

0212

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26

NUNAVUT WATER BOARD HEARING

RE: CAPE DORSET TYPE B WATER LICENSE

HEARING HELD AT THE
COMMUNITY CENTRE
CAPE DORSET, NUNAVUT
JANUARY 24, 2008

1 APPEARANCES:

2 NUNAVUT WATER BOARD:

3	Mr. T. Kabloona (by phone)	Chair
	Mr. R. Hanson	Acting Chair
4	Mr. G. Kusugak (by phone)	Vice Chair
	Mr. L. Toomasie	Member
5	Mr. T. Tatatuapik	Member
	Mr. G. Porter	Member
6	Mr. G. Kakkiarniun	Member

7

NUNAVUT WATER BOARD (NWB) STAFF:

8

	Mr. W. A. Tilleman, Q.C. (by phone)	Legal Counsel
9	Ms. C. Emrick, Esq.	Legal Counsel
	Ms. D. Filiatrault	Executive Director
10	Mr. D. Hohnstein	Acting Director Technical Services
11	Mr. B. Kogvik	Secretary/Interpreter/Translator
12	Mr. D. Bhandari	Technical Advisor
	Mr. D. Carr	Licensing Administrator
13	Mr. R. Dwyer	Licensing Administrator

14

NUNAVUT WATER BOARD CONSULTANTS:

15

16	Mr. H. Hartmaier	BGC Engineering Inc.
----	------------------	----------------------

17 LICENSEE:

18 HAMLET OF CAPE DORSET

19	-Mr. A. Stewart	Senior Administrative Officer (SAO)
20	-Mr. B. Roy	Community and Government Services (CGS)
21	-Mr. F. Schell	Mayor of Cape Dorset
22	-Mr. J. Palluq	CGS Assistant Regional Director
	-Mr. M. Aulakh	CGS
23	-Mr. P. Fuentes	Project Officer CGS
24	-Mr. T. McDonald	Project Officer CGS

HAMLET OF CAPE DORSET CONSULTANTS

25

26	-Mr. P. Cavanagh	Geotechnical Consultant, AMEC
		Earth & Environmental
	-Mr. C. Joyal	Dillon Consulting Ltd.

1 INTERVENERS:

2 GOVERNMENT OF NUNAVUT-DEPARTMENT OF ENVIRONMENT
(GN-DOE)

3 -Mr. M. Atkinson Manager of Environmental
4 Assessment and Land Use

5
6 ENVIRONMENT CANADA (EC)

7 -Ms. C. Spagnuolo

8 INDIAN AND NORTHERN AFFAIRS CANADA (INAC)

9 -Mr. J. Rogers Manager of Water Resources
-Mr. A. Keim Water Resource Officer
10 -Mr. D. Abernethy Water Resource Coordinator

11
12 INTERPRETERS/TRANSLATORS:

13 Mary Hunt Inuktitut Language
Ben Kogvik

14 Trevor Bourque Sound Technician

15 Karoline Schumann, CSR(A) Court Reporter
16
17
18
19
20
21
22
23
24
25
26

1	INDEX	
2		Page
3	Preliminary Matters	215
4	PRESENTATION BY INAC	220
5	Hamlet Questions INAC	239
6	Community Questions INAC	243
7	NWB Staff Question INAC	252
8	PRESENTATION BY BGC	271
9	Hamlet Questions BGC	295
10	Supplementary Matters	304
11	Hamlet Resumes Questioning BGC	311
12	Community Questions BGC	337
13	Procedural Matters	347
14	CLOSING STATEMENT BY GN-DOE	367
15	CLOSING STATEMENT BY EC	369
16	CLOSING STATEMENT BY INAC	371
17	CLOSING STATEMENT BY HAMLET	374
18	CLOSING STATEMENT BY NWB BOARD	378
19	Reporter's Certificate	380
20	Exhibits	382
21		
22		
23		
24		
25		
26		

1 (PROCEEDINGS COMMENCED AT 9:07 A.M.)
2 ACTING CHAIR: I'll call the meeting to
3 order. Bill, are you on board?
4 MR. TILLEMAN: Yes, sir.
5 ACTING CHAIR: Thomas?
6 THE CHAIR: Yes, I am.
7 ACTING CHAIR: Okay, good morning,
8 gentlemen.
9 THE CHAIR: Good morning.
10 ACTING CHAIR: Could we ask Lootie to
11 say the prayer, please.
12 (OPENING PRAYER)
13 ACTING CHAIR: We will start with the
14 intervener, INAC. We're just setting up here. No,
15 sorry, Art, you have a question?
16 MR. STEWART: Mr. Chair, Art Stewart.
17 Would we be able to make some brief comments just
18 before INAC goes on? Would that be acceptable?
19 ACTING CHAIR: Yes, I have no problem
20 with that, Art, go ahead.
21 MR. STEWART: Bhabesh Roy has --
22 ACTING CHAIR: Sorry, the guy from INAC
23 had a question.
24 MR. KEIM: Thank you,
25 Mr. Chairperson. Andrew Keim from INAC. A point
26 of order. Yesterday, the public meetings were

1 curtailed because of time, and I know that there's
2 one or possibly two members of the public that
3 would like to address the Board and carry on with
4 some questions before we proceed to INAC's
5 presentation, or I don't know whether it would fit
6 in before or after the Municipality makes a
7 statement. I know that there were some follow-up
8 questions for the Board. Thank you.

9 ACTING CHAIR: Thank you. I have no
10 problem with the Community, but they can perhaps
11 come after. Dionne?

12 MS. FILIATRAULT: Thank you, Mr. Chairman.
13 Dionne Filiatrault.

14 Right now on the overall agenda, we are on
15 Agenda Item 10, where we're doing presentation by
16 intervening parties. There is an opportunity, I
17 believe, under 13 -- or, sorry, 12, "Presentations
18 by any other person, association, agency who
19 advised the Chairperson that they wished to speak".
20 I would suggest to you, Mr. Chairman, that they
21 could -- they've advised -- there's two people from
22 the public that advised that they would like to ask
23 some questions and speak, that that would be an
24 opportunity for them to do so.

25 ACTING CHAIR: Okay, thank you. Point
26 taken. Art, go ahead.

1 MR. STEWART: Art Stewart, Hamlet of
2 Cape Dorset. Bhabesh Roy would like to speak on
3 our behalf.
4 ACTING CHAIR: Mr. Roy?
5 MR. ROY: Good morning,
6 Mr. Chairman, the audience. I'm giving some
7 comments on some of our assessment and presentation
8 held yesterday and on the discussion. We received
9 a letter from Water Board on October 10, 2007. The
10 letter issued by the Executive Officer of the Water
11 Board. In that letter, it was clearly mentioned
12 pre-hearing review of the application. And in
13 there, we have been given 12 points to deal with.
14 In the 12 points, the first one, I just read it
15 out quickly, one was seepage, as-built, operation
16 and maintenance, ownership of the lagoon,
17 geothermal assessment, stability assessment,
18 identification of geotechnical engineer of record,
19 discharge criteria, sludge management, the use of
20 current treatment system as contingency measures,
21 abandonment and reclamation, monitoring. So these
22 are the 12 point given to us and -- to deal with in
23 this public hearing. And also, we are -- we have
24 been asked to submit the response of these 12
25 points accordingly.
26 November 13th, 2007, I replied this letter

1 point by point, where we have address all these 12
2 points. A few things are not clearly -- we did not
3 submit information. One is the issue of the
4 as-built drawing. That is a concern yesterday.
5 There is some issue is missing in the as-built
6 drawing we submitted. Yes, I agree. I couldn't do
7 the license agreement. Once the license is issued,
8 within 90 days, we can submit the revised as-built
9 drawings.

10 Also the density, leakage, seepage, thermistor
11 monitoring, we did not give them a clear indication
12 what kind of precipitation will develop. Now, I'm
13 coming up with a program now. We are giving --
14 we're installing three thermistor in the discharge
15 pond, and each thermistor should be 15 metre long,
16 and we are giving the detailed manual within --
17 installing and developing the manual within nine
18 month from today.

19 Now, the other issues, like due to the
20 ownership of the lagoon is clearly indicated in my
21 letter, and I don't like to mention it. Geothermal
22 assessment, stability analysis, all those is
23 presented by AMEC presentation. Identification of
24 geotechnical engineers of record, the question
25 raised that the -- if Dillon and AMEC will sign the
26 document together, or they don't sign alone. You

1 know, the as-built drawing, Dillon signed the
2 document because Dillon was the main consultant.

3 The issue raises by BGC that they are
4 recommending both the consultants should sign the
5 as-built drawings. We ask the advice from the
6 Board, if the Board want, then we will deal
7 accordingly, and we can revise the as-built drawing
8 sheet as signing by two companies.

9 In the O & M manual, we clearly indicated the
10 discharge criteria, sludge management, current
11 treatment, contingency plan, abandonment and
12 reclamation, and monitoring.

13 I think the 12 point given to us we clearly
14 mention in my letter of November 13th, and during
15 the presentation yesterday, I saw the repetition,
16 they're asking the same thing, and I suspect that
17 the intervener has control all our reply, which we
18 submitted on the November 13th. However, the
19 additional information, as I said, thermistor
20 monitoring, the manuals, and the as-built drawing
21 addition, we follow up, as I explained in my
22 discussion.

23 Thank you, Mr. Chairman.

24 PRESENTATION BY INAC:

25 ACTING CHAIR: Thank you. Okay. INAC,
26 are you ready for your presentation?

1 JIM ROGERS, ANDREW
2 PHILLIP KEIM, sworn:
3 THE CHAIR: While Jim is getting
4 ready, I just have a note here, a bit of
5 housekeeping. Would the people who came in this
6 morning, if you have not already done so, please
7 sign the book during the next break, please.
8 INAC, the floor is yours.
9 MR. ROGERS: Jim Rogers, INAC.
10 Good morning. I'm grateful to have this
11 opportunity to speak to you, the Water Board, and
12 the Members of the Hamlet and their support at this
13 public meeting. My name is Jim Rogers. I'm the
14 Manager of Water Resources for Indian and Northern
15 Affairs, Nunavut Regional Office. With me today is
16 Andrew Keim, the Water Resource officer for the
17 Qikiqtani Region at the table, and in behind,
18 there's David Abernethy, who is the Regional
19 Coordinator and did some of the review for this
20 project.
21 We're pleased to participate in the public
22 meeting, and we have certain responsibilities and
23 mandates of Indian and Northern Affairs, the DIAND
24 Act, which gives us authority over resources;
25 Nunavut Land Claims Agreement, which is the
26 overriding rule for the Territory; the Nunavut

1 Water and Nunavut Surface Rights Tribunal Act,
2 which is the Act that influenced Article 13 of the
3 Nunavut Land Claims and is the one for the license;
4 and also we're bound by the Canadian Environmental
5 Assessment Act. At this time the Nunavut Impact
6 Review Board does not review, do assessments of
7 municipalities because it's exempted under 12(1)
8 within the claim.

9 Indian and Northern Affairs has reviewed the
10 information made available on the Nunavut Water
11 Board's public registry which pertains to the
12 license amendment application. This is the license
13 amendment for the P Lake sewage lagoon.

14 INAC recognizes that the Government of
15 Nunavut's Department of Indian and Government
16 Services is acting as the Hamlet's representative
17 on technical aspects of the license application.
18 Indian and Northern Affairs Canada has identified
19 areas of concern which the applicant should clarify
20 for the Nunavut Water Board.

21 These include the licensee of the facility,
22 which has been already discussed a number of times,
23 design criteria, the geothermal assessment of the
24 berms, the responsible professional who signs,
25 who's responsible if there's a failure of the
26 project, operation and maintenance plan,

1 contingency plan if things don't always work out
2 the way you are (sic), and abandonment and
3 reclamation.

4 For the Board's use, some of the presentation
5 is slightly different than the hard copy they have,
6 I apologize for that, but we've made some changes.

7 INAC is under the understanding that the Hamlet
8 of Cape Dorset will be the licensee for the P Lake
9 lagoon. The Hamlet of Cape Dorset is the Applicant
10 for the amendments. However, at the technical
11 meetings, the Hamlet have indicated some
12 unwillingness to take responsibility for the P Lake
13 sewage lagoon. In this hearing, the Hamlet has
14 clearly indicated that they will be the operator.
15 That clears up some of our issues earlier.

16 INAC also suggests that the Government of
17 Nunavut should explain to the Board, regulators,
18 and other interveners the process of site
19 selection, design, and public consultation that it
20 undertakes to improve the Board's understanding and
21 confidence in the Government of Nunavut system.
22 The perceived unwillingness of the Hamlet earlier
23 to operate the lagoon has opened the GN's process
24 to some question.

25 INAC would like to be clear that it will hold
26 the Licensee responsible for all terms and

1 conditions contained in the license -- or the
2 license amendment issued by the Water Board if it
3 issues.

4 INAC's opinion throughout the process is that
5 it has been unclear to us, and I'm sure it may be
6 to some of the other regulators and some of the
7 interveners and maybe perhaps the Water Board to
8 understand who is the responsible authority for --
9 on who and how discussions were made.

10 INAC is willing to work with the Government of
11 Nunavut after this hearing and with the Nunavut
12 Water Board and perhaps the Hamlet to clarify how
13 the process should proceed. This process happens
14 every few years, and we would like to clarify it to
15 make it a little more understandable to all of us.

16 Design criteria: Throughout the review period,
17 including the October 1st, 2007 technical meeting,
18 INAC had difficulty determining the design criteria
19 used for the lagoon, lagoon construction, and for
20 the treatment of the municipal waste water. INAC
21 now believes that any additional treatment by the
22 wetland downstream of the lagoon is not part of the
23 waste water design. These questions were raised;
24 we got conflicting answers. But the amendment is
25 clear: The point of discharge is the lagoon. The
26 additional treatment by the -- the wetland and the

1 P Lake is not included as part of this amendment.
2 However, INAC remains unsure whether and how
3 overland flow from upstream of the lagoon was
4 considered in the lagoon design, including whether
5 the channel built to bypass upstream overland flow
6 around the lagoon is adequate. They have a channel
7 that runs along the south side to channel water
8 that runs down off the headlands, around the lagoon
9 so it won't fill the lagoon, and then down into
10 P Lake.

11 We now understand after discussions with the
12 consultant to the Hamlet that they have estimated a
13 peak daily precipitation, but we have yet to
14 understand the flow, the design of the flow channel
15 and how much flow it is. Anybody who's aware of
16 Kugluktuk last summer realizes the -- most things
17 are underdesigned for large storms in this country.

18 Monthly flow rates were used for the upstream
19 flows, which works out to be about .03 cubic metres
20 per second, but peak rates couldn't be found. The
21 releases from the lagoon will be about .8 cubic
22 metres per second max., so it seems funny to design
23 less than the flow coming out of the lagoon.

24 Annual volumes of effluent in 20 years were
25 included in the application; however, any natural
26 runoff either seeping through or if the spillway --

1 or the bypass channel is underdesign, running over
2 the berms and into the lagoon, were not included
3 within the design.

4 During the summer of 2007, information from
5 Hamlet residents seemed to indicate that local
6 runoff was entering the constructed lagoon, and
7 some water was seeping out of the lagoon. The
8 berms constructed in 2007 should be fully frozen
9 now during the winter of 2007/2008, since little
10 water was contained in the lagoon. We would like
11 it clarified by the Hamlet how much water was left
12 in the fall before freeze-up to help us with that
13 determination.

14 Geothermal assessment: During the design of
15 the lagoon, the consultants for the Applicant used
16 computer models to estimate the rate, extent, and
17 stability of ground temperatures in the lagoon
18 berms and below the lagoon, but some issues remain.
19 Therefor, INAC suggests that ground temperatures
20 should be monitored and the information used to
21 verify the results of the computer model.

22 Today, the -- or this morning, the
23 Government -- or CGS said that they would install
24 three thermistors. We do not have locations on
25 those thermistors. They did cite depths. It's
26 been a long time coming for them to fully confirm

0227

1 that they were going to monitor ground
2 temperatures.

3 INAC suggests that the ground temperatures be
4 monitored in the berms and, so we can estimate
5 potential seepage, freezing rates, perhaps
6 downstream of the lagoon, although we're willing to
7 look at other options. Additionally, for the first
8 three years, the Licensee should compare these
9 temperatures to the results of the models, explain
10 the differences, and provide those to the Board in
11 the annual reports.

12 Signed drawings: During the review of the
13 water license and after inspection of the
14 constructed facility, INAC had difficulty in
15 understanding how the decisions were made and who
16 made the decisions for designs to application to
17 construction. For example, reports provided as
18 part of the application included recommendations by
19 the project's consultants and subconsultants;
20 however, the project was built without implementing
21 those recommendations.

22 We -- I think the Board should be clearly --
23 somebody should tell the Board clearly who makes
24 the decisions. Examples are installations of
25 thermistors. There were recommendations throughout
26 the application. No thermistors are installed at

1 this time, although the lagoon has been built.
2 Would have been a good chance to find out how the
3 freezing went. The use of clay or impervious
4 material in the cutoff trench was a recommendation
5 of the geotechnical engineer; however, they used
6 sand.

7 INAC believes the Applicant should clearly
8 explain why only some of these recommendations of
9 the design team were accepted and only provided
10 those designs and drawings that were to be
11 implemented. Very difficult for interveners to
12 know what to comment on if we have five designs,
13 and we don't know which one's going to be
14 implemented.

15 Also, all drawings should be signed by the
16 appropriate professional, who has the
17 responsibility for design and implementation, and
18 the copies of the signed drawings provided to the
19 Board. Final as-built drawings should be provided
20 within 90 days of issuance of this amendment.
21 Normally, it should be 90 days after construction.
22 However, it's been constructed. We were willing to
23 give a little bit of leeway if the amendment's
24 issued.

25 Normally interveners comment on the designs of
26 the Applicant. Due to liability -- and we were not

1 paid by the Applicant -- interveners do not provide
2 designs to the Applicant. That's the Applicant's
3 job. We did get questions yesterday, Well, tell us
4 where to put them, tell us how many; that's not our
5 job. That's what they pay their consultants for,
6 and that's what should happen.

7 Operation and maintenance: The operation and
8 maintenance manual submitted by the applicant in
9 November 2007 should be accepted with certain
10 amendments. The manual was prepared by Dillon on
11 behalf of the Government of Nunavut's Department of
12 Community and Government Services for the Hamlet.
13 Contacts list, for example, should be updated. The
14 Senior Administrator and Municipal Works foreman's
15 there, but not who else to call. They should
16 include the Government of Nunavut's environmental
17 health officer, and a 24-emergency spill report
18 line should be there as well. I suggested the INAC
19 Water Resource officer's name and number should
20 also be there.

21 Since cell one or the old sewage lagoon
22 system -- and I'm not always clear on which one
23 they're talking about, but I assume it's the top
24 cell of the three-tier or triple lagoon -- will be
25 used as the emergency sewage disposal site. The
26 operation and maintenance plan should indicate how

1 this contingency will be maintained in an
2 acceptable manner, accessible when required, and
3 how it will be decanted, preferably after notifying
4 the Board and the inspector. The plan should
5 include a concept of managing the sludge build-up
6 in the lagoon and possible removal.

7 At the technical meeting in October, the
8 discharge criteria used during the lagoon decant of
9 the amended lagoon was unclear. A waste water
10 operation plan should be amended to the operation
11 and maintenance plan which could outline the timing
12 and discharge rate used during the decant.

