 two hard copy presentations of the presentation you're
23 about to present, and you wish to file these as the
24 exhibits in the hearing?

25 MR. ROESCH: This is John Roesch for the
26 KIA. Yes, I do wish to file the two exhibits for the

1 hearing.

2 MS. MEADOWS: Thank you, Mr. Roesch. Teresa
3 Meadows, legal counsel for the Nunavut Water Board.

4 Mr. Chair, I'll file those exhibits as the next
5 two exhibits in this public hearing. Thank you.
6 Nothing further from me.

7 THE CHAIR: Please go ahead.

8 EXHIBIT 17 - Hard Copy PowerPoint
9 Presentation, Kitikmeot Inuit Association
10 Technical Review of TMAC's Amendment
11 Application for the Doris North Mine Site
12 Type A Water Licence (English)
13 EXHIBIT 18 - Hard Copy PowerPoint
14 Presentation, Kitikmeot Inuit Association
15 Technical Review of TMAC's Amendment
16 Application for the Doris North Mine Site
17 Type A Water Licence (Inuktitut)

18 MR. ROESCH: Hello, everyone. I'm John
19 Roesch, the Senior Hope Bay Project Officer For the
20 Department of Lands and Environment For the Kitikmeot
21 Inuit Association. I am responsible for project
22 oversight for the KIA and provide input into the
23 regulatory process on the Hope Bay project to both the
24 NWB and to NIRB. In performing this role, I make use
25 of KIA's consultants who are subject-matter experts in
26 the area of wildlife, fisheries, aquatic environment,

1 and geotechnical engineering.

2 The purpose of this presentation is to provide a
3 brief summary of our technical review of the amendment
4 to the Doris Type A water licence. Our review covered
5 wildlife issues, fisheries, aquatic environment, and
6 geotechnical engineering. KIA conducted the review in
7 a collaborative manner with TMAC Resources out of which
8 we brought forward 14 issues to be resolved at the
9 technical meeting and through further consultation.
10 The KIA's mandate is to promote social economic,
11 cultural, and environmental well-being. The Kitikmeot
12 Region is generally within the red boundary. The pink
13 and blue lands, which KIA owns -- the surface are --
14 are lands which KIA owns the surface right.

15 The Kitikmeot Inuit Association is a
16 democratically elected not-for-profit society that
17 represents the Inuit of the Kitikmeot Region of
18 Nunavut. KIA protects and promotes the social,
19 cultural, political, environmental, and economic
20 interests of the Kitikmeot Inuit. As a result of the
21 Nunavut Lands Claim Agreement (sic), Inuits are one of
22 the largest private landowners in the world. Much of
23 this privately owned land is in areas with high
24 potential for mineral development. This land is a
25 significant opportunity for Inuit if it is managed
26 properly. We seek to optimize opportunities and manage

1 liabilities that are inherent with being a private
2 landowner. If not, we will affect the well-being of a
3 Kitikmeot Inuit membership.

4 The Hope Bay project is located on the mainland
5 near the coast and approximately in the middle of the
6 region. When the Inuit-owned land was selected for the
7 Nunavut Lands Claim Agreement, Inuits knew that the
8 Hope Bay area was highly prospective for mineral
9 development. 120-kilometre length of surface lands
10 that include some mineral rights were selected in the
11 area. The brown areas are surface lands owned by KIA.
12 BB56, BB57, 58, and 60 include our agreement with TMAC
13 for the Hope Bay project.

14 The Hope Bay Green Stone Belt has been explored
15 since 1965. Within this Green Stone Belt, over 850
16 kilometres of drilling has occurred since 1965. Most
17 of the drilling has been focused around Doris, Madrid,
18 and Boston. This project has changed ownership many
19 times. Prior to TMAC, the last company to operate the
20 Hope Bay project was Newmont. TMAC took over the
21 project in 2012. On the map, you can see the location
22 of some of the highest priority development sites in
23 the Belt: Doris, Madrid, and Boston. The Hope Bay
24 Green Stone Belt is unique because it demonstrates the
25 capacity to hold several mining operations across the
26 belt in the different stages of development operated by

1 one company.

2 This Green Stone Belt includes a permitted mine at
3 Doris North. Several advanced exploration targets such
4 as Madrid North and South and Boston Camp, which has
5 preliminary mine plans developed, and many other
6 identified high-quality exploration targets. TMAC has
7 rights to all the minerals in this area. Once an
8 operating mine is established, the efficiencies of
9 belt-wide exploration can increase.

10 KIA's technical review concerns the amendment of
11 the Type A water licence for the Doris North Mine site.
12 Initiating production at the Doris North is critical to
13 the development of the entire belt.

14 As indicated previously, 14 issues were brought
15 forward to the technical meeting with the NWB and NIRB
16 pertaining to Doris North amendments. These five
17 concerned the Tailings Impoundment Area at Doris North.
18 We raised concerns about the capacity of the TIA to
19 handle mining expansion into Madrid, Patch Lake area;
20 whether caribou would be attracted to the tailings in
21 the TIA; the potential for dustfall in leaching from
22 the TIA into the surrounding environment; trace metal
23 contamination and the planned thickness of the cold
24 cover for the tailings upon closure.

25 TMAC has responded to our recommendations and ran
26 further simulations on dustfall which indicated it

1 would be contained within the TIA. In reviewing the
2 additional simulations on water and load balancing, KIA
3 found that the concentration levels of the metal
4 contaminants were well below the Canadian Council of
5 Ministers of the Environment and Mining Mineral
6 Effluent Regulations and Guidelines indicating that the
7 TIA water was nontoxic to caribou and birds.

8 Also, TMAC will develop adaptive management and
9 risk assessment to keep caribou away from the TIA, and
10 the tailings cover was found to be adequate upon
11 further review. All five of these issues have been
12 resolved. These five issues concern simulation models
13 for the marine discharge into Robert's Bay and
14 hydrogeology water balance at the mine site. The
15 issues are considered to be of moderate concern by KIA
16 requiring only additional water sampling and
17 adjustments to model parameters to provide improved
18 assurance on environmental impact.

19 Essentially, underground mine water is highly
20 saline and is to be mixed with water from the TIA and
21 is discharged into Robert's Bay. The salinity of the
22 discharge should be less than the ocean and similar in
23 temperature to minimize environmental impact on marine
24 life. TMAC has taken our recommendations under
25 consideration and ran further simulations using more
26 conservative input parameters. The results indicate

1 that ocean discharge is well below Canadian Council of
2 Ministers of the Environment Guidelines for the
3 protection of marine and aquatic life. Canadian
4 Council of Ministers of the Environment Guidelines are
5 met within 1 metre of the diffuser at a dilution of
6 186 to 1 at a distance of 250 metres from the diffuser.
7 Discharge dilutions are between 1,000 to 1 to 10,000
8 to 1. The discharge plume is trapped in deepwater
9 between the ocean floor and the surface layer. No
10 algae bloom will occur at the surface due to nitrates.
11 These five issues are resolved.

12 Issues 11 and 12 also concern simulation models of
13 water discharge and mixing with ocean water and are
14 viewed by KIA as being of moderate risk to the
15 environment. KIA essentially sought greater assurance
16 on environmental impact of minerals and nutrients on
17 ocean water to which TMAC has responded. TIA water
18 quality was well below the Canadian Council of
19 Ministers of the Environment and Mining Mineral
20 Effluent Regulations and Guidelines and is nontoxic to
21 wildlife or aquatic life.

22 Issue 13 concern the impact of water leakage from
23 Doris Lake into the underground mine and its effects of
24 the lake's water level. TMAC had conducted further
25 water modeling and has committed to mitigation methods
26 for plugging leaks and drill holes from exploration in

1 the lake. The expected impact on Doris Lake water
2 levels is within the natural variation of its water
3 levels.