13 Yesterday, we were told two weeks of decant
14 time. 100,000 cubic metres would be about .8 cubic
15 metres per second flow. It's quite a bit larger
16 flow than normal monthly flows. So that -- the
17 erosion capability, that should be considered.

18 High rates of release because of the -- at one
19 point at the technical meeting, we were told decant
20 would be three or four days, which I think they
21 backed away from. That's the -- that high rate
22 would cause erosion.

23 Contingency planning: Use of current treatment
24 systems as contingency measures and assessment of
25 how often normally the existing lagoon will be used
26 should be provided to the Board as a requirement of

1 the amendment. Is it going to be used once a week,
2 once a month, ten times for ten days in the middle
3 of January. On average, just an estimate, a guess.
4 Volumes put into the cell one should be included in
5 the annual report to the Board.

6 Abandonment and reclamation: Conceptual
7 abandonment and reclamation plans are now normally
8 required during licensing, so the Nunavut Board is
9 confident the Applicant is aware of the long-term
10 consequences of designs and decisions.

11 Indian and Northern Affairs Canada suggests
12 that the Hamlet of Cape Dorset submit an
13 abandonment and reclamation plan for the recently
14 constructed lagoon within six months of an
15 amendment if it's granted, then updated in greater
16 detail and for the Nunavut Water Board's approval
17 at least six months prior to the P Lake sewage
18 lagoon eventual abandonment. This license
19 condition is also included in the present license
20 up for renewal in Part G, Item 1.

21 The abandonment and reclamation plan would help
22 the Applicant to be in compliance with license
23 conditions, understand the scale of work needed to
24 eventually restore the lagoon site, and demonstrate
25 the Hamlet's commitment to effectively manage the
26 waste water treatment facility.

1 Abandonment and reclamation plan for the Hamlet
2 of Cape Dorset's current waste water treatment
3 system should be developed. I know it's not part
4 of this application, but it is imperative that this
5 is done and submitted to the Nunavut Water Board in
6 the immediate future. INAC suggests the plan be
7 submitted within six months, with a detailed plan
8 at least six months prior to abandoning the
9 facility.

10 So we're suggesting an abandonment plan be
11 provided and then updated to be a little more
12 detailed before they actually abandon it. That's
13 before the three-tier system and for what Mike
14 Atkinson calls the "honey pit", some people call
15 the emergency one, some people call the old one,
16 some people call the small one. We sometimes have
17 problems with the names of everything here.

18 The abandonment and reclamation plan for -- or
19 according to the submitted license amendment
20 application, INAC understands that once the P Lake
21 sewage lagoon becomes operational, the current
22 waste water treatment system will no longer be used
23 except for the contingency purposes. We'd like
24 that clarified by the Hamlet. I think they have a
25 couple of times.

26 License amendment: As a note, the Hamlet is

1 not in compliance with their existing license,
2 which has expired, although the terms and
3 conditions continue. The question of approving an
4 amendment to a noncompliant license will probably
5 be raised by the Board. INAC believes the new
6 lagoon will allow improved treatment and allow for
7 the Hamlet to move towards compliance.

8 Therefore, Indian and Northern Affairs
9 recommends that the Nunavut Water Board approve the
10 Hamlet of Cape Dorset's municipal license amendment
11 application. However, to ensure that the Hamlet of
12 Cape Dorset sewage lagoon has been constructed and
13 will be operated in a responsible manner, INAC
14 suggests some terms and conditions should be
15 included in the municipal license. I would like to
16 reiterate, the Licensee is responsible for
17 implementing all the terms and conditions.

18 Any sewage flowing into and out of the lagoon
19 should be monitored and estimated, with results
20 being reported in the annual license report, and
21 there should be an annual license report to the
22 Board.

23 Some way -- groundwater -- or ground
24 temperatures should be monitored. Thermistors are
25 one way of doing that, should be installed, and
26 thermistors could be installed in the berms, and

1 downstream of the berms or deep-seated
2 thermistors -- there's two ways to measure the
3 ground temperatures -- to monitor ground
4 temperatures and verify the geothermal analysis
5 provided by the Applicant. Collected information
6 should be provided to the Nunavut Water Board along
7 with data analysis results to the Board annually
8 for the first three years of operation.

9 The Licensee should confirm the compliance
10 point for lagoon releases with Environment Canada
11 and the INAC inspector. After this has taken
12 place, the Licensee should notify the Nunavut Water
13 Board of the agreed-upon compliance points.

14 At this time, the compliance point I believe is
15 where it's released into the environment, which is
16 at the outfall or end-of-pipe at the lagoon. I
17 suggested Environment Canada and INAC may be
18 willing to move that compliance point downstream;
19 however, the Hamlet must approach us, and we must
20 agree and provide that to the Water Board.

21 The Licensee should provide as-built drawings
22 within 90 days of the issuance of any amendment,
23 preferably after -- 90 days after any construction.
24 And the Licensee should provide waste water
25 operation plan as part of the operation and
26 maintenance plan within 90 days of the issuance of

1 the amendment, including a long-term sludge
2 management plan, and a discharge criteria.

3 Next steps: As referred to in the December
4 2000 letter to the Board, INAC is also concerned
5 about the renewal of the existing license,
6 including compliance. INAC will work with the
7 Licensee to reach compliance with the existing
8 license, including the terms and conditions of the
9 amendment. The existing three-tier lagoon site has
10 had failures in the past, which have caused leaking
11 from the cells and untreated waste water entering
12 into the ocean. The Municipality has been issued
13 an inspections directions under the Fisheries Act
14 by Environment Canada a couple of times to prevent
15 raw waste water entering fish-bearing waters.

16 After the P Lake lagoon is licensed, the Hamlet
17 should begin planning the abandonment and
18 reclamation of the three-tiered lagoon and
19 providing the Board with this plan for approval.

20 INAC has some concerns over the level of
21 treatment that is designed that will be attained in
22 the lagoon and over the discharge criteria. INAC
23 suggests the Board recommends that the Hamlet
24 consider the use of the downstream wetlands as
25 additional treatment for lagoon releases, including
26 slow releases of effluent over the growing season.

1 However, that's not part of the application, and if
2 wetlands are to be used as additional treatment,
3 the Hamlet and/or Community and Government Services
4 need to apply with adequate designs to amend the
5 Cape Dorset license for approval of the wetland
6 treatment.

7 Monitoring of the new lagoon is necessary to
8 confirm stability of the structure and level of
9 treatment. However, the Board must receive the
10 monitoring information if it is to confirm that the
11 Hamlet is meeting the terms and conditions of the
12 license. The INAC inspector will review annual
13 reports to assist in determining the completeness
14 of the reports and compliance with the license.
15 I'd like to reiterate, the Water Board needs to get
16 annual reports on your operation, and it's a
17 requirement of the existing license of the Hamlet,
18 and there is some lacking there.

19 INAC would like to thank the Board for
20 permission to make an intervention at this hearing,
21 and I'd -- and I and those with me would like to
22 thank the Hamlet for its cooperation and
23 hospitality. That's the end of my presentation,
24 Mr. Chair. Thank you.

25 ACTING CHAIR: Thank you, Jim. Is there
26 anything from Andrew he wants to add, or the

1 presentation is done?
2 MR. ROGERS: We feel he'll probably
3 get a question or two, so...
4 ACTING CHAIR: Okay, just before I call
5 on the various parties, just a question, I guess,
6 Jim, for the -- from the Board. Are there any
7 other impediments or concerns with the Board
8 issuing a license amendment for the newly
9 constructed sewage lagoon, should the Board decide
10 to do so?
11 MR. ROGERS: You're in a quandary. At
12 this time, the Hamlet not only is out of compliance
13 with the existing license, the existing license is
14 expired. The Hamlet has applied to renew their
15 license, and INAC, along with some of the other
16 interveners, has agreed that a short-term renewal
17 with the existing terms and conditions would be
18 acceptable. It will be extremely difficult for the
19 Board to amend essentially a nonexistent license.
20 I would suggest that there's two routes. One
21 would be, with the cooperation of the Applicant, to
22 issue a license that includes a renewal of those
23 sections and the amendment or renew the license and
24 add this amendment. However, I would request or
25 suggest to the Board that the renewal should be
26 fairly short, two years or less, and that the

1 Hamlet re-apply for the renewal with the entire
2 water-use system within the Hamlet, abandonment and
3 reclamation plans, clean-ups, monitoring included,
4 the waste dumps, both the solid waste dump and
5 the -- I guess what you would call the metal waste
6 dump, the separation of hazardous waste from
7 regular waste, the monitoring of leaching, or the
8 flow of water that comes through or around --
9 through those has not been upgraded.

10 I believe within the water license, the Hamlet
11 should give some indication of future growth, so
12 where they would need to modify the stream within
13 the Hamlet. If they want to put in a new road and
14 divert the streams and stuff, they should have a
15 conceptual plan of that ahead of time.

16 There was -- the inspector last summer did
17 write to senior people within the Government of
18 Nunavut at the Minister's level on the modification
19 required for the construction of the P Lake lagoon.
20 We would like to not see that happen again but --
21 and anything like that that's in the future, we'd
22 like to see in the renewed license. However, at
23 this time, we feel it's better to have the Hamlet
24 working under a license that we can enforce, rather
25 than working under the Act, which essentially
26 doesn't allow them to do anything.

1 ACTING CHAIR: Thank you, Jim. Are
2 there any questions from the Hamlet -- oh, sorry,
3 before I go any further, I don't have the names of
4 the -- the names of all the people who came in from
5 Cape Dorset, but I do want to welcome the Community
6 members in the back of the room. Thank you for
7 coming. Later on, you'll be given an opportunity,
8 hopefully, to ask a few questions. I know a few of
9 you want to, and I will definitely include you
10 under probably Item 13. So just bear with us, we
11 have to get through our things also, but we'll
12 definitely get to you.
13 Bill, do you require any further clarification
14 on anything that's been said so far?
15 MR. TILLEMANN: No.
16 ACTING CHAIR: Thank you. Then I will
17 call on the intervener -- or, I guess, the
18 Licensee, sorry, the Hamlet. Do you have any
19 questions for INAC?
20 MR. STEWART: Thank you, Mr. Chair.
21 Yes, we do, and Bhabesh Roy would like to -- I'm
22 sorry, Colin would like to make a few comments at
23 this time.
24 ACTING CHAIR: Okay, Colin?
25 HAMLET QUESTIONS INAC:
26 MR. JOYAL: Thank you, Mr. Chairman.

1 Colin Joyal, Dillon Consulting. Thank you,
2 Mr. Rogers, for your presentation.

3 Just to address two of the items there. One
4 was the as-built drawings, which were submitted
5 along with the November 13th correspondence, and
6 your suggestion to have that as a condition of the
7 license to submit as-built drawings within 90 days.
8 Typically the facility is not built so that you're
9 not discussing as-builts at the hearing, so I would
10 agree with that.

11 And some of the comments that did come up,
12 there may be some inclusions of information. One
13 in particular, there was reference to the south
14 road, the typical ditch section, was provided in a
15 report August 27th, 2007. That information can be
16 added to the as-built drawings along with any
17 relevant requests from this hearing, if that
18 condition is imposed as part of the license.

19 In addition, the O & M manual was provided
20 along with that same correspondence on November
21 13th, 2007, which does include information on
22 discharge rates, point of compliance, and discharge
23 criteria. Again, I agree with the comment that the
24 O & M manual be submitted within 90 days of
25 issuance of the license, as the O & M manual, as
26 everyone understands, needs to be updated

1 periodically and, in this case, would be updated to
2 reflect the conditions presented in the license, if
3 awarded. Thank you.

4 ACTING CHAIR: Thank you, any further
5 comments from the Hamlet?

6 MR. FUENTES: Pat Fuentes, Community
7 and Government Services. The other question, it
8 was regarding thermistor, the depth and then the
9 quantity. We have agreed with our consultant we
10 will install three thermistors along the berm in
11 order to find out what is the level of the
12 freeze-up, and this will be installed within nine
13 months from now, time permitted and allocation of
14 funds.

15 The others, we will develop and report on that
16 information, and it will be submitted to the Board,
17 if it's required. Oh, excuse me, the other
18 question, it was a drop. The drop is going to be
19 anywhere between 12 and 15 metres from the existing
20 crest of the berm. I think that will answer the
21 question to Jim Rogers. Thank you.

22 ACTING CHAIR: Thank you. Any further
23 questions, Art?

24 MR. STEWART: Thank you, Mr. Chair.
25 No, there's no further questions.

26 ACTING CHAIR: Thank you. Is there any

1 comments from the Government of Nunavut-Department
2 of the Environment?
3 MR. ATKINSON: Mike Atkinson, Government
4 of Nunavut-Department of Environment. I don't have
5 any questions. Thank you.
6 ACTING CHAIR: Thank you, Mike. Is
7 there any questions from Environment Canada?
8 MS. SPAGNUOLO: Thank you, Mr. Chair.
9 Collette Spagnuolo with Environment Canada. No, we
10 have no questions for Indian and Northern Affairs
11 at this time.
12 ACTING CHAIR: Thank you. Any questions
13 from BGC Engineering?
14 MR. HARTMAIER: Mr. Chair, Holger
15 Hartmaier, BGC Engineering. No questions at this
16 time, thanks.
17 ACTING CHAIR: Thank you very much. Is
18 there any questions from the Staff? Do I call on
19 the community concerns before the Staff, or do I --
20 MS. FILIATRAULT: Dionne Filiatrault,
21 Mr. Chairman. Yes, you -- if the public has any
22 questions to INAC, then by all means.
23 ACTING CHAIR: Is there any questions
24 from the public on the presentation that INAC just
25 gave? No, then Staff please proceed. Sorry,
26 somebody had a question? Get her a mike, please,

1 and she may have a question for INAC. State your
2 name.

3 COMMUNITY QUESTIONS INAC:

4 MS. PARR: Yesterday, there was a
5 question. It was about the water source for our
6 community here. It's very deep. My late husband
7 used to work for the local government here, and
8 just recently, it's very deep, it was -- this is
9 known. For many years, it's been our water source
10 for the longest time, and that person was concerned
11 about -- there was a question with regards to our
12 water source here yesterday; it was not answered.
13 I just want to get back to that. Thank you.

14 ACTING CHAIR: INAC?

15 MR. ROGERS: Jim Rogers, INAC.

16 During the presentation, I noted that we would
17 like to see the Hamlet re-apply for the renewal of
18 their license within the short term to deal with
19 those issues that were not part of this amendment
20 and are not in the existing terms and conditions.

21 One of the issues that has been raised -- or
22 two of the issues, one of the issues that has been
23 raised is the water source, and then there's the
24 water table, elevations, additional information. I
25 would suggest that as an intervener, the -- for the
26 application for the Hamlet, we would ask those

1 questions, and we would require those to be
2 included.

3 Yesterday, we heard the full supply level
4 elevations of both P Lake lagoon and the T Lake and
5 that there was a difference in elevation, but the
6 bathymetry of the lake is provided but not in a
7 form that's easily viewed by the -- people like me
8 and the public. So that's one reason for a
9 short-term license renewal, to -- so they come back
10 with a complete license application that will
11 include that information, those concerns.

12 Other concerns are flow coming down off the
13 mountain side on to Cape Dorset. There's a couple
14 others, I can't remember them offhand, but that's
15 one of the reasons we suggest that it's a
16 short-term license of the existing license. Thank
17 you.

18 ACTING CHAIR: I guess I'm concerned,
19 Dionne. I don't really think the question -- I
20 don't really know what the question was. Something
21 was said yesterday, and I think we have to know
22 what was said so we can answer her question.
23 Dionne?

24 MS. FILIATRAULT: Thank you, Mr. Chairman.
25 Dionne Filiatrault.

26 I think the question of concern to the Elder is

1 the fact that their current water supply is a very,
2 very deep lake, and they're concerned that there's
3 potentially a link between the sewage lagoon and
4 the water lake, not overland, but underflow. And I
5 think she's worried that there's potential
6 contamination from the sewage path towards the
7 water lake. And I think, while we can get the
8 Proponent to clarify, there is a difference in
9 elevation of the actual two systems, and it would
10 require water to flow uphill for it, in fact, to
11 be -- there to be contamination between the two
12 systems.

13 ACTING CHAIR: So I think then for
14 clarification yesterday, we heard that not
15 guaranteed but almost impossible for the water lake
16 to be ever contaminated because of that?

17 MS. FILIATRAULT: (NONVERBAL RESPONSE)

18 ACTING CHAIR: Does that answer your
19 question?

20 MS. PARR: The reason why I
21 commented on this, there was our Qallunaaq worker
22 at our behalf in Dorset, and he was quite
23 knowledgeable at the location the water source
24 here. It's very deep, and I think there was a
25 question in regards to how deep is the water. Does
26 anyone know how deep is the water? Our water

1 source is here, and that was asked, and there was
2 no more comments onto this issue. That's why I
3 brought it up again, just for clarification. Thank
4 you.

5 ACTING CHAIR: I think that was brought
6 up by Cal a number of times, and I think, Mr. Roy,
7 you showed various charts and so forth. Do you
8 have the depth of that lake, yes or no?

9 MR. ROY: This is Bhabesh Roy.
10 Thank you, Mr. Chairman. Yes, I have the contour
11 map of the water source, the potable water source.
12 From there, I can easily tell them what is the
13 depth of the water source. And also we have the
14 southern map of the P Lake lagoon, so from there,
15 we can easily compare the comparative water
16 elevation of these two facilities.

17 ACTING CHAIR: Thank you. You can take
18 it under advisement, please, and if possible
19 between now and the next hour or so, can you figure
20 out the depth of this lake? That's been brought up
21 a number of times yesterday and now again this
22 morning. Just for clarification is it a hundred
23 feet, is it 50 feet? Can you please figure it out
24 and let us know so we can pass it on to the public?
25 I think it's a question that they've asked.

26 MR. ROY: Yes, this is Bhabesh

1 again.

2 Yes, Mr. Chairman, I'll make photocopies of the
3 contour map and make it available to the Board.

4 ACTING CHAIR: I don't think it's
5 necessary for photocopies; I think it's the depth
6 of the lake. I mean, we have photocopies already.
7 It's not what we're asking. Does anybody in Cape
8 Dorset know what the depth of the lake is? I mean,
9 somebody has to know, I should imagine, by dropping
10 something down and do a measurement.

11 MR. ROY: Thank you, Mr. Chairman.
12 Yes, I will try to present this information.

13 ACTING CHAIR: Thank you, Mr. Roy.
14 Okay, any other questions from the -- or, sorry,
15 the public first? Can I have a name?

16 MS. PARR: My name is Alikak Parr.
17 I have a question now in regards to sewage waste of
18 the lagoon. I attended at the last meeting regards
19 to the same issue, and I'm not sure if the culverts
20 up there at the water source has been inspected
21 lately or it has been inspected at all, but the
22 culverts, the pipes are deteriorating, and it's
23 very obvious they're rusting; that's obvious
24 deterioration.