4 Issue 14 concerns improving the deployment of
5 cameras and data collection, determine if there is a
6 zone of influence around the mine for grizzly bears.
7 That is to know if they are either attracted or
8 repelled by the mine site activities. This issue was
9 of high concern to KIA since bears were known to travel
10 through the area along the coast and is considered --
11 is a condition of the original project permit.

12 TMAC had taken our recommendations under advice
13 and is updating the layout of its wildlife monitoring
14 cameras and wildlife mitigation and monitoring program
15 for the Doris North Mine site. And this issue was more
16 of a concern that we addressed at NIRB. I just
17 re-mention it here. So all four of these issues are
18 resolved.

19 In addition to the technical issues raised, the
20 KIA would like to point out that we have signed with
21 TMAC a comprehensive framework agreement for land
22 access compensation and an Inuit Impact and Benefits
23 Agreement. The IIBA addresses Inuit interests in the
24 areas of employment, contracting, and training in
25 relation to the Hope Bay project as a whole through its
26 entire life span. Under the IIBA, an Inuit

1 environmental advisory committee has been established
2 with TMAC which complements KIA's current environmental
3 activities in the Department of Lands and Environment.

4 The IEAC allows for the local community to have
5 input directly into TMAC on environmental concerns.
6 Through the implementation committee with KIA and TMAC
7 representatives, measures of the employment business
8 development in training are being developed which
9 fulfills social economic obligations under the Nunavut
10 Land Claims Agreement.

11 The KIA receives monetary compensation through a
12 variety of agreements, direct compensation through the
13 framework agreement, and the IIBA for land access,
14 quarry materials, and water usage, royalties from gold
15 production, plus shareholdings in TMAC. NTI also gets
16 a royalty on profit under its Mineral Rights Agreement
17 with TMAC Resources Inc. All this creates a
18 substantial benefit for Inuit in the region. As
19 indicated previously, the KIA and TMAC have signed a
20 Water Compensation Agreement as part of the framework
21 for the Doris North Project. This agreement addresses
22 Inuit Article 20 rights and TMAC obligations. As a
23 result, there are no water compensation issues to be
24 addressed by the NWB in the context of the TMAC Type A
25 water licence amendment.

26 Currently KIA has \$11.49 million in security and

1 both letters of credit and corporate guarantee under
2 its commercial lease with TMAC Resources Inc. This
3 level of security is inadequate for the Doris North
4 Mine site given changes to the water licence and the
5 development of the project. The KIA's engineering
6 consultants has reviewed both TMAC and INAC's
7 reclamation cost estimate and finds TMAC's to be
8 reasonable for the mine site. The KIA discussed with
9 TMAC and their engineering consultants the identified
10 residual risks and cost escalators and our consultants'
11 questions on these. The major conclusions of our
12 engineering consultant was TMAC's reclamation cost
13 estimate was reasonable and more accurate than INAC's
14 reclamation cost estimate, and that the split between
15 land and water liability was 84 percent and 16 percent.
16 84 percent for land for the KIA and 16 percent for
17 water for INAC.

18 The 28.94 million quantum with its 20 percent
19 contingency was found to be very reasonable after
20 discussion with TMAC and having our questions answered.
21 The KIA accepts and supports TMAC's cost estimate of
22 28.94 million for reclamation security for the Doris
23 Mine site. The split of land and water liability of 84
24 percent and 16 percent is considered appropriate and
25 equitable for the mine site given KIA's experience with
26 the brine spill at Boston camp.

1 INAC's engineering consultant has a reclamation
2 cost estimate of \$44.12 million, substantially higher
3 than TMAC's estimate. This primarily is due to
4 indirect costs being 175 percent higher than TMAC's
5 estimate of indirect cost. INAC's estimates use a
6 five-year time horizon for reclamation work in contrast
7 to TMAC's approximately two-year time horizon for
8 performing reclamation work. INAC's estimate has about
9 50, the productive of TMAC's estimate, with -- which
10 KIA finds questionable. The INAC estimate acknowledges
11 that 98 percent of the quantum is associated with
12 Inuit-owned land while only 2 percent is Crown land.
13 The 43.42 million of Inuit-owned land security has a
14 split of land and water liability of 45 percent and 55
15 percent respectively which the KIA finds unreasonable
16 given our experience with the Newmont Orbit 25 brine
17 spill at Boston camp in July of 2011.

18 Drilling fluid containing potassium chloride had
19 spilled in -- onto the land and subsequently entered a
20 nearby water body. About 1,200 square metres of tundra
21 was damaged due to elevated chloride levels. The
22 deleterious substance had entered into the water body
23 and dissipated quickly in a few days with no loss of
24 fish or damage to the aquatic environment.

25 Environment Canada at the time charged Newmont and
26 Orbit Garant with breaking federal environmental laws.

1 Both Newmont and Orbit Garant agreed to contribute to
2 Environment Canada's environmental fund. No
3 reclamation work was done by the federal government to
4 the lake since no damage was done.

5 KIA investigated possible means of land
6 reclamation. If no actions are taken, it will take 15
7 to 20 years for the land to recover through natural
8 re-vegetation. Human intervention would require
9 experimentation in the restoration of tundra and
10 remediation work based on experimental results. The
11 human intervention and reclamation of land would be
12 about \$3 million. This clearly illustrates that
13 liability is primarily with the land and not the water.
14 INAC's split of land and water liability of 45 percent
15 and 55 percent would expose KIA to an excessive amount
16 of risk as a landowner. The KIA has successfully
17 resolved all technical issues brought forward to the
18 technical meeting with TMAC through our ongoing
19 collaboration. Given this and the substantial benefits
20 that will be obtained for Inuit from the Hope Bay
21 project and the opening of the Doris North Mine site,
22 we believe that the amendment of the Type A water
23 licence is warranted and in the best interest of the
24 Inuit people. I thank you, and I'm open to any
25 questions.

26 THE CHAIR: Thank you. Any questions to

1 Kitikmeot Inuit Association from community members and
2 interested parties?

3 Next we have Indigenous and Northern Affairs
4 Canada to do their presentation. Our Board members
5 with like a five-minute break so just bear with us for
6 another five.

7 (ADJOURNMENT)

8 THE CHAIR: Welcome back. Our five
9 minutes is coming right up so we'll proceed.

10 Teresa, would you swear in the witnesses, please.

11 MS. MEADOWS: Thank you, Mr. Chair, legal
12 counsel for the Nunavut Water Board. If I can have the
13 witnesses state and spell their name for the record,
14 please.

15 MS. COSTELLO: Thank you, Mr. Chair. My name
16 is Karen Costello, K-A-R-E-N, C-O-S-T-E-L-L-O.

17 MR. ABERNETHY: Hello. My name is David
18 Abernethy. David, D-A-V-I-D, Abernethy,
19 A-B-E-R-N-E-T-H-Y.

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

22 Ms. Costello, it's my understanding that you wish
23 to affirm.

24 KAREN COSTELLO, Affirmed

25 MS. MEADOWS: Thank you, Ms. Costello. It's
26 my understanding that you wish to be -- have your

1 evidence sworn. Can you please put your left hand on
2 the Bible, raise your right hand.

3 DAVID ABERNETHY, SWORN

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

6 Mr. Abernethy, it's my understanding that you have
7 a -- two or three copies of the presentation materials
8 that you were about to present at the community
9 session?

10 MR. ABERNETHY: David Abernethy. I -- I have
11 translated copies of the presentation. So there's
12 Inuinnaqtun, which is on the screen. That's split with
13 English. We also have a full English version and
14 Inuktitut.

15 MS. MEADOWS: Thank you, Mr. Chair. Teresa
16 Meadows, legal counsel for the Nunavut Water Board.
17 And you wish to have those marked as the next three
18 exhibits in this public hearing?

19 MR. ABERNETHY: I do. I have hard copies
20 available that I can provide to you right after we
21 present.

22 MS. MEADOWS: Thank you, Mr. Chair.
23 Teresa Meadows, legal counsel for the Nunavut Water
24 Board. I will mark those as the next three exhibits in
25 this public hearing. Thank you, Mr. Chair. I have
26 nothing further.