25 And I would like to ask a question maybe
26 towards Hamlet staff. As a Community people, we've

1 been concerned about this for the longest time, and
2 it's rusting, and I would like to ask a question if
3 it's a part of the assessment during this meeting.
4 That was my question. Thank you.
5 ACTING CHAIR: I've got to get
6 clarification, gentlemen, and it's more on, I
7 guess, your side on the -- what's the word I want,
8 sorry, not inspection but enforcement, sorry, I
9 lost my train of thought -- on the enforcement, so
10 would one of you, please, answer this lady,
11 Mrs. Parr?
12 MR. KEIM: Thank you, Mr. Chair,
13 Andrew Keim from INAC.
14 If Alikak could please tell me where the pipes
15 are that she's talking about because I don't know.
16 MS. PARR: Thank you. The pipes
17 that would be connected to lagoon, is that going to
18 be inspected periodically? Is that going to be
19 part of the monitoring programs? Like I said
20 before, we have -- there's an old culvert that is
21 being used. That was my question, if that's going
22 to be under monitoring programs. Thank you.
23 ACTING CHAIR: Hamlet?
24 MR. STEWART: Art Stewart, Hamlet of
25 Cape Dorset. Thank you, Mr. Chair.
26 I can assure Alikak that our water supply is

1 tested. These tests are sent in to the
2 environmental people. They used to be sent every
3 week, but they only need them now every two weeks.
4 They test the water. The water is tested at the
5 water point, and we also take two samples out of
6 our trucks, and to date, we have not had any
7 problems. The tests always come back that the
8 water is good.

9 As far as the pipes go from T Lake, if the
10 water is good at the water point, obviously there
11 is nothing, there's no contaminants that are
12 getting into the pipes to cause the water not to be
13 good. So to answer the question, yes, we do
14 testing on our water supply on a biweekly basis.

15 ACTING CHAIR: Thank you. For INAC,
16 when was the last time the facilities were
17 inspected by INAC, and prior to that, how often do
18 you inspect this community?

19 MR. KEIM: Thank you, Mr. Chair.

20 The last inspection --

21 ACTING CHAIR: Name?

22 MR. KEIM: Andrew Keim from INAC.
23 The last inspection was July or August, right at
24 the end of July, beginning of August of this year,
25 and previous to that -- oh, sorry, 2007, yes, and
26 looking forward. And before that, it was 2006.

1 Most communities, if not every community, as that
2 is our goal, is to inspect every community once a
3 year.
4 ACTING CHAIR: Okay, thank you. Any
5 other questions from the public? Don, there's a
6 lady beside you in red.
7 MS. QUYIANAQTULIAQ: Can you hear me now? Can
8 you hear me now? Now, my question is -- my name is
9 Mayuriaq Quyianaqtuliaq. When I was a member of
10 the Hamlet Council then, and I attended the last
11 meeting in regards to our sewage lagoon. My
12 understanding was I thought there was going to be
13 culverts connected to the sewage lagoon. And if it
14 should get, if there should be an overflow in that
15 area, there's a natural land where we used to pick
16 berries close to the lagoon. I understand that the
17 landfill was going to be -- but my understanding
18 was at that time, that's very stable where we used
19 to pick berries, and that it's quite sandy up
20 there, and people used the sand pit for building,
21 for constructions. And I just wondering through
22 the thermal testing, and I just want to know if
23 that is stable, like not just on the surface of the
24 land where you can see. The culvert should have
25 been plugged somehow, and if it should be faulty,
26 or if that even -- is that clear? Is that clear --

1 are those culverts always clean? Do you know the
2 fact that we don't have to worry about those
3 culverts in that area? That's the question I have.
4 Thank you.

5 ACTING CHAIR: Okay, Hamlet? Dionne?

6 MS. FILIATRAULT: Thank you, Mr. Chairman.
7 Dionne Filiatrault.

8 I think we're kind of getting -- you know, we
9 welcome the opportunity for the community to make
10 all the comments and express their concerns. There
11 will be an opportunity following INAC's
12 presentation and then following the geotechnical
13 engineer's presentation, the Board can open the
14 floor to the public again. But right now, INAC is
15 the -- I guess if there's questions related to
16 inspections, enforcement, and any of the
17 recommendations that INAC's made in their
18 presentation, this would be the time to ask the
19 questions to INAC.

20 ACTING CHAIR: Thank you, we will take
21 your question under advisement, and you can make a
22 note from the Hamlet and perhaps give an answer
23 later on, so we'll just defer it for now.

24 Go ahead, INAC.

25 MR. KEIM: Thank you, Mr. Chair.
26 Andrew Keim.

1 If Alikak and Mayuriaq next year, when I come
2 back during my inspections, can make themselves
3 available, I can work with the Hamlet. I'll make
4 arrangements to let them know that I'm coming to
5 town. They can show me what it is that they have
6 concerns about, and I will include it in next
7 year's inspection. Currently right now we don't
8 have the time. I'm just not sure exactly what it
9 is that they want me to look at, so next year when
10 there's no snow, when I'm back here in the summer,
11 I commit to working with them and bringing this to
12 a resolution for the Board.

13 ACTING CHAIR: Thank you. Okay, any
14 other questions from the community? Then, Staff,
15 do you have comments? Jim?

16 NWB STAFF QUESTION INAC:

17 MR. HOHNSTEIN: Thank you, Mr. Chair.
18 David Hohnstein.

19 I've got a few quick questions here with
20 respect to Environment Canada's recommendation
21 yesterday on toxicity testing for the effluent.
22 Does INAC see toxicity testing as part of this
23 license, and if so, have these been applied or
24 included in other licenses and, you know, have they
25 been in compliance? And again if so, has it been
26 the trout bioassay or has it been alternatives, as

1 Environment Canada had suggested?
2 ACTING CHAIR: INAC?
3 MR. KEIM: Thank you, Mr. Chair.
4 Andrew Keim from INAC.
5 I'm aware of two other licenses that have a
6 bioassay component. To the best of my knowledge,
7 none of the bioassays that have actually -- and
8 they use trout -- none of the bioassay samples that
9 have been collected, the trout didn't survive
10 because of other factors, not necessarily anything
11 to do with anything they were measuring for the
12 effluent. I don't find the test to be particularly
13 a good indicator because of different factors. So
14 I know of two -- it's in two licenses, but I don't
15 know of anybody who's ever been able to come into
16 compliance with it.
17 ACTING CHAIR: Thank you. Staff?
18 MR. HOHNSTEIN: Thank you. David
19 Hohnstein, again Water Board.
20 Just a quick question on sampling procedures,
21 and are there any issues with the sampling and
22 monitoring that takes place under the current
23 license, I guess, for the lagoon operations, and
24 you know, are there any recommendations that INAC
25 can provide?
26 ACTING CHAIR: INAC?

1 MR. KEIM: Thank you,
2 Mr. Chairperson. Andrew Keim.
3 I believe that INAC is closely working with the
4 Board, and we're planning a meeting here in the
5 not-too-distant future to talk about topics exactly
6 like this, so I think I'll defer any comments like
7 that to the meeting we have so that we can move
8 forward positively on future licenses.
9 ACTING CHAIR: Okay, thank you. Staff?
10 MR. HOHNSTEIN: Just -- sorry, Mr. Chair,
11 David Hohnstein.
12 Just a follow-up to the sampling and
13 monitoring. I guess with respect to some of the
14 components that are required for the Hamlet's
15 monitoring under the license, particularly, I
16 guess, BOD monitoring. Is there any issues that
17 INAC may have identified in their compliance that,
18 I guess, could be included in another license
19 renewal conditions? Is there any problems with the
20 monitoring of that particular component? Is there
21 any alternatives, I guess?
22 ACTING CHAIR: If I can, Bill, are you
23 still there?
24 MR. TILLEMAN: I am.
25 ACTING CHAIR: Tom, you still there?
26 THE CHAIR: I am.

1 ACTING CHAIR: Okay, just want to check
2 in every so often, make sure you guys are still
3 there; I don't want to lose you. INAC, go ahead.
4 MR. KEIM: Thank you, Mr. Chair.
5 Andrew Keim.

6 A number of the components that are currently
7 in the monitoring programs in municipal and other
8 licenses, particularly Class A licenses, have
9 sampling that requires that the municipality or the
10 proponent, the licensee, to capture a sample and be
11 able to have that sample into a lab within 24
12 hours.

13 If you're in a community such as Cape Dorset or
14 any community in Nunavut and transportation is an
15 issue, it is sometimes, although probably not every
16 time, it is hard for the licensee to ensure that
17 that sample makes it from point A to point B within
18 24 hours at a given temperature and not frozen and
19 all the rest of the stuff that goes with it.

20 Currently there is no lab in Nunavut to address
21 these types of issues; these time-sensitive issues.
22 I think it's a -- it is a problem. It affects the
23 job that I do as well. A lot of the samples that I
24 took this year did not make it to the lab on time
25 simply because of transportation. That doesn't
26 make the samples totally useless; they can still

1 run the tests, but I can't use that result with
2 any, you know, definitive, you know, judgment on
3 it. Thank you.

4 ACTING CHAIR: Thank you. Any other
5 questions?

6 MR. HOHNSTEIN: Yes, Mr. Chair, thank
7 you. David Hohnstein.

8 There's been a little bit of discussion about
9 the emergency lagoon and the use of this cell one,
10 whichever, you know, it's referred to, and I was
11 wondering if INAC sees application of similar
12 monitoring requirements for this lagoon, as it
13 will, no doubt, require annual decanting every year
14 to remove water to make sure it's got the capacity
15 to be available for emergency use, and if so, I
16 guess, you know, would toxicity testing be applied
17 on that decant as well.

18 ACTING CHAIR: INAC?

19 MR. KEIM: Thank you,

20 Mr. Chairperson. Andrew Keim.

21 I'm not sure if the toxicity testing can even
22 be added to an amendment to an existing license
23 that's currently expired. So I don't know if you
24 could actually add that to the license as they're
25 talking about an amendment to an existing license.
26 And whether or not the acute toxicity of fish

1 should be added to any license here in Nunavut, I'm
2 not convinced that it actually is applicable, and
3 probably it causes more concern than the value of
4 the test is worth.

5 ACTING CHAIR: Staff?

6 MR. HOHNSTEIN: Thank you, Mr. Chair.
7 David Hohnstein.

8 Just another quick follow-up to that response.
9 Is there any other recommendations as far as a
10 similar test or other tests that could be applied
11 in place of the toxicity testing?

12 ACTING CHAIR: INAC?

13 MR. KEIM: Thank you, Mr. Chair.
14 Andrew Keim.

15 Maybe I should rephrase my comment earlier.
16 It's not that I believe that all lethality tests
17 are not applicable; it's just the specific one for
18 trout.

19 Again, just to give a history to the Board,
20 we've gone out, we've taken samples of a potable
21 water source that should have been absolutely
22 pristine and people are drinking it, and we send it
23 south, and they throw the trout in, and the trout
24 are dead within 24 hours, and there's nothing wrong
25 with the water. The water's very, very hard.

26 And trout grow up, they're fish that are down

1 south, they're not used to that, and they die.
2 Char would have survived; trout die. Is it a good
3 indication that the water, you shouldn't be
4 drinking it? Probably not.
5 So as an alternative, the Daphnia. I can't
6 remember the name of the Daph -- Daphnia Magna is
7 the alternative that I would suggest. Thank you.
8 ACTING CHAIR: Thank you. Staff,
9 comments? Okay, are we going to be a while with
10 these questions? The reason being is it's like 20
11 after 10, and I see the coffee is ready, and
12 people --
13 MS. FILIATRAULT: I have three questions.
14 ACTING CHAIR: Okay, let's carry on.
15 I'd like to get INAC done, if we can, before
16 coffee.
17 MS. FILIATRAULT: Thank you, Mr. Chairman.
18 It will require possibly some clarification on
19 one point from the Hamlet. Does the Nunavut Water
20 Board -- we've heard a lot about thermistors, so
21 does the Board need to confirm the installation of
22 these thermistors and an assessment period on
23 thermistors to monitor the freeze-back before the
24 system can actually be commissioned for use?
25 ACTING CHAIR: INAC?
26 MR. ROGERS: Jim Rogers, INAC.

1 Actually I was going to ask the Hamlet a
2 question about the thermistors. The installation
3 of the thermistors should occur, I believe, within
4 90 days of this hearing because the Hamlet has
5 stated that they will install them. They need to
6 provide the information to the Water Board on
7 thermistor depth, give locations, and the frequency
8 of monitoring; are they going to monitor these
9 thermistors once or twice a year, or are they going
10 to put a continuous monitor on there and monitor
11 daily temperatures.

12 I believe the designs for the thermistors, the
13 locations, should be provided to the Board within
14 90 days of this hearing. I would suggest that the
15 Board does not have to wait to approve an amendment
16 or this amendment for that to be in place.

17 However, the Board should require or I suggest
18 the Board should put in the license that the
19 comparison to the modelled data should be provided
20 on a fairly frequent basis, like close to the end
21 of the first summer and close to the end of the
22 first winter to show freeze-back amounts and the
23 amount of the active layer. And included in there
24 is a special report, which the Board will review
25 and provide comments back, and then the Board can
26 decide whether they need to approve or not. But I

1 don't think it should hold up the amendment itself,
2 but I would like to see those designs fairly
3 quickly, and design locations and frequency of
4 monitoring.

5 ACTING CHAIR: Thank you, Jim. Staff?

6 MS. FILIATRAULT: Thank you, Mr. Chairman.
7 Dionne Filiatrault.

8 So just to confirm, it's INAC's recommendation
9 that the thermistors should be installed within 90
10 days of issuance of a potential license, and that
11 the assessment of that material can come throughout
12 a later date, but that the installation of the
13 thermistors should be done prior to commissioning
14 of the facility, yes or no?

15 ACTING CHAIR: INAC?

16 MR. ROGERS: Yes.

17 ACTING CHAIR: Staff?

18 MS. FILIATRAULT: Thank you, Mr. Chairman.
19 Dionne Filiatrault.

20 If I could, one of these questions, I guess it
21 is to INAC, but it may require some clarification
22 from the Proponent.

23 In your discussion, you talked about the
24 wetland and if the community is proposing to use
25 the wetland and consider the wetland as part of the
26 sewage treatment system. It's my understanding

1 that the use of the wetland as it is now is more of
2 a natural wetland, that there is no plans to go in
3 and actually engineer a wetland for this community,
4 that the wetland is being viewed as sort of a
5 secondary bonus treatment for this community, and
6 I'm not sure what INAC's recommendation on how
7 you're going to go and actually have them submit
8 designs for a natural wetland. If it was an
9 engineered wetland, I could see where that would
10 apply, but I'm trying to understand how you want
11 them -- what information this Board would ask them
12 for a natural wetland.

13 ACTING CHAIR: INAC?

14 MR. ROGERS: Jim Rogers, INAC.

15 Under this amendment the wetland is not part of
16 the water treatment -- the effluent treatment
17 system. However, throughout the amendment, the
18 meetings, the technical meetings, it always was
19 mentioned, oh, that the wetland will polish the
20 water and make it better and stuff like this.

21 At this time, my personal feeling is that this
22 is the same as dumping it straight into the sea
23 right out of the sewage lagoon. If they want to
24 use the polishing within the wetland, I suggest
25 that they come back to the Board with a proper
26 design to modify the wetland from an -- or some

1 sort of controlled spreading of water and -- so
2 they can come up with an idea of how much
3 improvement in the treatment of the effluent will
4 occur by the wetland.

5 Right now they're saying it's going into a
6 wetland, and therefore, it's better. How do they
7 know? It's a gut feeling? Okay, say it's a gut
8 feeling. If they've tested it, tell us. But at
9 this point, it is not part of the effluent
10 treatment system. If it is part of the effluent
11 treatment system, then work out the design, do the
12 monitoring, and tell us how much improvement that
13 does occur. That's all that -- that's really what
14 my point is, it's not part of this amendment.

15 ACTING CHAIR: Thank you, Jim. Hamlet,
16 do you have any comments?

17 MR. JOYAL: Thank you, Mr. Chairman.
18 Colin Joyal, Dillon Consulting.

19 Yes, I'm in agreement that the lagoon design
20 does not include treatment from the wetlands. The
21 lagoon is designed to meet the discharge criteria
22 at the end-of-pipe. The wetland's location
23 through, I would say through good site selection,
24 it makes the site preferable and adds to the
25 advantages of locating a lagoon at that site.

26 If down the road, it's deemed that the wetlands

1 should be included in the license or included in
2 the treatment process, then I agree that it would
3 have to be designed, and then the point of
4 compliance would then be moved to the end of the
5 wetlands.

6 ACTING CHAIR: Thank you. Staff, last
7 one?

8 MS. FILIATRAULT: Thank you, Mr. Chairman.
9 Just a final point on some follow-up from
10 yesterday based on a comment on the effectiveness
11 of the lagoons. It was compared to two other
12 communities, Pond Inlet and Hall Beach, and the
13 request was made to INAC to provide some indication
14 of compliance and their inspection overview of, you
15 know, how the systems in those communities are
16 operating for those communities.

17 ACTING CHAIR: Do you need that question
18 read again, or did you both understand that?

19 MR. KEIM: Andrew Keim from INAC.
20 To confirm, I believe it was Hall Beach and
21 Pond Inlet? That's correct, Mr. Chair? I recall
22 that I've been to both communities, and while I
23 don't have my notes in front of me, I could
24 provide -- and I know I have provided copies to the
25 Board. I believe that there were issues with both
26 of those communities, and both were noncompliant in

1 a number of areas of their license.
2 ACTING CHAIR: Dionne?
3 MS. FILIATRAULT: Mr. Chairman, I can
4 advise the Board that if there are inspection
5 reports that were completed for those communities,
6 they likely have been provided to the Board, to the
7 overall public registry that the Board holds, but
8 not necessarily to the public registry for this
9 particular file.
10 ACTING CHAIR: Okay, INAC, do you want
11 to -- no questions, no? So what are you
12 suggesting?
13 MS. FILIATRAULT: It may be of use,
14 Mr. Chairman -- Dionne Filiatrault -- to file
15 those, the most recent inspection reports that have
16 been completed by Andrew or Water Resources as
17 exhibits to this application.
18 ACTING CHAIR: Okay, and that can be
19 done, Andrew?
20 MR. KEIM: Yes, Mr. Chair. Andrew
21 Keim.
22 ACTING CHAIR: Thank you. Okay, is that
23 your final comment, Staff?
24 MS. FILIATRAULT: That's it, Mr. Chairman.
25 Thank you.
26 ACTING CHAIR: Bill, do you have any

1 comments or questions at the present time?
2 MR. TILLEMANN: No, sir, thank you.
3 ACTING CHAIR: Thank you, sir. Then we
4 will take a -- sorry, Hamlet?
5 MR. ROY: This is Bhabesh Roy.
6 I'm talking about the thermistor as Dionne
7 mentioning the question to INAC. If the thermistor
8 requirement is before licencing or a pre-condition
9 of the licensing.
10 As you understand that, we are in a situation
11 where we cannot bring any equipment in this
12 situation. We have to wait for the sea lift. So
13 if you say that we have to keep the license after
14 the thermistor will be installed, then we have to
15 wait for when the sea lift will be available to
16 bring the equipment and then do the boring and
17 install the thermistors.
18 I think the solution -- my solution is we can
19 submit the manual location plan specification
20 offhand, and once the facility will be available,
21 we can bring the equipment, and we can do the
22 construction. Thank you, Mr. Chairman.
23 ACTING CHAIR: Thank you. Go ahead.
24 MR. CAVANAGH: Can I add a comment too,
25 Mr. Chairman?
26 ACTING CHAIR: Of course, please.