1 EXHIBIT 19 - Hard Copy PowerPoint, INAC/AANC
2 TMAC Resources Incorporated Amendment
3 Application No. 1 to Water Licence
4 No. 2AM-DOH1323, Community Presentation,
5 Nunavut Water Board Public Hearing (English)
6 EXHIBIT 20 - Hard Copy PowerPoint, INAC/AANC
7 TMAC Resources Incorporated Amendment
8 Application No. 1 to Water Licence
9 No. 2AM-DOH1323, Community Presentation,
10 Nunavut Water Board Public Hearing
11 (Inuktitut)
12 EXHIBIT 21 - Hard Copy PowerPoint INAC/AANC
13 TMAC Resources Incorporated Amendment
14 Application No. 1 to Water Licence No.
15 2AM-DOH1323 Community Presentation Nunavut
16 Water Board Public Hearing
17 (English/Inuinnaqtun)
18 THE CHAIRPERSON: Thank you, Teresa. Go ahead
19 with your presentation.
20 Presentation by the Kitikmeot Inuit Association
21 MS. COSTELLO: Thank you very much,
22 Mr. Chair.
23 Good evening, everybody. My name is Karen
24 Costello, and I am the Director of Resource Management
25 for Indigenous and Northern Affairs Canada for the
26 Nunavut regional office. I appreciate the opportunity

1 that the Water Board has provided to us to make a
2 presentation to the community regarding the work we
3 have done with respect to TMAC Resources application to
4 amend its Type A water licence for the Doris North gold
5 mine.

6 Throughout this presentation, you may hear me
7 refer to Indigenous and Northern Affairs Canada as "the
8 Department". It makes it a bit easier on the
9 interpreters. I'm joined by David Abernethy who is
10 with our water resources division. He is one of our
11 regional coordinators and the project lead on this
12 file.

13 So this slide outlines the topics we will discuss
14 in this presentation. We will provide a brief overview
15 of our roles and responsibilities. We'll take a few
16 moments to discuss our contributions during the review
17 process, we'll touch on components of our technical
18 review, we'll speak to reclamation security,
19 inspections conducted by the Department, and then offer
20 some conclusions for the community to hear.

21 We've included a few photographs in our
22 presentation. You've seen similar photos in TMAC's
23 presentation. This one is a view of the Doris camp
24 with the well-known mountain as the backdrop for the
25 site.

26 The Department works under a number of laws and

1 regulations to ensure that the interests of Nunavummiut
2 are protected. The different pieces of legislation are
3 listed on this slide. They include the Nunavut Waters
4 and Nunavut Surface Rights Tribunal Act and the Nunavut
5 Water Regulations, the Department of Indian Affairs and
6 Northern Development Act, the Nunavut Land Claims
7 Agreement Act, the Territorial Lands Act and its
8 associated regulations, and finally the Arctic Waters
9 Pollution Prevention Act and its associated
10 regulations.

11 So in Slide 5, you will see a bit of an outline of
12 our contributions through this review process. It
13 started with TMAC making their submission in August
14 2015. We attended the technical meeting hosted by the
15 Nunavut Water Board here in Cambridge Bay in January.
16 We participated via teleconference in the Board's
17 prehearing conference in June, and we are attending
18 here as well.

19 I'll now turn the microphone over to David who
20 will touch on some components of our technical review.
21 MR. ABERNETHY: Hello, Mr. Chair and everyone
22 in attendance. This is David Abernethy. I will review
23 the technical review themes that the Department covered
24 in its review of TMAC's application and speak to
25 certain points for each theme. The first is water
26 quality and quantity predictions. This theme is

1 important because it deals with the management of
2 freshwater at the mine site to ensure protection of
3 surrounding water sources. The second theme is the
4 Robert's Bay discharge monitoring. Discharge of water
5 from the Tailings Impoundment Area to Robert's Bay or
6 the ocean is not considered to be within the scope of
7 the water licence. This activity will be addressed
8 under the Metal Mining Effluent Regulations and may
9 also require authorization under the Arctic Waters
10 Pollution Prevention Act.

11 Here's another photo of Doris Lake looking from
12 the northern end. So you're looking south. And Doris
13 Lake I think, as most people know, is the largest --
14 well, the -- the lake right by the mine site that TMAC
15 and all here have an interest in protecting, that it is
16 not negatively impacted by mining operations. Thanks.

17 The third theme that has been addressed by the
18 Department is waste rock and tailings. The design and
19 management of the above-ground Tailings Impoundment
20 Area is an issue of concern to the Department, as well
21 as the management of waste rock and tailings that will
22 be permanently stored underground.

23 A fourth theme is mitigation measures, and in its
24 review, the Department commented on dust control for
25 the above-ground tailings that will be stored in the
26 Tailings Impoundment Area.

1 On this slide is a picture, again, of Doris Lake
2 looking towards the Tailings Impoundment Area where the
3 light is shining, and that grey triangle is the north
4 dam used to hold in the tailings. This -- this picture
5 shows -- is from the viewpoint of standing on the north
6 dam looking into the Tailings Impoundment Area, and I
7 believe the equipment there is used for dewatering
8 purposes.

9 A fifth -- the fifth and sixth themes are
10 identified on this slide. Water treatment, in its
11 review, the Department commented on the treatment of
12 sewage effluent and cyanide in mill process water. It
13 is noted that no additional treatment is planned for
14 water from the Tailings Impoundment Area before ocean
15 discharge. 'F' or 6: Theme 6 would be management
16 plans and reports. Management plans describe how
17 concepts are implemented, and monitoring reports
18 document the results of project activities. The
19 Department, like many interveners, reviewed management
20 plans and monitoring reports provided by TMAC in its
21 amendment application.

22 This slide shows a picture of Doris Creek with the
23 north dam of the Tailings Impoundment Area above it.
24 So Doris -- Doris Creek flows out of Doris Lake, and
25 the Department, through its review both before the
26 Nunavut Impact Review Board and the Nunavut Water

1 Board, had an interest in -- in reviewing the
2 application to ensure that Doris Creek will be
3 protected because it supports life downstream from
4 Doris Lake. And TMAC has addressed the Department's
5 concerns with this matter.

6 The final theme that the Department commented on
7 is closure and reclamation planning. It is
8 acknowledged that the final tailings cover design for
9 the Tailings Impoundment Area will be submitted by TMAC
10 to the Nunavut Water Board for approval prior to the
11 construction of this cover. It is also acknowledged
12 that water quality in the Tailings Impoundment Area
13 must be satisfactory before the north dam can be
14 breached following closure -- the completion of closure
15 activities. The Department will be careful to review
16 monitoring results to ensure that this is followed.

17 Now I will turn it back to Karen Costello.

18 MS. COSTELLO: Thank you, David. Karen
19 Costello for Indigenous and Northern Affairs Canada.
20 Financial reclamation security must be provided to
21 ensure that the mine site is cleaned up and that the
22 costs to make sure that the mine operator, rather than
23 the Crown or the private landowner, who is the
24 Kitikmeot Inuit Association, would be responsible. So
25 TMAC is responsible for cleaning up the site before
26 leaving it, but to cover a situation where they could

1 not, they are required to post a security deposit.
2 That's what the financial assurance is. And this
3 security deposit is the amount it would cost to reclaim
4 or clean up the site, and this cost is developed based
5 on the reclamation plan. INAC's current estimate is
6 around 36.8 million, and TMAC's estimate is around 29.1
7 million. This is the one item where we are still
8 working with the company on, and we'll continue our
9 discussions during Day 2 of our technical -- of the
10 technical component of this hearing.

11 The Department's work will not be done when a
12 licence is issued. INAC has a field operations team.
13 We have water resource officers who visit project sites
14 to make sure an operator is complying with the water
15 licences and other authorizations. Since July 2015,
16 there have been three inspections at the Doris North
17 site. All of these inspection reports and the
18 company's responses are available on the Water Board's
19 website. The Department's inspections demonstrate no
20 major issues. TMAC is regularly engaged with our
21 inspection staff. There have been a few minor spills
22 reported. TMAC has been quick to respond, as outlined
23 in their management plans, and the Department has no
24 concerns.