1 MR. CAVANAGH: Thank you. Paul
2 Cavanagh. I'll be brief.

3 The intent -- I'd just like to clarify the
4 intent of the monitoring, and the need to have it
5 in expediently kind of hinges on that. The -- in
6 my mind, the intent of the monitoring is two-fold:
7 To confirm the assumptions that we've made in the
8 design; the second is to collect data that would
9 help us provide maintenance and ongoing operations
10 in the future.

11 So the monitoring system for thermistors is not
12 intended as a one-shot to trigger whether we can
13 start filling or not. Our design initially
14 included immediate filling right from day one, and
15 we've shown by thermal modelling that it should
16 work even when filling is ongoing.

17 So I'm not totally comfortable with the idea
18 that the licensing needs to be connected to whether
19 the monitoring is in place. If the Proponent is
20 agreeing to supply the monitoring within a certain
21 time frame, as Mr. Roy pointed out, there's
22 practical limitations that may come into play in
23 that, and to hold it as a condition of the license
24 might be very onerous for the Proponent, and I
25 would suggest that it's not necessary.

26 The other issue that I'd like to briefly touch

1 on that INAC has brought up, the whole idea of us
2 supplying our monitoring plan for review. Early on
3 in the proceedings, we have indicated that the
4 Proponent and members of the Proponent will be the
5 engineers of record, and if we develop plans that
6 we think is appropriate for our designs and
7 monitoring, it is our responsibility to do that and
8 make sure that it's operating in its intended use.

9 I'd just like some clarification about when
10 we're submitting plans, when we're submitting
11 annual reports of monitoring. Is it of the
12 understanding that those plans and reports have to
13 be approved by the Board or some of the enforcing
14 agencies, or does the ultimate responsibility still
15 rest with the Proponent and the engineer of record?

16 ACTING CHAIR: Thank you. Staff?

17 MS. FILIATRAULT: Dionne Filiatrault,
18 Mr. Chairman.

19 No, that's fine; I appreciate the
20 clarification.

21 ACTING CHAIR: INAC?

22 MR. ROGERS: Jim Rogers, INAC.

23 Throughout this process, the consultants to the
24 Applicant have recommended monitoring. This
25 project was built in the summer of 2007, but there
26 was no monitoring installed. As the intervener to

1 this, INAC has difficulty in understanding why
2 recommendations of the designers were not
3 implemented by the Applicant. We would like the --
4 I don't think we have to approve the monitoring
5 plan, but we have to understand the monitoring
6 plan.

7 The reason to provide the designs beforehand is
8 so we can understand what you're trying to monitor
9 and whether that -- we feel that fills out your --
10 not only your due diligence but our cleanup in case
11 of failure.

12 So I would like to see some way to monitor
13 freeze-back fairly rapidly; preferably 90 days from
14 this date. I'm not much of a geotechnical
15 installation guy. I don't know if you can use the
16 air drill that Bronik (phonetic) has in town to put
17 in the thermistors or not. They're fairly deep, 15
18 metres. But is that 15 metres off the top of the
19 berm, which doesn't go very far under the natural
20 level because the berms are fairly high? So that's
21 just the berms themselves; you're missing some of
22 the foundation that way.

23 So I suggest that you may not hold up the
24 amendment, Mr. Chair, but I suggest that
25 installation and monitoring is expedient, within
26 reason. You know, I'm not saying you have to go

1 hire the Royal Navy's Hovercraft to bring up a
2 separate drill. But if it's possible, I would like
3 to see the monitoring installed and put in place as
4 early as possible within the dates. It would have
5 been fortuitous if you would have installed them
6 last summer when it was not frozen, easy to dig
7 through, the stuff was unconsolidated.

8 Now, as for frequency of monitoring, we have
9 another project where they monitor the thermistors
10 once a year, so the depth of the active layer
11 depends on the date they arrive, sometimes August
12 1st, sometimes August 5th, sometimes July 15th.
13 However, most of us understand that the maximum
14 depth of the active layer probably occurs between
15 the 15th of September and the end of October.

16 Therefore, we would like the thermistors to be
17 monitored more frequently. I don't think minute by
18 the minute. I suggest either once a week, once a
19 day, you know, something like that. Electronics
20 have gone a long way. They can monitor that stuff;
21 you just need to download it. Thank you,
22 Mr. Chair.

23 ACTING CHAIR: Thank you, Jim. Staff?

24 MS. FILIATRAULT: Thank you, Mr. Chair.

25 Dionne Filiatrault. I'll make this very, very
26 quick. It's a yes-or-no question to INAC.

1 We heard this morning that the Proponent --
2 Applicant has said in all likelihood they will not
3 be able to install thermistors until I believe it
4 was nine months. Is that this acceptable to INAC,
5 yes or no?
6 ACTING CHAIR: INAC?
7 MR. ROGERS: If it's not possible,
8 it's not possible. However, I suggest that if it's
9 possible, they do it. So I can't tell you what
10 equipment's in town or nearby at this time, but if
11 they need to bring in equipment, then that's just
12 the way it is. But if there is equipment that they
13 can use to install, I would suggest we would like
14 to find out the maximum freezing that has happened
15 this winter, would be ideal, and we can see what
16 the active layer is over the summer.
17 ACTING CHAIR: Thank you, Jim. Any
18 other questions for INAC? Final comment, go ahead,
19 Art.
20 MR. ROY: Bhabesh Roy,
21 Mr. Chairman.
22 Yes, nine month is our worst-case scenario to
23 answer to -- for the comments of Mr. Jim Rogers,
24 yes, we try our best; as early as possible we can
25 install thermistor and start monitoring. But as I
26 said, the nine month is the worst-case scenario.

0271

1 Thank you, Mr. Chairman.
2 ACTING CHAIR: Thank you very much.
3 Then on behalf of the Board, I want to thank INAC
4 for doing your presentation. We will take a
5 15-minute break and grab a coffee, and we'll come
6 back and do BGC Engineering.
7 (BRIEF ADJOURNMENT)
8 ACTING CHAIR: I call this meeting back
9 to order. Okay, what we'll do is we'll start.
10 David, could you pass the -- BGC Engineering, do
11 you want to come forward. I'll just do some
12 housekeeping.
13 PRESENTATION BY BGC:
14 HOLGER HARTMAIER, sworn:
15 ACTING CHAIR: Just roughly how long do
16 you figure you'll be, Holger?
17 MR. HARTMAIER: Probably about half an
18 hour, I'd say.
19 ACTING CHAIR: Thank you. Bill, are you
20 on Board?
21 MR. TILLEMAN: Yes, sir.
22 ACTING CHAIR: Welcome back. Thomas?
23 THE CHAIR: Yes.
24 ACTING CHAIR: Welcome back. Okay, BGC,
25 the floor is yours, sir.
26 MR. HARTMAIER: Thank you, Mr. Chair.

1 Holger Hartmaier, BGC Engineering.

2 I'm a geotechnical engineer that's been
3 retained by the Nunavut Water Board to conduct an
4 independent geotechnical review of the Cape Dorset
5 sewage lagoon. I don't actually have a visual
6 presentation to give you.

7 In yesterday's hearing, BGC started listing the
8 issues and questions for the Proponent raised in
9 our intervention. It was decided that rather than
10 having the Proponent respond directly to each
11 issue, that BGC would present their comments and
12 recommendations in summary fashion so that the
13 Proponent and parties would have the opportunity to
14 ask questions and obtain clarification.

15 Also, Mr. Bhabesh Roy from the GN had indicated
16 that some submission by BGC had arrived after the
17 close of the submission period, and therefore, the
18 Proponent did not have the opportunity to respond.
19 These included our executive summary and the
20 results of an independent geothermal analysis
21 conducted by BGC.

22 Mr. Chair, I, therefore, intend to read
23 excerpts from our executive summary and the results
24 of the independent geothermal analysis into the
25 public record. Copies of these documents are on
26 the back table if anyone wants to follow along with

1 the presentation.

2 BGC was requested by the Nunavut Water Board to
3 contact an independent geotechnical review of the
4 following information that was posted on the NWB
5 FTP site on November 13th, 2007, by the Government
6 of Nunavut, Department of Community and Government
7 Services -- I'll refer to them as CGS for the rest
8 of my presentation -- the Proponent of the Cape
9 Dorset lagoon. These were the record as-built
10 drawings of the construction, the operation and
11 maintenance manual for the operation of the lagoon
12 that was prepared by Dillon Consulting, dated
13 November 9th, a memorandum on the additional
14 stability and seepage analysis for the P Lake
15 sewage lagoon that was prepared by AMEC, dated
16 November 15th, a letter from CGS with a table
17 summarizing their response to a list of specific
18 geotechnical items requested by BGC. That letter
19 was dated November 13th, 2007. These documents
20 were provided in response to the October 10th
21 letter issued by the Nunavut Water Board following
22 the pre-hearing in the fall of 2007.

23 Upon receipt of this documentation, BGC noted
24 that the as-built detail of the berm differed
25 significantly from the original design drawings as
26 well as the details that were used in the

1 geothermal model that was done by AMEC. The main
2 differences were the configuration of the
3 geosynthetic clay liner -- which I'll refer to as
4 the GCL -- within the berm, the cutoff trench
5 excavation configuration and the cutoff trench, the
6 material used in the cutoff trench backfill.

7 These discrepancies in addition to other
8 technical issues raised by BGC in previous reviews
9 resulted in a recommendation by BGC to the Water
10 Board to conduct an independent geothermal analysis
11 of the berm as part of this review. Board
12 representatives agreed that this additional work
13 would be worthwhile and should be included in our
14 scope of work and budget.

15 The purpose of the independent geothermal
16 analysis was to satisfy the following objectives:
17 It was to support BGC's intervention statement,
18 specifically to back up any comments or critique of
19 AMEC's geothermal modelling that's been carried out
20 to date, to provide the Board with an independent
21 assessment, and improve the level of confidence
22 that the permafrost conditions in the as-built
23 liner berm foundation and lagoon configuration will
24 provide the necessary water retention of lagoon
25 contents, such that the waste water treatment
26 objectives are met, to identify sensitive or

1 critical parameters or issues that must be
2 addressed either by additional investigations,
3 monitoring, engineering, or construction such as
4 remediation on the part of the Proponent, to
5 provide technical guidance with the drafting of
6 terms and conditions of the water license to
7 address the above-identified issues.

8 So in summary, Mr. Chair, some of our key
9 comments that are detailed in our intervention
10 statement, as far as the as-built drawings go, and
11 some of this was brought up in yesterday's
12 discussions, we require that the as-built drawings
13 be stamped by AMEC as the engineer responsible or
14 the engineer of record for the geotechnical
15 discipline.

16 In general, there was no identification shown
17 on the drawings indicating where field changes were
18 made from the original construction drawings.
19 Normally, these would be highlighted in some way,
20 such as with a revision bubble as well as a brief
21 note on the revision section of the title block.

22 In Record Drawing 100, major revisions were
23 made with respect to the alignment of the access
24 roads on both sides of the lagoon between the east
25 and west berms compared to Original Design Drawing
26 Number 100. Also the configuration of the west

1 berm at the north abutment had been altered from
2 the original design. Further clarification on this
3 is requested from Dillon, as noted under the
4 comments for Drawing 109.

5 As far as Drawing 109 goes, it shows up to 1
6 metre of unfrozen fill that was used to level the
7 ground surface under both berms, meaning the east
8 and west berms. There are no details provided on
9 the drawings as to what this material is actually
10 composed of.

11 On Drawing 109, the berm contours at the north
12 abutment of the west berm include a widened crest,
13 which is widened from original width of 4 metres to
14 about 25 metres for a turnaround area on the
15 downstream side. On the upstream side, there are
16 two significant gullies or ditches indicated by the
17 contours, and it is not clear what these represent.

18 BGC requests that the Proponent provide
19 additional cross-sections and longitudinal sections
20 of this area to clarify as-built conditions. The
21 concern is that there may be insufficient fill
22 thickness in this area to ensure that the GCL
23 tie-in to the cut off trench remains frozen.

24 Record Drawing 110 shows typical road sections.
25 On July 30th, 2007, CGS provided a revised ditch
26 detail for the road, which does not seem to be

1 included in as-built details on this drawing.

2 The Hamlet of Cape Dorset noted a problem with
3 seepage into the lagoon through the active zone
4 with the as-constructed detail in the October 1st,
5 2007, technical pre-hearing. In that hearing,
6 Dillon was requested to provide further
7 clarification on how this issue is being resolved,
8 and we are still looking for that clarification.

9 In Record Drawing 112, the configuration of the
10 geosynthetic clay liner is different from the
11 original design. In the original design, the liner
12 was placed on top of the original ground surface
13 under the berm on the upstream side of the core
14 trench. The concern with the as-built
15 configuration is that the saturated zone upstream
16 of the liner is now brought closer to the cutoff
17 trench. Record drawing 112 also indicates that the
18 material used to backfill the cutoff trench is
19 labeled as "sand", the same material used in the
20 construction of the berm.

21 At the October 1st, 2007 technical pre-hearing,
22 Hamlet representatives noted that water was
23 observed to be seeping out of the downstream toe of
24 the dam. Since the berm was constructed during the
25 summer on top of the thawed active zone, the berm
26 foundation had not yet had a chance to freeze back.

1 As a result, the water within the lagoon can seep
2 under the berm, through the active zone, around the
3 GCL, through the sand backfill in the cutoff
4 trench, and through the thawed active zone under
5 the downstream toe of the berm. As a result, the
6 lagoon will not be usable until after the winter of
7 2007/2008 at the earliest when the foundation has
8 had a chance to freeze back.

9 It is important to note that AMEC's original
10 design recommendation in the October 13th, 2005
11 report was to backfill the cutoff trench with, and
12 I quote, "compacted clay material or grouted".
13 This requirement was never reflected in the
14 previous construction drawings issued by Dillon to
15 date and has been raised as a design issue by BGC
16 in previous reviews. The modification requires the
17 lagoon now to remain dormant over the first winter
18 season so that the foundation can freeze back.
19 This conflicts with the original intended
20 commissioning of the lagoon in October.
21 Thermistors are, therefore, required to validate
22 the freeze-back as a license condition.

23 In Record Drawing 112, the as-built liner
24 embedment details for the abutment areas of the
25 east and west berm are requested. The cutoff
26 trench must extend a sufficient distance into the

1 abutment so that any end-run seepage through the
2 active zone is prevented. It is not clear from the
3 as-built information if the extent of the cutoff
4 trench satisfies this criteria.

5 Also in Record Drawing 112, the crest detail of
6 the emergency overflow weir section was changed.
7 This change notice was transmitted to the
8 contractor by Dillon originally on July 21st, 2007.
9 The as-built detail now shows the geoweb and the
10 GCL in one layer with no granular or other material
11 between the two. Dillon had originally initiated
12 this modification to address a previous concern
13 raised by BGC that water could seep under the GCL
14 in the emergency spillway and potentially lift the
15 liner. It is still not clear how the above
16 modification prevents this problem from occurring.

17 With respect to the operation and maintenance
18 manual, BGC recommends that the Board include a
19 condition in the water license requiring prior
20 approval by the Board for any change in the lagoon
21 waste water storage and decanting operations. This
22 notification should trigger a geotechnical and
23 geothermal review to assess the implications of
24 year-round water storage on permafrost conditions
25 under the lagoon.

26 Section 3.4.6 of the operation and maintenance

1 manual for the lagoon describes geothermal
2 monitoring but does not provide the number,
3 locations, depths, or bead locations of the
4 thermistors that are proposed. Further details
5 should be provided as a license condition.

6 Section 3.4.7 describes geotechnical reviews
7 but does not mention dam safety inspections.
8 Inspections should be carried out more frequently
9 than dam safety reviews. As a minimum, the lagoon
10 should be subject to an annual inspection by a
11 qualified geotechnical engineer. The operation and
12 maintenance manual should also require operators to
13 conduct a visual inspection of the berms whenever
14 they are visiting the lagoon and record any
15 observations in a logbook that can be reviewed
16 during the annual inspection.

17 It is noted that weekly inspections of berms,
18 dikes, and drainage courses were recommended in
19 Table 6 of the O & M manual. This is considered an
20 adequate minimum frequency, similar to typical
21 license requirements for mining operations. It is
22 recommended that these requirements be included as
23 conditions in the water license. The annual
24 geotechnical inspection should also be added under
25 the yearly frequency in Table 6.

26 With respect to the report on the additional

1 stability and seepage analyses conducted by AMEC,
2 observations of the active zone in the cutoff
3 trench were carried out by AMEC between July 2nd
4 and July 12th, 2007. A 1-metre thick working pad
5 was placed over the natural ground surface, but
6 depths were measured relative to the natural ground
7 surface. Hard frozen soil was typically observed
8 in the cutoff trench from a low of about
9 1-and-a-half metre depth. This would suggest that
10 the active layer, which is deepest in early October
11 of the year, will likely be on the order of 2 to
12 2-and-a-half metres.

13 AMEC should have commented on whether their
14 geothermal model agreed with the active layer
15 observations. In AMEC's August 21st, 2007
16 geotechnical report that reviews the geothermal
17 analysis, no mention is made of the assumed active
18 layer thickness or of any calibration of the
19 geothermal model to replicate these site
20 conditions. Note that in bedrock areas, the depth
21 of the active zone is typically much greater than
22 in soil, say in the order of 3 to 4 metres deep.

23 AMEC had assumed that the native silt and clay
24 and frozen soil were impermeable material, having
25 low values of hydraulic conductivity. This
26 assumption may be true for ice-saturated frozen

1 material below the active zone; however, for active
2 zone materials which have been disturbed by
3 seasonal free-thaw cycles, this is not the case,
4 nor has it been substantiated by site observations.

5 Hamlet officials reported water seeping into
6 the sides of the lagoon, under the roadways, and
7 exiting the lagoon under the berm at the completion
8 of construction in August 2007. Therefore, it is
9 clear that the GCL by itself is not an effective
10 water barrier. Freezing of the foundation and the
11 berm will be necessary to form an effective barrier
12 to seepage. This major design criterion must be
13 confirmed with thermistor readings.

14 The major concern from a licensing perspective
15 is the water retention capability of the lagoon,
16 and we've all heard the public's concerns in the
17 meetings so far. Since the base of the lagoon is
18 unlined, there's nothing preventing seepage losses
19 or gains through the active zone along the sides
20 and bottom of the lagoon. As noted above, it is
21 not clear from the record drawings if the cutoff
22 trench extends far enough into each of the
23 abutments to prevent end-run seepage out of the
24 lagoon through the active zone.

25 The extent of the cutoff must also take into
26 account global warming effects over the design life

1 of the structure. These have not been included in
2 the current geothermal analysis done by AMEC. The
3 model cross-sectioned surfaces of the seepage and
4 stability analysis do not realistically represent
5 the as-built configuration of the liner. The model
6 case assumed a vertical liner in the center of the
7 berm that ties into the core of frozen soil. The
8 as-built detail indicates that the GCL is inclined
9 at 45 degrees from the horizontal within the
10 upstream shell of the berm. The active zone in the
11 berm was assumed by AMEC to be 2 to 3 metres deep.
12 This appears low considering that the berm is
13 composed of granular material which was placed
14 during the summer in a relatively dry and drained
15 state.

16 BGC believes that from a seepage analysis
17 perspective, the differences between the modelled
18 and actual liner configuration may not be
19 significant. However, from a stability
20 perspective, it seems that having a GCL as a low
21 shear strength element that is oriented at the
22 as-built slope of 45 degrees would have a greater
23 effect in reducing the factor of safety of the
24 upstream slope than the vertical liner.

25 With the model case, the slip circle lies
26 essentially within the granular berm material of

1 the upstream slope. If the failure path was
2 modelled along the inclined low shear strength GCL,
3 a lower factor of safety for the upstream slope is
4 expected. It is, therefore, recommended that the
5 stability analysis for the 1 and 2 metre a head
6 difference for the rapid drawn-down case include
7 this assessment to demonstrate the stability of the
8 upstream slope based on the as-built detail. BGC,
9 therefore, recommends that AMEC validate the
10 stability of the upstream slope with the revised
11 liner configuration for all expected stability
12 cases in agreement with factors of safety
13 recommended by the Canadian Dam Association.

14 General conclusions: Based on the field
15 performance of the GCL, on its own, it is not an
16 effective seepage barrier. A GCL with overlapped
17 sheets is an imperfect liner typically used for
18 secondary containment. Freezing of the foundation
19 is required to create an impermeable barrier to
20 seepage under the berm. Within the berm itself,
21 the upper 2 to 3 metres is assumed to be within the
22 seasonal active zone. In this area, the GCL has to
23 act as the primary water retention barrier. It
24 remains to be seen how effective this barrier is,
25 since the lagoon has not yet been impounded.

26 In general, the seepage analyses have indicated

1 that there are no significant adverse effects on
2 stability. The downstream slope, however, has
3 slightly less than the required factor of safety
4 for the conservative case of full seepage, assuming
5 no liner is present. The effectiveness of the
6 liner under full lagoon conditions, therefore,
7 remains to be confirmed especially for seepage
8 through the active zone in the berm as noted above.

9 The upstream slope stability should be
10 re-checked with the inclined low shear strength
11 element representative of the as-built conditions.
12 It is expected that lower factors of safety
13 presented in the current analysis will result.

14 AMEC has outlined potential mitigation
15 strategies that could be implemented should factors
16 of safety for the berm slopes not meet the required
17 design criteria, including additional drainage
18 provisions, construction of support berms, modified
19 operational procedures. Further details should be
20 provided by AMEC regarding the event of trigger
21 level when these contingency measures should be
22 implemented. These details should be included in
23 the O & M manual as well as in water license
24 conditions.

25 I'd now like to just present a summary of our
26 independent geothermal evaluation of the proposed

1 design. As I noted, the water retention capability
2 of the sewage lagoon is a key water licensing issue
3 for this facility. The engineer of record, Dillon,
4 with geotechnical input from AMEC has designed the
5 berm with a geosynthetic clay liner embedded in a
6 cutoff trench excavated into the top of the
7 permafrost. The lagoon basin is unlined.

8 The integrity of the sewage lagoon strongly
9 depends on the aggradation and maintenance of
10 permafrost within the berm and foundation
11 throughout its design life, which is understood to
12 be in the range of 20 to 40 years. We've assumed
13 30 years, because in the previous design reports,
14 there was indications that various elements of the
15 infrastructure had potential lives in the range of
16 up to 40 years. So in our geothermal model, we ran
17 the model beyond the 20-year design life just to
18 see what would happen up to a 30-year design life
19 in case the lagoon had to remain in service after
20 the 20 years.

21 Although an updated geothermal analysis dated
22 August 21st, 2007, was prepared by AMEC and
23 discussed at the October 1st, 2007, pre-hearing,
24 BGC did not feel it was relevant to undertake an
25 in-depth critique of the analysis results until the
26 as-built construction details from the November

1 15th, 2007 submissions were provided. The as-built
2 configuration was noted to be different from the
3 original design drawings and the design
4 cross-section evaluated in the geothermal model.

5 Specifically the geothermal model was based on
6 a berm section that excluded the presence of the
7 liner, in AMEC's opinion, demonstrating that the
8 berm and foundation would freeze back and remain
9 frozen without a liner is a conservative design
10 assumption supporting the conclusion that the
11 lagoon did not need to be lined.

12 BGC believes that this design rationale has not
13 been fully substantiated by the design
14 calculations. AMEC's updated geothermal design
15 predicted ground temperatures in the undisturbed
16 terrain downstream of the berm cooling from
17 approximately minus 5 degrees Celsius to colder
18 than minus 6 degrees Celsius over a 30-year period.
19 This contradicts AMEC's November 1st, 2006 report
20 where they stated that from the measured ground
21 temperature data at the mean annual permafrost
22 temperature at a depth of 15 metres was
23 extrapolated to be in the range of minus 4 to minus
24 5 degrees Celsius. The thermal instability
25 suggests that the selected input parameters are
26 inconsistent with the assumed initial temperature

1 conditions.

2 Furthermore, AMEC also predicted that the berm
3 foundation will also progressively cool over the
4 30-year design life, which is inconsistent with
5 typical geothermal response of embankments on
6 permafrost. Considering that the design concept
7 for the sewage lagoon relies on the presence of
8 permafrost to provide containment, BGC believed
9 that an independent geothermal analysis of the
10 sewage lagoon design was necessary to improve our
11 level of confidence that the sewage lagoon will
12 perform as designed.

13 It was BGC's view that the AMEC's geothermal
14 design was incomplete in several key areas. First
15 of all, the geothermal model was not calibrated
16 against any observed permafrost conditions. The
17 applied air temperature boundary was based on mean
18 monthly values for the time period of 1970 to 2000.
19 The sensitivity of the geothermal design to the
20 potential occurrence of long-term climate warming
21 in extreme warm years was not explicitly evaluated.
22 The as-built configuration of the GCL was not
23 modelled. The potential thermal effects of seepage
24 through the berm were not evaluated. The warming
25 effect of density-driven convection in the lagoon
26 waste water was not addressed.

1 Specifically BGC has carried out the following
2 tasks. We reviewed the available information such
3 as climatic data, soil properties, berm sections,
4 and we commented on AMEC's models and assumptions.
5 As part of our geothermal modelling, we conducted
6 our own 1-D thermal model calibration to what we
7 believe to be the existing site conditions. We
8 carried out a 2-D simulation of the sewage lagoon
9 over an operational period of 30 years. We
10 assessed sensitivity cases such as convective heat
11 transfer, long-term climate warming, and the
12 effects of extreme warm years to basically test the
13 robustness of the model and its sensitivity.

14 ACTING CHAIR: May I ask, are you just
15 about done? I don't want to rush you, but are you
16 almost done?

17 MR. HARTMAIER: Yes, I'm just going to
18 summarize the conclusions of the geothermal model,
19 and I'm done.

20 ACTING CHAIR: I just need to take a
21 5-minute break.

22 MR. HARTMAIER: Okay.

23 ACTING CHAIR: I had a prostate
24 operation two months ago, and I have to go.
25 (BRIEF ADJOURNMENT)

26 ACTING CHAIR: Sorry, about that. We'll

1 come back into regular session. Bill, you still
2 with us?
3 MR. TILLEMANN: Yes.
4 ACTING CHAIR: Thomas, you still there?
5 THE CHAIR: I am.
6 ACTING CHAIR: Okay, sir, if you want to
7 carry on. Thank you for that break. I can't -- I
8 don't have a quorum, hold on.
9 Okay, sorry, for the delay. Thank you, Holger,
10 for waiting. Please go ahead.
11 MR. HARTMAIER: Thank you, Mr. Chair.
12 I'll conclude by summarizing the results of our
13 geothermal modelling. The good news is that the
14 as-built berm configuration, in general, is
15 suitable for the proposed operating conditions
16 based on our modelling. However, there's a few
17 issues that did come out of the modelling that I
18 think we'd like to pass on for consideration by the
19 Proponent as well as the Board.
20 First of all, assuming that the lagoon filling
21 does not start until the first February after
22 construction, the GCL is expected to freeze into
23 the bedrock foundation, and seepage through the
24 berm mainly through the silt layer in the
25 foundation would not occur. Convection due to
26 seepage will only partially thaw the upstream side

1 of the berm. With an estimated active layer of
2 thickness of 3 to 4 metres in the berm, the GCL
3 will be the primary form of containment for the
4 summer. We should note that as compared to the 1
5 to 1-and-a-half metres that were predicted or
6 assumed by AMEC in their geothermal analysis.
7 We heard yesterday that the time period is
8 critical because if we -- the upper part of the
9 berm is full of -- or affected by water content in
10 the lagoon for only a short period of time in the
11 later part of the season, that would be different
12 compared to having the majority of the berm exposed
13 to lagoon contents, which would be this case for
14 the deeper active zone.
15 It is predicted that the berm foundation will
16 remain sufficiently frozen. We've assumed minus 2
17 degrees Celsius as our boundary between frozen and
18 unfrozen soil over the 30-year design life,
19 although permafrost containment may be impacted if
20 the sewage lagoon operates for more than 30 years
21 under the design long-term climate warming
22 modelled.
23 So what we're saying is that with the
24 assumption of global warming included in our
25 analysis, the lagoon should be good to about the
26 30-year design life, but if we're considering

1 operating this lagoon for longer than that that --
2 and again, this is the reason we want to do
3 thermistor modelling of the foundation is we want
4 to keep close tabs on what the actual foundation
5 temperature is at that time. We're predicting that
6 we're going to start seeing some thawing around the
7 cutoff trench, you know, in around the 30-year
8 period.

9 Even under extreme warm-year scenarios
10 following the berm construction, the foundation
11 meets the minus 2 Celsius criteria and after the
12 first winter. Now, we've assumed here that, you
13 know, during this first winter period that the
14 lagoon has no water behind it. It's just empty.

15 The foundation beneath the lagoon is predicted
16 to remain in a permafrost condition. The integrity
17 of the system strongly depends on the operation and
18 management of the lagoon contents. Changes in the
19 way and schedule that the lagoon is filled and
20 emptied may affect temperatures in the lagoon and
21 berm foundations and adversely impact the design
22 concept.

23 So in a sense the modelling that we carried out
24 was based on the proposed operation of the lagoon:
25 Emptying it each fall, and then slowly incrementing
26 filling over the course of the year. So in a sense

1 over most of the winter period, the depth of water
2 in the lagoon is, you know, very low.

3 The base of the lagoon may be frozen
4 year-round. When modelling, the monthly .45 metre
5 increments of lagoon filling and assuming that the
6 lagoon level is lowest at the end of the September,
7 the lagoon contents are predicted to completely --
8 to be completely frozen each year between October
9 and April. The summer period may be too short and
10 cold to fully thaw the lagoon. I'm talking about
11 now the actual sewage contents. This may cause
12 problems related to sewage management.

13 On the other hand, if sewage is first added to
14 the lagoon during the spring or summer, the sewage
15 contents may not completely freeze to the bottom of
16 the lagoon and could cause additional permafrost
17 foundation thaw. The observed thermal state of the
18 lagoon contents should be reviewed by a
19 geotechnical engineer during a minimum of the first
20 two years of operation to confirm the thermal
21 design of the sewage lagoon.

22 Where the liner is embedded in a bedrock
23 foundation, the active layer is deeper, say in the
24 order of 3 metres, and the as-constructed cutoff
25 trench depth is 2 to 2-and-a-half metres, so the
26 active zone in bedrock is deeper than the cutoff

1 trench. Berms founded on a bedrock foundation are
2 predicted to be colder than the minus 2 degree
3 Celsius criterion after the first winter following
4 berm construction. However, over the 30-year
5 design life, part of the bedrock foundation may
6 warm to above minus 2 Celsius but still remain
7 colder than zero degrees Celsius due to global
8 warming. As bedrock, even jointed, is expected to
9 freeze at temperatures just below 15 Celsius,
10 permafrost is still expected, providing the joints
11 remain ice-saturated.

12 So in conclusion, it is critical freeze-back
13 has occurred within the foundation and the berm.
14 Temperature data must be routinely collected and
15 recorded in the annual inspection reports. We're
16 recommending that a minimum of three deep, and
17 we're talking 20- to 25-metre deep, thermistors be
18 installed from the berm crest as a license
19 requirement. And I should add that the geothermal
20 analysis recommendations were with respect to the
21 west berm, so we're talking about three thermistors
22 in the west berm as a minimum that are 20- to 25-
23 metres deep. As well, I would also recommend at
24 least one thermistor of that depth into the east
25 berm as well because the east berm is also a water
26 retention structure with the potential for seepage

1 to the east toward town, down the hill.

2 That concludes my presentation.

3 HAMLET QUESTIONS BGC:

4 ACTING CHAIR: Thank you, Holger. We'll
5 start with the Hamlet of Cape Dorset. Questions?
6 You can start or you can finish, whichever you
7 prefer. You want to take some time to think about
8 what's just been said, and then I can call on the
9 other interveners first? Art?

10 MR. ROY: This is Bhabesh Roy,
11 Municipal Engineer at CGS.

12 Three of us are sharing the question initially
13 to answer a few of the issues Holger brought up,
14 some of the issues also raised by other
15 interveners, like INAC and Department of the
16 Environment. Some of the issues I already answered
17 their inquiries, even to the Water Board.

18 I'm going to begin. You were talking about the
19 thermistor. Yes, as an engineer, I feel it is
20 extremely necessary. This is not only for
21 licensing, the comment, also to know due to the
22 climate change and the global warming what is
23 happening in the north in our communities, so yes,
24 thermistor is on.

25 In the west berm, we are definitely putting
26 three. One more to the east, we are requesting our

1 consultant to advise if it is -- we are coming up
2 with the same conclusion. If it's needed, we'll
3 consider it.

4 Now, regarding the depth, you are considering
5 20 to 25 metre; we are considering 15 metre. 15,
6 25 is not a big deal, but installing thermistor is
7 the important issue.

8 We are talking about the Dillon and AMEC
9 consultant joint signature on the as-built drawing,
10 I will indicate if the Water Board would want, we
11 definitely -- we're willing to go ahead. The
12 as-built drawings you are talking about of -- due
13 to the change-orders during the construction,
14 something missing in the as-built drawing. We
15 agreed, and as-built drawing will be revised and
16 O & M manual, and following will be, 90 days, of
17 the revised drawings and the O & M.

18 We are also talking about the life of the
19 project. Normally in our -- all the CGS municipal
20 project we are designing for 20 years' lifetime.
21 Make sure it is 20 safe, and project is
22 environmental sound to protect communities.

23 Now, I'm giving microphone to Dillon and to
24 AMEC to raise some other issues so that we all come
25 to the conclusion. Thank you, Mr. Chairman.

26 ACTING CHAIR: Okay, thank you, Mr. Roy.

1 Colin or Paul, one of you two?

2 MR. JOYAL: Thank you, Mr. Chairman.
3 Colin Joyal, Dillon Consulting.

4 Just to add to what Bhabesh mentioned, as
5 previously mentioned, as-built drawings, updated
6 as-built drawings could be provided within 90 days
7 of issuance of the license. Some of the issues and
8 requests for information will be included on those
9 drawings -- could be included at that time. Some
10 of the other issues here, the same would go for the
11 O & M manual, if there are -- if there is
12 additional information requested, the O & M manual
13 following issuance of a license could be revised to
14 include that information where appropriate.

15 There is some information on a road section, I
16 addressed this earlier today, where that
17 information has been included in the August 27th
18 report but will be included in record drawings.

19 One of the questions relevant to the road
20 section was addressed in the November 13th letter,
21 Item 30. Just to summarize that condition, there
22 was seepage reported in 2007, fall. It was likely
23 through the still unfrozen active layer and
24 unfrozen cutoff trench beneath the berm. This will
25 be monitored. If the ditch seepage is present at
26 an unacceptable rate, remediation action will be

1 undertaken. Of note, the constructed containment
2 is approximately 4,000 cubic metres greater than
3 the design requirements are. 38,000 cubic metres
4 of hydraulic retention is designed for a 20-year
5 life. Should there be seepage through the ditch in
6 the first several years of operation, it will not
7 adversely impact the operation of the lagoon.

8 That concludes the items that I would like to
9 address, and I'll hand it over to Paul.

10 ACTING CHAIR: Go ahead, Paul, please.

11 MR. CAVANAGH: Thank you, Mr. Chairman.
12 I have a few questions that I'd like answered, and
13 I would start off with a few comments. I'm going
14 to try to restrict my questions and comments to the
15 document that was provided on January the 8th and
16 not refer to the other documents that were provided
17 subsequent to that, just for clarity.

18 This document, that is a final document?

19 ACTING CHAIR: Holger?

20 MR. HARTMAIER: Yes, it's a final
21 document.

22 ACTING CHAIR: Hamlet?

23 MR. CAVANAGH: Thank you. The initial
24 part of the document talks about the as-built
25 drawings, which I believe has been addressed, and I
26 don't want to get into too many details there. I

1 understand that on page 8, there's a -- in the top
2 paragraph, there's the last sentence: (As Read)
3 In addition, BGC recommends that the Board
4 include a condition in the water licensing
5 requiring prior approval by the Board for
6 any change in waste water storage and
7 decanting operations. This notification
8 should trigger a geotechnical and
9 geothermal review to assess the
10 implications of year-round storage on
11 permafrost conditions under the lagoon.
12 I'm wondering if Mr. Hartmaier can elaborate on
13 what he sees as that geothermal review.
14 ACTING CHAIR: BGC?
15 MR. HARTMAIER: Thank you, Mr. Chair.
16 Holger Hartmaier, BGC Engineering.
17 Basically the geothermal modelling is looking
18 at the assumed operational case where the lagoon is
19 emptied at the end of September. It certainly is
20 empty pretty much throughout the winter period, and
21 water starts to accumulate to the full supply level
22 by the end of September, and it's decanted again.
23 If we get to the situation where the amount of
24 water in the lagoon progressively, you know -- at
25 each time in the year is progressively deeper, then
26 it starts to impact the thermal regime. The

0300

1 thermal regime is sensitive to the water in the
2 lagoon. So what we're saying is that if there's a
3 change in the operation of the lagoon from the
4 assumed case, that that should trigger a
5 reassessment of the operational aspects on the
6 geothermal regime.

7 Now, presumably by the time that were to
8 happen, if we have thermistors installed, we would
9 have a pretty complete operational history on the
10 response of the permafrost under the foundation to
11 the operation of the lagoon, and we would be in a
12 better position to attest the sensitivity of that
13 to, you know -- of the water levels in the lagoon.

14 So, therefore, it's just a flag to say that if
15 the Hamlet is considering changing the operational
16 process in the lagoon, that it should also be
17 coupled to a geotechnical review of the
18 implications on the permafrost and geothermal
19 stability.

20 ACTING CHAIR: Hamlet?

21 MR. CAVANAGH: Paul Cavanagh.

22 So are we to interpret from this statement that
23 the Board will assess a major or minor change in
24 the decanting operations and instruct the Hamlet to
25 conduct the review?

26 ACTING CHAIR: Holger?

1 MR. HARTMAIER: Holger Hartmaier, BGC.
2 Our recommendation to the Board is to write the
3 terms of the license to include a condition, and
4 the specifics of how that would work could be
5 included in the wording of the condition, but
6 basically, yes, it would be that the Applicant
7 would have to submit any significant change in the
8 operation of the lagoon to the Water Board so that
9 they could assess whether an additional geothermal
10 review should be conducted, or as part of your --
11 part of the condition in the submission on the
12 change in operation would be presumably going back
13 to the -- to yourself to include that assessment as
14 part of the application.
15 ACTING CHAIR: Hamlet?
16 MR. CAVANAGH: Paul Cavanagh here.
17 So the determination of significance in changes
18 of operations rests with the Hamlet?
19 ACTING CHAIR: BGC?
20 MR. HARTMAIER: Holger Hartmaier, BGC.
21 In one of our other recommendation, we have
22 asked for one of the license conditions to be an
23 annual inspection by a geotechnical engineer. As
24 part of his inspection, you know, he would be
25 looking at the thermistor readings, comparing them
26 to the water levels and operations in the lagoon,

1 and the -- if there was any change in terms of the
2 operational aspects, it can be determined in that
3 case, number one, as a sort of annual requirement
4 to address any changes in operations.