25 We heard a little bit from TMAC earlier. They
26 continue to explore to try and find more ore at Doris,

1 in the Doris area in the Hope Bay Belt, and this is a
2 photograph -- it's a little dark, but it shows a
3 helicopter bringing in supplies to a diamond drill. In
4 INAC's review of this application, it made many
5 comments, and other than right now, currently, not
6 having agreement with TMAC on a reclamation cost
7 estimate, we're satisfied with all of the responses
8 TMAC has provided, and with that in mind, the water
9 licence amendment application should be accepted with
10 consideration of the Department's comments. And we
11 hope to engage the Kitikmeot Inuit Association on the
12 potential co-managing of reclamation security once we
13 hopefully reach agreement with TMAC on what an
14 appropriate reclamation cost estimate is.

15 Thank you very much for your time.

16 THE CHAIR: Thank you. Any questions to
17 INAC from the general public or interested parties?
18 Thank you.

19 Next we have Environment Canada and Climate
20 Change.

21 MR. DAHL: Just -- Mark Dahl for
22 Environment Canada. The presentation tonight is the
23 same one that was given earlier, the -- it will be
24 briefer speaking notes, but the exhibit is the same.

25 THE CHAIR: Whenever you're ready, just go
26 ahead. Don't wait for me.

1 Presentation by Environment and Climate Change Canada

2 MR. DAHL: Thank you, Mr. Chair. Mark
3 Dahl for Environment Canada, and I'll be presenting on
4 behalf of Environment and Climate Change Canada this
5 evening, and I'm accompanied by Anne Wilson, the water
6 quality expert on the file.

7 Environment and Climate Change Canada reviews
8 development proposals for potential impacts and
9 provides scientific advice to the Nunavut Water Board
10 on issues falling within our mandate. The Department
11 of the Environment Act gives ECCC responsibility to
12 preserve and enhance water quality and to conserve and
13 protect Canada's water resources. More broadly
14 speaking, ECCC also has responsibilities -- oops,
15 excuse me. The -- we also have responsibilities to
16 forecast daily weather and to regulate boundary waters
17 and the general coordination of federal and
18 environmental policies and programs.

19 This is a listing of the Acts under which we do
20 our review, just for your information. Excuse me.
21 Where are we? Just bear with me for a moment, please.
22 We have two different -- for a water licence review,
23 the Department's focus is on protecting water quality
24 as well as on the effective waste management and the
25 protection of air quality as they relate to water
26 quality. It is from this perspective that ECCC

1 reviewed the applications and provided scientific
2 expertise to the Nunavut Water Board during the review
3 of the original Hope Bay project and this amendment
4 application.

5 The issues that Environment Canada raised during
6 the review fell into four -- under four themes.
7 Those themes are listed here, and they include the
8 monitoring locations and the receiving environment,
9 which is Robert's Bay; predicting effluent composition;
10 monitoring -- the monitoring parameters to be examined
11 and monitored for; and the mine water management.

12 Anne Wilson will now speak to the more -- to the
13 details of those themes.

14 MS. WILSON: Thank you. Anne Wilson with
15 Environment and Climate Change Canada. And as Mark
16 mentioned, we had several broad areas that we were
17 concerned about. Environment and Climate Change Canada
18 has participated in this review process since the first
19 part of the amendment and came from the broader
20 concerns down to more detailed levels.

21 Throughout those concerns, we've been able to work
22 through them with TMAC and get to resolution on all the
23 details that are important to understand the effects of
24 the project and to manage and mitigate those. So these
25 included everything from monitoring in the marine
26 environment, and we're quite happy that there's a

1 robust environmental monitoring plan developed, and the
2 baseline is -- is -- actually has been collected this
3 year already. Next slide.