5 The other -- as a license condition, it would
6 specifically be stated that if the Hamlet does
7 change those operations that it is the Hamlet that
8 must inform the Board on any significant changes
9 and as well as inform their consultant.

10 ACTING CHAIR: Hamlet?

11 MR. CAVANAGH: Paul Cavanagh,
12 Mr. Chairman.

13 I'm just trying to understand what is a
14 significant change in operations and what is not a
15 significant change in operations. I would -- I'll
16 just make a comment that I would suggest that the
17 Hamlet as the owner and the consultants that work
18 for the Hamlet as the engineers of record should
19 retain some ability to determine significance in
20 this case. It is our design, and we should be able
21 to understand what a change in operations and how
22 that impacts the design, and we should be the ones
23 who determine at what point we advise the Board of
24 a significant change.

25 ACTING CHAIR: BGC?

26 MR. HARTMAIER: Holger Hartmaier, BGC.

1 It's my recommendation to the Board that this
2 be included as a license condition. However the
3 Board chooses to apply it and the -- is up to them.
4 I'm just saying that the -- it's a design aspect.
5 The Hamlet has -- on the operational side, we don't
6 know who's operating the lagoon and who's making
7 the decision as to whether this is a significant
8 change or not. We just want to have the blanket
9 statement that any changes in operations do require
10 the notification of the Board because there may be
11 a potential for geothermal assessment, which would
12 then be requested via the Board. We -- I don't
13 think -- it's our recommendation that we don't
14 leave it up to an operator at the Hamlet to
15 determine whether it is a significant change or
16 not. It's up to the Hamlet to provide an annual
17 report on the operations of the lagoon, and if
18 nothing else, that should perhaps trigger the Board
19 to notice that there is a significant change in
20 operation, which may trigger this as well.

21 So as I say, it's not up to me to write the
22 specifics of how it would work between the Board
23 and the Hamlet, but it's our recommendation that
24 some kind of license condition be included to
25 initiate that trigger.

26 ACTING CHAIR: Thank you, Holger.

1 Staff?

2 SUPPLEMENTARY MATTERS:

3 MS. FILIATRAULT: Thank you, Mr. Chairman.

4 Dionne Filiatrault.

5 I think there is -- you know, not to presume
6 any decision that this Board is going to make -- in
7 Water Board licenses, there is a general provision
8 in all licenses that for operation and maintenance
9 plans, if there are changes in operation,
10 technology, or functioning of the operation and
11 maintenance component, that there be -- the
12 licensee is requested to provide annual revision to
13 that and provide notification to the Board of that
14 revision. And then, you know, it's the level of
15 significance. It really isn't brought, I guess,
16 into the term itself. So that does give an -- the
17 Applicant that broad ability, but your points are
18 noted, and the Board has that for the record.

19 ACTING CHAIR: Thank you. Before we go
20 any further, we are getting close to noon, and I
21 know we were talking about -- wrapping up by noon
22 is not going to happen, I know that right now
23 because we still have all the other interveners; we
24 have the community consultation, they have
25 questions they want to do; the final comments from
26 the Licensee. So it could be another couple hours

1 yet before we're done, so I would suggest that we
2 break now for lunch, because lunch is only from 12
3 to 1, and we break for lunch until, say, even 1,
4 come back here at 1, and get back in it. Dionne?
5 MS. FILIATRAULT: Thank you, Mr. Chairman.

6 Dionne Filiatrault.

7 Just one, I guess, consideration on your --
8 what you're proposing is the Hamlet or the
9 Applicant following questioning and comments, once
10 it's closed, they may want a period of time, a
11 significant period of time, in order to prepare
12 their final closing remarks. And I would suggest
13 maybe trying to determine whether or not they are
14 going to need a significant break to prepare
15 closing remarks, determine if there are a
16 significant number of questions left to Holger.

17 You may -- we may be that close to actually
18 getting it done as far as the questioning and what
19 not that then a lunch break could be the time where
20 the Applicant could turn around and prepare their
21 final closing remarks. So you may want to poll the
22 Applicant on this.

23 ACTING CHAIR: Okay, I'll going to the
24 Hamlet first. Roughly how much longer are you
25 going to need?

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

1 Art Stewart, Hamlet of Cape Dorset.
2 Paul will probably need about another 15, 20
3 minutes, and we would like to have approximately 1
4 hour to sum up our final comments. Thank you.
5 ACTING CHAIR: I'm just going to do a
6 roll call. Department of Environment, roughly how
7 long? What I can do right now is I'll do a roll
8 call. GN-Department of Environment, do you want to
9 come up? Do you have any questions for BGC?
10 MR. ATKINSON: Mike Atkinson, Government
11 of Nunavut-Department of Environment. I don't have
12 any questions.
13 ACTING CHAIR: Thank you. Environment
14 Canada, do you have any questions?
15 MS. SPAGNUOLO: Collette Spagnuolo.
16 Environment Canada would have no questions for BGC
17 either.
18 ACTING CHAIR: Thank you. INAC?
19 MR. ROGERS: Jim Rogers, INAC. We
20 will have no questions for BGC, and our closing
21 remarks would be very short as well, probably less
22 than 10 minutes.
23 ACTING CHAIR: Sorry, I didn't ask GN.
24 Thank you, Jim. GN-Department of Environment and
25 Environment Canada, do you have any closing remarks
26 at all?

1 MR. ATKINSON: Mike Atkinson, Government
2 of Nunavut-Department of Environment. I have some
3 very brief closing remarks.
4 ACTING CHAIR: Thank you. Environment
5 Canada?
6 MS. SPAGNUOLO: Thank you, Mr. Chair.
7 Collette Spagnuolo. Our closing remarks would be
8 extremely brief as well.
9 ACTING CHAIR: Staff, questions and
10 closing remarks?
11 MS. FILIATRAULT: Thank you, Mr. Chairman.
12 Dionne Filiatrault. We will likely have no
13 questions for Holger except for actually we do have
14 one, and we don't have closing remarks, we work for
15 you.
16 ACTING CHAIR: No, I know. I have
17 closing remarks. Bill, do you have anything you
18 want to add right now?
19 MR. TILLEMAN: No, thank you.
20 ACTING CHAIR: Okay. So it looks to me
21 then we probably have close to an hour of questions
22 and closing remarks left to do. I'll let you give
23 the community at least a half an hour perhaps.
24 So I'd say we will break until -- you know,
25 there's no way we can get through this in the next
26 hour-and-a-half for sure and get this done until --

1 by 2:00, and then they're going to need an hour,
2 so -- and I expect Art, he has to pick up staff at
3 12:00, as mentioned yesterday, so I think we should
4 break now and come back in at 1:30 or 1:00 even.
5 1:00? Yes, 1:00 is good. And we'll get right back
6 into Holger and get you done, and do closing
7 remarks, community comments, and hopefully be done.
8 Might be able to give you a break for an hour
9 if you need it. You can work over lunch if you
10 want to, see if you need that extra hour after, and
11 if you do, most certainly, we'll give it to you for
12 your closing remarks and then come back in, say, at
13 3, 3:30, whatever, and do your final closing,
14 because I think our plane is at 6:00 tonight, so we
15 still have a bit of time left.
16 MS. FILIATRAULT: Mr. Chairman, we are on
17 charter, so the plane is at our disposal.
18 ACTING CHAIR: Okay, so we'll take a
19 break now until 1:30 (sic).
20 (PROCEEDINGS ADJOURNED AT 11:58 A.M.)
21 (PROCEEDINGS RESUMED AT 1:19 P.M.)
22 ACTING CHAIR: Welcome back to regular
23 session. Please, we don't have a lot of time.
24 Okay, just before we go back to BGC, the
25 Licensee has a clarification they'd like to do
26 before we start.

1 MR. FUENTES: Thank you, Mr. Chairman.
2 This is Patricio Fuentes, Regional Manager for
3 Project Division. I would like to say for the
4 record, the question yesterday was have similar
5 facility such as these been contracted in Nunavut.
6 The answer was yes. We have contracted two of
7 them; one of them was Hall Beach and the other one
8 was Pond Inlet.
9 In the case of Pond Inlet, we have recent
10 evidence that the system is working in regard to
11 the BOD discharge. In the month of October, it is
12 a decanting process, and we have the lab result,
13 which we have provided to the Nunavut Water Board,
14 also to Andrew Keim, at least by Tuesday, if that
15 is acceptable. The result -- the result -- what we
16 promised by Tuesday is the result that we obtained
17 from the lab; the laboratory result, it will be
18 provided.
19 ACTING CHAIR: I don't know if that's
20 relevant because it's after the hearing. Dionne?
21 MS. FILIATRAULT: Mr. Chairman, thank you.
22 Dionne Filiatrault.
23 My concern is exactly what you just expressed.
24 When you, Mr. Chairman, close this meeting, the
25 Board will not accept any further evidence, and
26 there are issues surrounding leaving the floor open

1 for the receipt of additional evidence.

2 My first suggestion is the nature of the
3 monitoring data that you want to submit for Pond
4 Inlet and whatever, is this information that likely
5 was submitted under those particular water licenses
6 and that we may have on the public registry
7 already, and we can verify that through our office
8 and ask them to see if that information is
9 already -- we already do have it, and therefore, we
10 can close it now? Is there no way that you can get
11 this information and provide it before the close of
12 this hearing today?

13 ACTING CHAIR: Hamlet?

14 MR. FUENTES: We have that information,
15 but it's in Pond Inlet. I know because we receive
16 it from the lab directly. We request a copy of
17 that result, and we have it in the office, but
18 unfortunately, I cannot pick it up right now.

19 ACTING CHAIR: If you -- if I may, if
20 you could have that faxed to your office today, we
21 can enter that into evidence. If not, it will not
22 be part of this hearing.

23 MR. FUENTES: We will try. Thank you.

24 ACTING CHAIR: Bill, any comment?

25 MR. TILLEMAN: No. I think Dionne,
26 Mr. Chairman, summarized the issue and the concern,

1 and I think your decision reflects that, so I don't
2 have any comments. Thank you.
3 ACTING CHAIR: Thank you. Catherine,
4 you had a comment? No? So basically that's where
5 it's at now. Clarification, Andrew -- or INAC,
6 sorry?
7 MR. KEIM: Thank you, Mr. Chair.
8 Andrew Keim from Indian and Northern Affairs.
9 The documents that Mr. Fuentes would like to
10 submit are relevant to the proceedings only in the
11 sense that it is representative of the current
12 lagoon that's in discussion here today. Further to
13 that, I've entered other documents into evidence
14 for the hearing electronically, and they'll be read
15 out later on today. It will have to do with the
16 whole thing. Thank you.
17 ACTING CHAIR: Okay, thank you. Okay,
18 Holger, would you please come to the intervener
19 table, and I think we were still on the Hamlet's
20 questions. Any questions before we finished for
21 lunch, Holger, or everything's been entered so far?
22 MR. HARTMAIER: (NONVERBAL RESPONSE)
23 ACTING CHAIR: Hamlet?
24 HAMLET RESUMES QUESTIONING BGC:
25 MR. CAVANAGH: Thank you, Mr. Chairman.
26 It's Paul Cavanagh.

1 I probably have about seven or eight questions,
2 and then -- they should be fairly straightforward.
3 I'd like to ask the representative from
4 BGC Engineering if he considers that there's
5 general agreement between the models and the
6 modelling done by AMEC and the modelling done by
7 BGC, and I'm just wondering if there's general
8 agreement between the results.
9 ACTING CHAIR: BGC?
10 MR. HARTMAIER: Holger Hartmaier, BGC.
11 Our report I guess indicates where we see
12 differences. We have differences of opinion on the
13 starting temperatures and the predicted --
14 primarily the predicted active zone depth. I think
15 some of those issues relate to the design of the
16 berm, particularly with respect the need for the
17 GCL, the geosynthetic clay liner, to act as the
18 primary liner within the main part of the berm
19 above the frozen zone.
20 We've predicted a greater -- essentially the
21 entire thickness of the berm would be the active
22 zone, whereas the prediction by AMEC was only the
23 top 1 to 1-and-a-half metres would thaw out, which
24 is a substantial difference in terms of the amount
25 of berm where you have both frozen containment as
26 well as secondary containment by the liner.

1 We feel that the main difference in the
2 analysis is that we've confirmed that the core
3 trench and foundation is in a frozen state, but the
4 actual berm itself would become thawed in the
5 summertime.

6 So at the end of the day, I have achieved maybe
7 a bit better level of confidence on the overall
8 fact that we do get frozen conditions in the
9 foundation, but nevertheless, I'm less confident on
10 the ability of the berm to act as a dual frozen
11 structure as well as the -- you know, the GCL
12 acting as a hundred percent effective single line
13 of containment.

14 ACTING CHAIR: Thank you. Hamlet?

15 MR. CAVANAGH: Thank you. Paul
16 Cavanagh.

17 I'll take that as, yes, there is general
18 agreement in the conclusions with some differences.

19 The seepage that was observed last fall, it's
20 been speculated that it flowed -- that there was
21 seepage beneath the berm to the downstream side.
22 Is it -- would BGC Engineering consider that that
23 seepage flowed around the bottom end of the GCL
24 liner or through the GCL liner?

25 ACTING CHAIR: BGC?

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

1 BGC, Holger Hartmaier.

2 I can't speculate. I mean, the potential flow
3 paths include going around the liner or going
4 through the liner. The fact is the core trench was
5 backfilled with sand, so there are numerous flow --
6 potential flow paths for seepage under the dam, so
7 I can't say one way or another which was the actual
8 case this past summer.

9 ACTING CHAIR: Thank you. Hamlet?

10 MR. CAVANAGH: Thank you. Paul
11 Cavanagh.

12 Is it fair to say though that the level of the
13 water was at a sufficient elevation that it's most
14 likely that it flowed around the end of the liner
15 rather than through it and that the liner in terms
16 of its capacity to hold water had not really been
17 fully tested?

18 ACTING CHAIR: BGC?

19 MR. HARTMAIER: Holger Hartmaier, BGC.

20 As I said, the fact that the liner is
21 constructed of sheets of overlapping GCL in terms
22 of conventional practice for that liner is a known
23 problem with that type of liner to be a hundred
24 percent effective in terms of seepage. Therefore,
25 it's never used as a primary liner for that reason,
26 so the -- coupled with the fact that the trench has

0315

1 been backfilled with sand.

2 I grant, Mr. Cavanagh, the -- I guess the case
3 that it could be that the seepage hadn't consisted
4 entirely of seepage going underneath the liner
5 through the sand backfill, but nevertheless, we
6 have not experienced the full containment of the
7 liner as far as having seepage potential going
8 through the GCL above the frozen zone, so I can't
9 say.

10 ACTING CHAIR: Thank you. Hamlet?

11 MR. CAVANAGH: Thank you. Paul
12 Cavanagh.

13 I'd just like to make a comment then.
14 Throughout this document, there's comments about,
15 and I'll quote one: (As Read)

16 Based on the field performance, the GCL on
17 its own is not an effective seepage
18 barrier.

19 I would suggest that those comments are not fully
20 proven, and I would like to make that as a public
21 record for the Board to consider, that I don't
22 think the GCL liner has really been tested as to
23 its effectiveness.

24 ACTING CHAIR: Thank you. Just a
25 comment; it's not a question to you --

26 MR. HARTMAIER: Holger Hartmaier, BGC.

1 You know, I think we're dealing with six of
2 one, half dozen of the other. I think the fact
3 that we don't know exactly what happens, I don't
4 think we can equally make the statement that Paul
5 is making, that it is, therefore, an effective
6 liner or hasn't been tested.

7 The fact is that seepage was observed. The
8 design intent of this lagoon was to be fully
9 operational at the time of commissioning and to
10 hold water. That was the original design intent.

11 The -- for various reasons, the core trench was
12 backfilled with sand. The GCL configuration was
13 changed. The actual use of a GCL was continued
14 despite the original concerns that were raised by
15 BGC in earlier sessions regarding the effectiveness
16 of using GCL.

17 So my concern is that either way you look at
18 it, there hasn't been an adequate assessment of
19 what had happened back in August of 2007. I have
20 no -- there's nothing before me regarding water
21 levels, what type of seepage and where it was
22 observed to say whether we can tell whether it's
23 going underneath or through the liner. So equally,
24 I would think, AMEC can't make the statement that
25 the liner is a hundred percent effective.

26 ACTING CHAIR: Okay. Thank you.

1 Hamlet?

2 MR. CAVANAGH: Thank you. Paul
3 Cavanagh.

4 Within the document, there is two other quotes
5 I'd like to bring forward: (As Read)

6 From a seepage analysis perspective, the
7 differences between the model and actual
8 liner configuration are not considered
9 significant.

10 That's from BGC's document. What I'd like to put
11 forward as a comment is I'm suggesting that a lot
12 of the discussion in this document that suggests
13 differences between as-built conditions and what
14 was used in the models is important to determining
15 the outcome/conclusion.

16 And I'm of the opinion that I think this
17 statement is factual, that we ran models for
18 exactly what they are, they're models, and I think
19 BGC did the same thing. And I think we've come to
20 the conclusion that the models are generally
21 representative and provide a positive outcome in
22 that we've both concluded, for example, that the
23 berm will remain frozen over the life of the
24 structure, which is 20 years, 20-year design life,
25 that the base of the lagoon will remain frozen and
26 act as a liner to seepage; and that in relation to

0318

1 another statement from the same document, where it
2 says: (As Read)
3 In general, the seepage analyses have
4 indicated there are no significant adverse
5 effects on stability. The berm itself will
6 remain stable throughout the life of the
7 project,
8 this is -- and I think BGC and AMEC are in
9 agreement on that.
10 One of the differences where -- that was cited
11 was the active layer as a result of the models that
12 we have both produced. We've suggested that the
13 active layer is 1 to 2 metres thick. BGC is
14 suggesting that it could be higher than that. And
15 I'm suggesting that that portion of the dam is
16 above typical reservoir levels during the first
17 years of operation, and we will be able to collect
18 enough data from thermistor monitoring to assess
19 how important that is, and I recognize that it's a
20 difference in the modelling, but the proof is going
21 to be in the pudding, and we will have time to
22 react to those kinds of conditions. And I just
23 wonder if Holger would like to comment on that.
24 ACTING CHAIR: Thank you for that. BGC?
25 MR. HARTMAIER: Holger Hartmaier, BGC.
26 Yes, I generally concur with what Paul was

1 saying there. The statement I was making in our
2 intervention about the difference with regard to
3 the seepage from the as-built versus the
4 configuration that was modelled, that was just in
5 reference to the fact that, for some reason, AMEC's
6 August 21st model showed a vertical liner in the
7 center of the berm down to basically a frozen zone
8 within the core of the dam, whereas the actual
9 as-built is, you know, a 45-degree liner on the
10 upstream slope dropping down into the core trench.

11 So what I was trying to say there is that with
12 the modelling that AMEC had done from a seepage
13 perspective, the difference between the modelled
14 and the as-built from a seepage perspective doesn't
15 make a big difference, so we don't have any
16 argument with AMEC's seepage analysis. Where we do
17 think there may be a slight difference is to have
18 them confirm what the impact was on the actual
19 upstream slope stability with the as-built
20 configuration.

21 The other difference of opinion is, as Paul
22 suggested, is with the depth of the active zone
23 within the berm. So our active zone encompasses
24 pretty much the entire berm thickness, so the -- it
25 puts more onus on that GCL to act as the primary
26 containment for the lagoon contents, you know, when

1 the lagoon levels get up to that level.

2 ACTING CHAIR: Thank you. Hamlet?

3 MR. CAVANAGH: Thank you. I have three
4 more questions, and then I'll be done, so I'll
5 switch directions a bit.

6 I'd like to -- sorry, Paul Cavanagh -- I'd like
7 to explore a bit the final recommendations that BGC
8 is putting forward. And when I read this document,
9 there's about one, two, three -- about five bullets
10 on page 14, and that kind of confirms, I think,
11 that there's general agreement in the models,
12 there's some differences, but that it's prudent to
13 put in place a monitoring program.

14 And I want to understand from BGC Engineering
15 if that is the essence of their recommendation to
16 the Board at this time, that a monitoring program
17 and a reporting program be put in place, just if
18 that's really the essence of the recommendation, or
19 if there's other recommendations that they will be
20 making.

21 ACTING CHAIR: Thank you. BGC?

22 MR. HARTMAIER: Holger Hartmaier, BGC.

23 Yes, that's basically what we boiled it down
24 to. The intent of doing this independent
25 geothermal analysis was to -- for us to cut through
26 having to, you know, get into academic discussions

1 at the hearing level regarding our differences of
2 opinion on how the model should be done and then
3 requesting you to answer back. So it was maybe to
4 jump ahead of all that discussion, run the model
5 ourselves just to see, you know, if any of the
6 issues that we had in our own mind are critical to
7 the design and operation.

8 So, therefore, we have come up essentially with
9 the recommendation that at the end of the day, what
10 we'd like to see is thermistors being installed
11 within both berms so that we can confirm, you know,
12 (a), the model assumptions that were used, and the
13 actual ground temperatures within the berm.

14 ACTING CHAIR: Thank you. Hamlet?

15 MR. CAVANAGH: Thank you. Paul
16 Cavanagh.

17 When these thermistors are installed in the
18 ground and the monitoring begins and the reporting
19 process is underway, in your mind, how much
20 responsibility and how much authority reverts back
21 to the owner of the facility and the engineer of
22 record in determining how that program is changed
23 or altered over time?

24 ACTING CHAIR: BGC?

25 MR. HARTMAIER: Holger Hartmaier, BGC.

26 Basically AMEC is the geotechnical engineer of

1 record and has full responsibility for putting
2 together the thermistor program that they
3 recommend, the -- you know, deciding on the details
4 of the thermistor installation, the frequency of
5 monitoring, how that data gets interpreted, and the
6 implications on design.

7 BGC and the Board really have no, I guess,
8 approval of that. We don't approve that. We're
9 not the designers. We're not taking responsibility
10 for that design. All we can do is look at that
11 information and make sure that the appropriate
12 monitoring that we like to see to get, you know,
13 our own assessment of stability and confirmation of
14 confinement is addressed in whatever you recommend,
15 and the license condition will reflect that that
16 information be submitted, and we review it, and we
17 comment on it, and get back to you, but
18 essentially, it's your responsibility, and it's --
19 you're the engineer of record, and it's up to you
20 to decide exactly what those details might be.

21 ACTING CHAIR: Hamlet?

22 MR. CAVANAGH: Thank you. Paul
23 Cavanagh.

24 I have one last question. We've seen from some
25 of the other interveners, they've provided a
26 concise list of recommendations, but in general,

1 we're getting an understanding from those
2 interveners that, in general, they're supportive of
3 providing a recommendation to the Board to grant a
4 license with some conditions, and they've outlined
5 what they think those conditions should be.

6 It's a little confusing to me right now if BGC
7 is of the same mind or has a different intent, and
8 I'm just wondering if Holger is in a position now
9 to comment as to whether he will recommend that a
10 license be granted with conditions.

11 ACTING CHAIR: BGC?

12 MR. HARTMAIER: Holger Hartmaier with
13 BGC.

14 Yes, the -- basically the -- with the
15 conditions that we've indicated in our
16 intervention, I see no reason why, you know, we
17 couldn't get a license put together that now
18 addresses any of those outstanding concerns, so I
19 don't have any other objections to moving ahead
20 into a licensing.

21 ACTING CHAIR: Thank you. Hamlet?

22 MR. CAVANAGH: Thank you. I don't have
23 any further questions. Does -- I think we're good.
24 Thank you.

25 ACTING CHAIR: Thank you very much. Is
26 that a question?

1 MR. ROY: From the long debate
2 between two experts from two independent sides,
3 from the engineering point of view, we totally
4 satisfied that the thermistor is going as a
5 condition, and the recommendation in the west berm
6 should be three and the east berm should be one,
7 yes. We are going for -- we are starting four for
8 satisfaction of all the parties.

9 And we still proposing the length of the 15
10 metre these, and the way the manual will be coming
11 up, we'll monitor weekly and see how the behaviour
12 and the information coming up. If we see the
13 consent information, probably then we can increase
14 the frequency, so it depends on the pre-condition.
15 So, however, since it will come as a condition,
16 we'll submit the manual and worst-case scenario
17 with the nine-month period, definitely this
18 thermistor will be in place. Thank you,
19 Mr. Chairman.

20 ACTING CHAIR: Thank you. BGC?

21 MR. HARTMAIER: Holger Hartmaier, BGC.

22 I'd just like to comment on the proposed
23 thermistor program that the GN is recommending.
24 Our recommendation would be to -- I guess, first
25 off maybe before you maybe finalize the depths is
26 to talk to your consultant, make sure that he's had

1 a chance to look through our -- the actual
2 geothermal analysis report.

3 The depth that we've recommended is in the
4 range of 20 to 25 metres simply because we have
5 developed a slightly different initial ground
6 temperature scenario than AMEC has come up with, so
7 the depth that we've picked for the thermistors is
8 also to provide a bit better information on the
9 actual geothermal regime deeper down, which is part
10 of the overall geothermal model and -- so that's
11 one, is to consider going deeper.

12 The -- I forget what the other point I was
13 going to make was, but anyways, the -- oh, yes, the
14 timing, the timing of your installation. You're
15 recommending within the next nine months. Our
16 recommendation is that these thermistors be
17 installed before the end of April because what we'd
18 like to capture is the actual freezing that's
19 taking place right now, and after -- you know, once
20 you get past April, you're starting to get on the
21 warming side of the curve again, and whatever
22 readings you have are going to be, you know,
23 subject to some interpretation as to whether it's
24 already been affected by some warming. So you want
25 to be able to see essentially what has happened
26 this year and be confident that, you know, you've

1 experienced the, say, maximum amount of freeze-back
2 that you're going to get over the winter period and
3 what that is. It gives you more confidence as to
4 planning your operations from then on in.

5 If you leave it for nine months, that means
6 you're not going in until, say, October, which is
7 already -- we've lost this freeze-back period, and
8 we're at the deepest active zone at that point, so
9 you're not going to have any information on -- you
10 know, that would give you some information that
11 there is frozen conditions there, but it may be
12 that you're right back to the bottom of the core
13 trench, which is what we're predicting. So that
14 would then require, again, looking at that
15 information, saying, Well, now we have to wait
16 until the winter of '08/09 to get another degree of
17 freeze-back again.

18 So the information is required now because it's
19 such a -- there's such a time period in gathering
20 the data before you can even make an interpretation
21 of it. So my recommendation is to get those
22 thermistors in before the end of April.

23 ACTING CHAIR: Okay, just for
24 clarification for the Board, this has been
25 discussed this morning already, and it's the same
26 thing you're starting again today, again this

1 afternoon, doing it all over again. And I
2 understand that from the Licensee that it will be
3 done as quickly as possible, what we were told this
4 morning. And if cannot be done, it may have to
5 happen during sea lift, which could be up to nine
6 months, but as soon as it is feasible to do, it
7 will be done. Is that what I heard this morning,
8 and if that's the case, why are we debating this
9 again?

10 MS. FILIATRAULT: I think it's critical
11 that the Board -- Dionne Filiatrault -- I think
12 it's critical that the Board understand the risks
13 associated with understanding whether or not the
14 system is confirmed to be operating as they've
15 proposed through their modelling.

16 In order to do that, I believe all parties have
17 agreed that thermistor -- the use of thermistors is
18 one method to do, to use to confirm that. In the
19 ideal world, these thermistors would have been
20 installed prior to construction. We're now faced
21 with the Board having to make a determination on
22 when these thermistors should go in, such that the
23 level of risks is minimized or is understood
24 clearly by the Board.

25 So the timing of when these thermistors are
26 going to go in is critical also in understanding

1 from the Applicant's point of view of when they're
2 actually going to be able to use the system.

3 So not to presume a decision that you as a
4 Board member would make, if this project proceeds
5 forward and the Board does issue a license, what is
6 going to need to be very clearly identified is when
7 they're actually going to be able to put sewage
8 into the system, that just because you're given a
9 license, does not necessarily mean you can
10 immediately start using the system. Do those
11 thermistors need to be installed prior to being
12 able to use the system? That is the question that
13 needs to be answered and be very clearly
14 enunciated.

15 And that's -- we've got their understanding
16 that it's not going to happen or it may not happen
17 for 90 days. We have INAC's understanding that
18 they are -- want it to go in within I think it was
19 three months, but we still -- the Board still needs
20 to understand the risks associated with that.

21 So it may be appropriate, Mr. Chairman, to
22 really clarify with Holger when should the
23 thermistors be installed, what information is
24 needed by this Board before the plan is
25 commissioned, and what are the risks if the lagoon
26 is commissioned prior to the installation of

1 thermistors.

2 ACTING CHAIR: No, I completely
3 understand all that. I'm sorry, I didn't -- I know
4 what you're saying. I just thought we're doing it
5 again, and I know what the requests are, but if you
6 want to carry on and clarify, please do.

7 I just, you know, know we're trying to get to
8 the end of this so we can have other interveners
9 also ask questions, and I'm -- you know, we're just
10 debating something we've already debated this
11 morning, and I don't know -- I'm kind of lost, I
12 guess, where I am for clarification.

13 But, no, please proceed. I understand what
14 Dionne has said, but I want to make sure the Board
15 does because this is very -- it's very, very
16 technical for us. You know, we're the laymen in
17 the communities, and what you're talking about is
18 way above me, but I'll get it when I talk to the
19 Staff for sure once we're told and the information
20 that we're receiving, but I want us to try to get
21 to the end, that's all.

22 So, BGC?

23 MR. HARTMAIER: Holger Hartmaier with
24 BGC.

25 Yes, I think the -- you know, our comments and
26 our intervention have boiled down to the fact that

1 we're willing to see the license go ahead as long
2 as there is monitoring put in place.

3 From our point of view, the fact that there are
4 no thermistors in the dam right now is a gross
5 design deficiency because those were recommended by
6 Dillon's geotechnical consultant from very early
7 on, first design that they've ever done. So for
8 some reason, they were never installed. So you
9 basically have a structure that has been built with
10 a major design deficiency in it.

11 So having said that, we're now faced with
12 trying to get this thing in operation. So what are
13 the risks of filling this lagoon before we know any
14 of the ground temperature data?

15 Well, if we look at what was done, the entire
16 geothermal analysis was based on assumed ground
17 conditions. The -- there was very little or no
18 initial ground temperature measurements that were
19 done. Some were done back in the fall of last
20 year. BGC commented that those temperatures were
21 not representative of actual ground conditions
22 because they were measured right after the bore
23 hole was drilled, and they weren't allowed to
24 equilibrate to ground temperatures. You know,
25 we've discussed the calibration of the -- what was
26 observed in the core trench in the summer against

0331

1 what the modelling had assumed, there was a
2 difference there.

3 So basically we don't know what we have right
4 now, so that's the key thing. So in order to
5 assess the risk, if we want to start filling the
6 lagoon, say, tomorrow, then we'll have to look at
7 exactly what is going to happen in the lagoon. If
8 we -- we can imagine that we're placing material
9 into a lagoon in small lifts under winter
10 temperatures, it's all going to freeze. So we
11 maybe have an assumption that for a certain period
12 of time in the initial operation of this lagoon,
13 there won't be any open water up against the
14 structure.

15 Now, if we're waiting nine months, to get up to
16 nine months before we get temperature data, then
17 we've already committed ourselves to having a
18 lagoon at some point that's full of water, and we
19 still don't know whether or not the foundation is
20 frozen. So then we run the risk that in the
21 summertime, whatever's in the lagoon, if the cutoff
22 is not frozen, and seepage does occur, there is a
23 risk that whatever freeze-back has occurred could
24 be thermally destroyed by water seeping in.

25 Now, the modelling assumption has made certain
26 assumptions about what effect water has on the

1 integrity of the frozen structure, but again, it's
2 just based on original assumptions, so again, we're
3 back to having thermistors in the dam when the
4 water starts to be impounded against the dam so
5 that we can actually see whether or not our
6 assumptions, that, you know, despite the fact
7 there's water up against the upstream slope, that
8 it is staying frozen.

9 So if we don't have that in place, we won't
10 know that information until suddenly we have some
11 issues. So not having the thermistors in place is
12 a fundamental deficiency with the design and
13 operation of the lagoon.

14 ACTING CHAIR: Thank you. I just want
15 to do a roll call. Bill, are you still on Board?

16 MR. TILLEMANN: Yes, sir.

17 ACTING CHAIR: Thomas, still there?

18 THE CHAIR: Yes.

19 ACTING CHAIR: Thank you. Hamlet, any
20 more comments on what's been said? Paul?

21 MR. CAVANAGH: Yes, I -- Paul Cavanagh.
22 I'll try to keep them brief.

23 In general, I understand what Holger is saying.
24 At the end of the day, I concur with Dionne that --
25 and her comments that it's really a risk question,
26 and you have to temper some of the modelling

0333

1 results, which are kind of theoretical and not
2 forgiving, with what is actually happening in the
3 real world. And at this point, if we were to start
4 filling, within three months' time, I'm betting
5 that the lagoon area would not be full to the top,
6 for example. So it really comes down to what is
7 the risk, and Holger's right; on the condition of
8 the berm, all we have is modelling results right
9 now, what we think the condition is.

10 I would suggest though, on behalf of the
11 Hamlet, there is some urgency to try to get this
12 thing, this structure into operation, and I would
13 suggest that through the initial filling period of
14 three or four months, the risks, because it's a
15 winter period, are relatively low. So I would
16 suggest that, from my perspective, and if I'm the
17 engineer of record at the end of the day and maybe
18 has some final say on all of this, I would say that
19 the risks are relatively low in terms of starting
20 the filling and putting the thermistors in
21 simultaneously, but I would like to see what comes
22 back from the license conditions around that before
23 I make some of those decisions.

24 So I just want to clarify that I'm not
25 convinced that the risks are as high as perhaps
26 what BGC is suggesting.

1 ACTING CHAIR: Thank you. BGC?

2 MR. HARTMAIER: Holger Hartmaier, BGC.

3 Well, to assess the risks, we have very little
4 factual information to assess the risk. All we're
5 saying is that without knowing what the actual
6 condition is within the berm, once we start
7 impounding the lagoon, then there is a chance that,
8 you know, we may have problems that will only
9 manifest themselves by the fact that we, you know,
10 see problems developing, and we won't have any
11 advance warning of, you know, warming temperatures
12 or anything like that.

13 So the operational aspect of a lagoon from here
14 on in is a critical component. If we say that we
15 can put, you know, material in a lagoon now, then
16 you are automatically setting yourself up for risk
17 down the line because now you have material in the
18 lagoon that can thaw, and you don't have any
19 monitoring in place. And if that monitoring
20 doesn't happen until October, well, you're running
21 the first year with no information on what the
22 actual berm conditions are doing and the response
23 of the ground to the impact of the lagoon water.

24 So that's another important piece of
25 information that you want to confirm is that you
26 want to get the initial ground temperatures,

0335

1 confirm that they're frozen back under a dry
2 condition right now, and then you want to see what
3 the thermal response is as you start impounding
4 just to make sure that it is behaving according to
5 the model. If you see that there's some anomalous
6 warming, then you know you've got a problem, and
7 you can do something about it before the lagoon
8 gets too full. That's the risk, and I'm just
9 explaining it to you.

10 As far as the license condition goes, we can
11 address any of the operational things, and as Paul
12 suggested, he's the engineer of record, he should
13 be able to go through and assess, you know, what
14 the operational methodology and maybe some other
15 form of interim monitoring can be, but the -- our
16 basic recommendation is that the thermistor should
17 go in now prior to impounding so that the -- that
18 risk is mitigated.

19 ACTING CHAIR: Thank you, Holger.

20 Hamlet?

21 MR. CAVANAGH: Paul Cavanagh. No, I
22 have no further comment.

23 ACTING CHAIR: Anything else from the
24 Hamlet for BGC?

25 MR. ROY: Bhabesh Roy. Yes, I'm
26 glad for the discussion, and I understand that

1 the -- nobody has any concern for issuing the
2 license; that is the one thing probably I
3 understand clearly.

4 Now, the issue is the thermistor will go to the
5 ground before commissioning or up to commissioning.
6 I understand the Board can make the decision and
7 whatever direction will come to us, and we try to
8 follow. Thank you, Mr. Chairman.

9 ACTING CHAIR: Thank you. It was just a
10 comment that was just made that -- it was just a
11 general comment that I heard for clarification is
12 that nobody has any problem with the license being
13 issued. That was just a comment that was made, and
14 I don't know, that's not what I've heard yet from
15 all the parties, and I just want to make sure that
16 is clarified, please. Dionne?

17 MS. FILIATRAULT: Mr. Chairman, that's
18 their interpretation of what they're hearing at
19 this hearing, and that's fine. I think that was
20 the two questions of clarification that I believe
21 you're going to move to shortly here, so that will
22 provide that 100 percent clarification in the
23 Board's mind of what the position of the parties
24 are in that regard, so those two questions will
25 answer that.

26 ACTING CHAIR: That's what I wanted to

1 make sure. Okay, Department of Environment had no
2 more questions; Environment Canada had no
3 questions. INAC?
4 MR. ROGERS: Of Holger?
5 ACTING CHAIR: Yes, of BGC. So will you
6 please come forward and -- do you have any
7 questions for BGC?
8 MR. ROGERS: Jim Rogers, INAC. No, we
9 don't have any questions for BGC.
10 COMMUNITY QUESTIONS BGC:
11 ACTING CHAIR: Thank you. Is there any
12 questions from the community for what this
13 gentleman there was talking about? Does anybody
14 have any questions for him, not for the Hamlet but
15 for this gentleman here and his presentation?
16 Okay, Zeke? Do you want to get a thing for
17 Zeke, and he can ask the question?
18 MR. EJESIAK: Thank you, Mr. Chair. I
19 was listening to this -- I just want to add this as
20 a comment in regards to the issues, same issue.
21 Last August, September 2007, I was involved in
22 building a berm for a fuel tank. We dug in a
23 foundation for the berm to place the berm -- in the
24 bottom of the berm. Like it has to be insulated
25 with sand, but no gravel. Gravel is permeable, and
26 it has to be certain size, thickness of the sand

1 that we put three layers of lining.