4 We had raised concerns of how they could be sure
5 what the effluent was going to be like. If you take
6 all the parts that -- combined to make the end-of-pipe
7 effluent, in response, TMAC had modeled and has
8 committed to update modeling on an annual basis using
9 real data from their monitoring. So that gives us
10 confidence that they'll know what's going on, and if
11 you know what's going on, you can figure out what to do
12 about any changes you might see.

13 There was quite a bit of discussion on the exact
14 contaminants or parameters that should be monitored by
15 TMAC. And I think we pretty well sorted out the what,
16 the where, and the how often for the monitoring both
17 upstream of the effluent release and in the freshwater
18 receiving environment.

19 One of the big issues for TMAC is the management
20 of the mine -- the water that comes in the mine. It's
21 quite salty, and until there's a way for that to be
22 discharged under Environment and Climate Change
23 Canada's Metal Mining Effluent Regulations, they will
24 be using their Tailings Impoundment Area to hold that
25 water. So they've developed -- next one -- interim
26 water management plans. Environment Canada is doing

1 our part to make the changes that are needed for this
2 to happen. The timing will be tight, and TMAC will be
3 doing the alternative water management until they can
4 discharge under the MMER, or Metal Mining Effluent
5 Regulations, to Robert's Bay.

6 I think that is all I had to say except for
7 thank you for your time and attention, and any
8 questions we would be glad to try and answer.

9 THE CHAIR: Thank you. Any questions to
10 Environment Canada and Climate Canada from the general
11 public or interested parties? Thank you very much.

12 This takes us to the end of our agenda for
13 tonight's session. On behalf of the Nunavut Water
14 Board, I would like to thank everyone for participating
15 tonight and thank you to the community of Cambridge Bay
16 for hosting these important meetings. A special thanks
17 to all of the presenters tonight and all of the people
18 who chose to join us this evening to share your views,
19 comments, and questions with the Board.

20 In terms of what is next, the technical review
21 component of the Board's public hearing will continue
22 tomorrow right here starting at 9:00 AM, and we expect
23 to wrap up that aspect of the public hearing by 3
24 tomorrow afternoon. Everyone is welcome to attend
25 tomorrow's session. Good night. Hope to see you
26 tomorrow.

1 _____
2 PROCEEDINGS ADJOURNED TO 9:00 AM, SEPTEMBER 14, 2016
3 _____
4

5 CERTIFICATE OF TRANSCRIPT:
6

7 I, Sara Anderson, certify that the foregoing pages
8 are a complete and accurate transcript of the
9 proceedings, taken down by me in shorthand and
10 transcribed from my shorthand notes to the best of my
11 skill and ability.

12 Dated at the City of Calgary, Province of Alberta,
13 this 25th day of September 2016.
14

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16 
17 _____



18 Sara Anderson, CSR(A)
19 Official Court Reporter
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1	EXHIBITS ENTERED	
2	SEPTEMBER 13, 2016	
3		
4		PAGE NUMBER:
5	EXHIBIT 1 - Hard Copy PowerPoint	30
6	Presentation TMAC Resources Inc. Nunavut	
7	Water Board Public Hearing Doris Project	
8	Water Licence Amendment 2AM-DOH1323	
9	(English)	
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25	Doris North (Addition of Gold to Process	
26	Schematic Diagram) (English)	

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2	Subject Doris Project: Closure and	
3	Reclamation Cost Estimates - Response to	
4	INAC's July 22, 2016, Submission (English)	
5		
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12	Prepared By BGC Engineering Inc. For The	
13	Kitikmeot Inuit Association, Subject:	
14	Draft - Review of Interim Closure Cost	
15	Estimate For the Doris North Mine	
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18	EXHIBIT 9 - Hard Copy Letter to John	34
19	Roberts from Brodie Consulting Ltd. Dated	
20	September 7, 2016, Re: Review of	
21	Reclamation Cost Estimate - Doris North	
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26	September 14, 2016, as Exhibit 30)	

1	EXHIBIT 11 - Hard Copy PowerPoint	107
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