2 I was involved in constructing it, and we had
3 to place three layers of liners. We could not --
4 we had to make sure not to have any pieces of
5 stones such as gravel. It has to be pure sand in
6 order to prevent it from if it should get damaged.

7 I've been following you on this topic, and I
8 just want to help the public here in order to make
9 them more understand. This is exactly what they're
10 talking about. This is the topic. This is more or
11 less in supporting -- in explaining it. This is
12 what the kind of thermal liner they're talking
13 about.

14 ACTING CHAIR: Thank you for those
15 comments. Anybody else from the community?
16 Ashevak?

17 MR. EEZEKIU: Mr. Chair, thank you.
18 I'll probably be a little bit long on this, on my
19 question, because I have not heard any comments in
20 the issue I'm about to bring up.

21 In regards to sewage waste, at certain times,
22 the smell occurs from where they place -- they use
23 the small lake or pond for decanting it. The
24 stench tends to reach this far to our community.
25 Is that going to be the problem on the next one if
26 they're going to be issued with a license?

1 This usually happens during the -- depends
2 which way the wind is coming from. Can the
3 contaminant contaminate human health? If it -- I
4 was wondering if it can impact on our health, will
5 it contaminate the wild game also, such as ravens?
6 There's always scavengers around that area, and
7 they bring what they scavenge into our community.
8 They can spread what's contaminatable.
9 And sometimes we have dry meat in our community
10 here, right in the community here in Cape Dorset.
11 Sometimes they come too close to our houses where
12 we have dry meat, and wouldn't that be -- maybe
13 they can spread the -- they can contaminate our
14 natural foods on the nature. I don't know if I
15 make any sense with my question or not.
16 ACTING CHAIR: No, you made good sense.
17 I just need to know who wants to answer it. It
18 could be a public health or environmental thing,
19 but I just wonder who really would like to answer
20 that. I need some help here. Would somebody
21 please tell me who I should be asking to answer
22 that question? I know what he's saying, and I
23 appreciate his comment; I just need who can answer
24 him.
25 MS. FILIATRAULT: It's a difficult question
26 to answer on whose responsibility it is to answer

1 this question. It is outside the mandate of this
2 Board to deal with wildlife and to deal with public
3 health issues.

4 I would suspect in the siting of the sewage
5 lagoon that there likely is no, I guess, airborne
6 public health issues with residents of the
7 community. However, I'm not the public health
8 expert, but I would recommend that it's Public
9 Health that would address that particular issue of
10 other impacts to our health, and that's the
11 Government of Nunavut, and I'm not going to put
12 Mike on the spot again because he's not here with
13 Public Health.

14 ACTING CHAIR: No, I appreciate that,
15 and I'm just saying maybe direction perhaps to the
16 Hamlet, because there has been a concern brought up
17 by a community member advising there's a problem,
18 and all we're asking you is to please get that
19 information for this gentleman, Ashevak, and get
20 back to him and give him an answer about it, even
21 if it's Public Health or whoever it is.

22 This is not a Water Board issue, so we can't
23 deal with that, but I just want to make sure that
24 your question is answered. Right?

25 MS. FILIATRAULT: My apologies,
26 Mr. Chairman, can you repeat that last little bit

1 of your statement?

2 ACTING CHAIR: I just want to make sure
3 his question is answered. Like he has a question,
4 a concern, and we appreciate his comments. I just
5 don't want to leave him out there. I mean, we're
6 directing through the Staff to find out, I mean,
7 whether it's through the Hamlet or through the
8 Government of Nunavut, their other departments,
9 that there is problems. So it's not just here, as
10 Mike's probably aware, it's all across all of
11 Nunavut because there is other sewage lagoons
12 elsewhere, so go ahead.

13 MS. FILIATRAULT: Thank you, Mr. Chairman.
14 Then I would suggest, Mr. Chairman, that when they
15 did the site selection process for determining
16 where these facilities -- what facility to use and
17 where to site this particular facility, they would
18 have done an environmental assessment component or
19 Dillon would have.

20 The environmental assessment process is
21 somewhat outside our scope, but Dillon may be able
22 to provide some indication, and I'm not sure that
23 he specifically will be able to give an answer, but
24 there was an -- there should have been an
25 environmental review done when they were doing site
26 selection.

1 ACTING CHAIR: That's what I wanted to
2 hear, thank you. Hamlet? We'll ask for Colin
3 perhaps. You can't pass the buck; you're the only
4 guy here.

5 MR. JOYAL: Why is everybody looking
6 at me? Thank you, Mr. Chairman, Colin from Dillon.

7 Yes, I don't have that information present in
8 the body of information at this hearing. What I do
9 have in front of me though, just to -- I
10 acknowledge that I'm not directly answering the
11 question but perhaps to add to the body of
12 information and provide some background or
13 reassurance is there's several guidelines and
14 reports that have been issued for different
15 treatment methods in the north, specifically in the
16 north. INAC has a sewage treatment best available
17 technology report issued from 2001. There's other
18 comments that have been made about other lagoons in
19 other communities. So just to provide some
20 assurance that what we're proposing is technology
21 that's used elsewhere.

22 It is acknowledged that there are odor issues
23 associated with sewage, and as mentioned, I agree
24 that it was likely taken into consideration, and
25 dominant winds would have an impact as well as
26 distance from the community. So I guess what I'm

1 hoping to add here is the knowledge that this
2 technology is used elsewhere and has been
3 investigated and is included in the best available
4 technologies for sewage treatment in the north.
5 ACTING CHAIR: Yeah, I appreciate that,
6 even though it is not the mandate of the Board, a
7 question has been asked by one of the Elders for
8 clarification, and perhaps when you go back and you
9 do discuss with your other workers and find some
10 information, you can pass it on to the Hamlet, and
11 perhaps they can pass it on to Ashevak because he
12 is going to be living here for many more years. So
13 thank you for that question.
14 Any other questions from the community? Then
15 I'll call on the Staff. Any questions? Oh, Annie
16 Manning.
17 MS. MANNING-PICHULA: Mr. Chair, my name is
18 Annie Manning-Pichula (phonetic) of Dorset. We
19 been concerned about -- and us ladies in town here,
20 this summer, we went up there to visit the site.
21 We actually were on top of the higher grounds, and
22 it's -- I just want to know the level or the
23 height, if it's the same as our water source. Will
24 there be any seepage to this -- from the lagoon to
25 the water source through the ground. We were
26 concerned about that, of the women's group, when we

1 visited the site.

2 We also live off the roots and plants from the
3 land annually. They're very -- they have
4 nutritional value, and they're part of our culture;
5 we want to conserve them. That's all I have to
6 say.

7 ACTING CHAIR: Okay, thank you, Annie.
8 Thank you for them comments. They have been asked
9 before, and just to advise you what we were told,
10 there's no way can the sewage go into the water
11 source, because the sewage is here and the water's
12 here, and they can't -- it doesn't run up hill. So
13 hopefully everything what we're hearing before is
14 all okay. Now, I can ask somebody from the Hamlet
15 perhaps just to give a short clarification to make
16 sure I said that right, and I'll ask Colin.

17 MR. JOYAL: Thank you, Mr. Chairman.
18 Yes, I agree the question came up in the past, but
19 it's come up again. Maybe I won't read the
20 paragraph, but I'll try and pick out the important
21 parts to address your concern.

22 P Lake, which is where the discharge for the
23 lagoon is located, and T Lake, which is the water
24 source, are located approximately 1 kilometre
25 apart. The elevation of T Lake is 150 metres above
26 sea level, the surface in P Lake is 113, so you've

1 got 37-and-a-half metres in elevation, with your
2 sewage facility being at the bottom and the water
3 supply being above. So those are important
4 factors.

5 The possibility of sewage running from P Lake
6 to T Lake is highly unlikely. The sewage would, in
7 essence, have to run uphill in order to reach
8 T Lake. In addition to that, the land mass lying
9 between P Lake and T Lake is significantly higher
10 in elevation, so there's actually a physical
11 barrier of rock between the two, making it
12 physically impossible.

13 The second path that could be identified
14 extends to the northeast of P Lake, which is
15 blocked by the construction of lagoon berms that
16 will contain the volume of sewage discharges into
17 P Lake. So I hope that helps.

18 ACTING CHAIR: It does. Thank you very
19 much, Colin. Annie, just so you know, when he's
20 talking 37 metres, that's 110 feet, okay? For us
21 older folks, trying to figure out metres and feet.
22 It's a hundred-plus feet, so that's a quite a ways
23 away, so hopefully it will never happen. Hope that
24 answers your question.

25 Any other questions from the community? Then
26 I'll move on to Staff. Staff? No questions?

1 MS. FILIATRAULT: No questions,
2 Mr. Chairman.
3 ACTING CHAIR: No questions for Holger?
4 MS. FILIATRAULT: Mr. Chairman, I believe
5 our questions got asked when you sought that
6 clarification previously, so we're good.
7 ACTING CHAIR: Thank you very much.
8 Bill, do you have any questions for BGC?
9 MR. TILLEMAN: No, thank you.
10 ACTING CHAIR: Okay, thank you. Holger?
11 Sorry, I've already dealt with him. If it's quick,
12 I'll let you do it, because I mean I asked for
13 questions, you had none, I moved on, so --
14 MR. ROY: No, not be --
15 ACTING CHAIR: The Hamlet?
16 MR. ROY: This is Bhabesh Roy.
17 Yes, thank you, Mr. Chairman. My question is not
18 in this regard. Before the break, I was asked one
19 of the public to know the water depth of the water
20 source for clarification.
21 The information actually in my computer. I
22 cannot explore it from here, but I did the
23 measurement by myself. The ice thickness roughly,
24 I think, 1.2 metre. I did in wintertime. I did a
25 bore hole, and then I did the measurement. And
26 probably the water depth roughly 10 metre, but if I

0347

1 can send this information to SAO so that this
2 information can be available to the public. Thank
3 you, Mr. Chairman.
4 ACTING CHAIR: Thank you. So you're
5 saying the water depth is roughly 10 feet -- or 10
6 metres, which is roughly 30 feet; is that correct?
7 MR. ROY: Yes, plus ice thickness
8 1.2 metre, so roughly, say, we are talking about 35
9 feet depth.
10 ACTING CHAIR: So your lake in Cape
11 Dorset is 35 feet. Thank you very much for that.
12 Okay, what I'll do maybe is I'll call on
13 Catherine first to do the exhibits and get us back
14 up to date. And, Holger, thank you very much for
15 your presentation, well-received.
16 PROCEDURAL MATTERS:
17 MS. EMRICK: Thank you, Mr. Chair. We
18 have a number of items to add to the exhibit list.
19 I'd like to mark as Exhibit Number 9, the INAC
20 presentation, the Hamlet of Cape Dorset P Lake
21 Sewage Lagoon, dated January 23rd, 24th, 2008, hard
22 copy submitted by Jim Rogers.
23 EXHIBIT NO. 9:
24 HARD COPY OF THE INAC PRESENTATION, THE
25 HAMLET OF CAPE DORSET P LAKE SEWAGE LAGOON,
26 DATED JANUARY 23, 24, 2008, SUBMITTED BY

1 JIM ROGERS.
2 MS. EMRICK: I'd like to mark as
3 Exhibit Number 10, the INAC presentation, Hamlet of
4 Cape Dorset P Lake Sewage Lagoon, January 23rd,
5 24th, 2008, electronic copy submitted by Jim
6 Rogers.
7 EXHIBIT NO. 10:
8 ELECTRONIC COPY OF THE INAC PRESENTATION,
9 HAMLET OF CAPE DORSET P LAKE SEWAGE LAGOON,
10 JANUARY 23, 24, 2008, SUBMITTED BY JIM
11 ROGERS.
12 MS. EMRICK: I'd like to have marked
13 as Exhibit Number 11, INAC July 14th, 2007,
14 Municipal Water License 3BM-PON0409 Pond Inlet,
15 letter December 6th, 2007, and that was submitted
16 by Jim Rogers. And to mark as Exhibit Number 12,
17 INAC July 16th, 2007, Hall Beach Municipal Water
18 License Inspection 3BM-HAL0308, letter December
19 17th, 2007.
20 ACTING CHAIR: Just for clarification,
21 that was not Jim's, that was Andrew's.
22 MS. EMRICK: Okay, we can have those
23 submitted by Andrew Keim.
24 ACTING CHAIR: Yes.
25 MS. EMRICK: So that would be for
26 Exhibit 11 and Exhibit 12, thank you.

1 EXHIBIT NO. 11:
2 INAC JULY 14, 2007, POND INLET MUNICIPAL
3 WATER LICENSE INSPECTION 3BM-PON0409,
4 LETTER DATED DECEMBER 6, 2007, SUBMITTED BY
5 ANDREW KEIM.
6 EXHIBIT NO. 12:
7 INAC JULY 16, 2007, HALL BEACH MUNICIPAL
8 WATER LICENSE INSPECTION 3BM-HAL0308,
9 LETTER DATED DECEMBER 17, 2007, SUBMITTED
10 BY ANDREW KEIM.
11 MS. EMRICK: I'd like to mark as
12 Exhibit 13, BGS Cape Dorset Sewage Lagoon Review of
13 Final Submission, dated January 8th, 2008,
14 submitted by Holger Hartmaier.
15 EXHIBIT NO. 13:
16 BGS CAPE DORSET SEWAGE LAGOON REVIEW OF
17 FINAL SUBMISSION, DATED JANUARY 8, 2008,
18 SUBMITTED BY HOLGER HARTMAIER.
19 MS. EMRICK: To mark as Exhibit Number
20 14, BGC Executive Summary, Cape Dorset Sewage
21 Lagoon, Review of Final Submission, January 17th,
22 2008, Executive Summary, Holger Hartmaier.
23 EXHIBIT NO. 14:
24 BGC EXECUTIVE SUMMARY, CAPE DORSET SEWAGE
25 LAGOON, REVIEW OF FINAL SUBMISSION, DATED
26 JANUARY 17, 2008, SUBMITTED BY HOLGER

1 HARTMAIER.
2 MS. EMRICK: And Exhibit Number 15,
3 BGC Independent Geothermal Evaluation of Proposed
4 Design, January 17th, 2008, submitted by Holger
5 Hartmaier.
6 EXHIBIT NO. 15:
7 BGC INDEPENDENT GEOTHERMAL EVALUATION OF
8 PROPOSED DESIGN, DATED JANUARY 17, 2008,
9 SUBMITTED BY HOLGER HARTMAIER.
10 MS. EMRICK: And then for -- to mark
11 as Exhibit 16, Caduceon Certificate of Analysis
12 Report to Hamlet of Pond Inlet, and it's number
13 B07-32335, October 30th, 2007, submitted by
14 Patricio Fuentes.
15 EXHIBIT NO. 16:
16 CADUCEON CERTIFICATE OF ANALYSIS REPORT TO
17 HAMLET OF POND INLET, NUMBER B07-32335,
18 DATED OCTOBER 30, 2007, SUBMITTED BY
19 PATRICIO FUENTES.
20 MS. EMRICK: To mark as Exhibit
21 Number 17, Caduceon Certificate of Analysis Report
22 to Hamlet of Pond Inlet B07-34682, November 20th,
23 2007, submitted by Patricio Fuentes.
24 EXHIBIT NO. 17:
25 CADUCEON CERTIFICATE OF ANALYSIS REPORT TO
26 HAMLET OF POND INLET, NUMBER B07-34682,

1 DATED NOVEMBER 20, 2007, SUBMITTED BY
2 PATRICIO FUENTES.
3 MS. EMRICK: To mark as Exhibit 18,
4 Caduceon Certificate of Analysis Report to Hamlet
5 of Pond Inlet, Report Number B07-31475, dated
6 October 23rd, 2007.
7 ACTING CHAIR: Sorry, if I can,
8 Catherine, I have to take just a 5-minute break.
9 MS. EMRICK: Okay, so that was
10 submitted by Patricio Fuentes.
11 EXHIBIT NO. 18:
12 CADUCEON CERTIFICATE OF ANALYSIS REPORT TO
13 HAMLET OF POND INLET, NUMBER B07-31475,
14 DATED OCTOBER 23, 2007, SUBMITTED BY
15 PATRICIO FUENTES.
16 (BRIEF ADJOURNMENT)
17 ACTING CHAIR: Okay, thank you for
18 coming back. Bill, are you still there?
19 MR. TILLEMANN: Yes, sir.
20 ACTING CHAIR: Thomas?
21 THE CHAIR: Yes.
22 ACTING CHAIR: Thank you. So,
23 Catherine, do you want to finish, please?
24 MS. EMRICK: Thank you, Mr. Chair.
25 Catherine Emrick.
26 I would like to mark as Exhibit Number 19 the

1 Caduceon Certificate of Analysis Report to Hamlet
2 of Pond Inlet, Report Number B07-34075, November
3 12th, 2007, submitted by Patricio Fuentes.
4 EXHIBIT NO. 19:
5 CADUCEON CERTIFICATE OF ANALYSIS REPORT TO
6 HAMLET OF POND INLET, NUMBER B07-34075,
7 DATED NOVEMBER 12, 2007, SUBMITTED BY
8 PATRICIO FUENTES.
9 MS. EMRICK: And finally mark as
10 Exhibit Number 20, Caduceon Certificate of Analysis
11 Report to Hamlet of Pond Inlet, Report Number
12 B07-33259, October 31st, 2007, submitted by
13 Patricio Fuentes.
14 EXHIBIT NO. 20:
15 CADUCEON CERTIFICATE OF ANALYSIS REPORT TO
16 HAMLET OF POND INLET, NUMBER B07-33259,
17 DATED OCTOBER 31, 2007, SUBMITTED BY
18 PATRICIO FUENTES.
19 MS. EMRICK: Thank you, Mr. Chair.
20 ACTING CHAIR: Thank you very much.
21 Dionne, just for myself again, because so many
22 things were told to me during the break, I have a
23 line here to ask a question, and I forgot what it
24 was. I know I have to do these couple questions,
25 but there was something before I started here. I
26 don't know what it was.

1 Okay, I was just going to give one final
2 opportunity for the community members who are here,
3 in case they had any other comments or questions
4 that they want to bring to the components or to any
5 interveners or to the Licensee, that was one, and
6 the second one is -- I know what the line is now --
7 the Government-DOE, Department of Environment, and
8 Environment Canada are leaving on the plane, and
9 they would like to have their presentation comments
10 or their closing comments read into the record by a
11 Staff member. I don't think that's really a
12 problem. Dionne?

13 MS. FILIATRAULT: Dionne Filiatrault.
14 Thank you, Mr. Chairman.

15 There's no problem us reading their final
16 statements into the record, but before they do
17 leave, there were the two questions that you
18 deferred to today that need to be asked to those
19 two parties before they depart.

20 ACTING CHAIR: I'm getting to that; I
21 just had to ask the community first. Looks like
22 there is no questions, so as I mentioned yesterday
23 at the close of the first day and knowing that we
24 would be probably closing today, which I'm sure we
25 will be, it was a comment -- there was two comments
26 that I made yesterday, and I'm going to do the roll

1 call individually by the various interveners.

2 And question one is I intend to ask, which I am
3 asking, I'm asking each party to comment on whether
4 the Board should consider merging the renewal of
5 the existing license, which is currently underway,
6 with a license amendment for the newly constructed
7 sewage lagoon should we decide to do so. So that's
8 question one.

9 Question two is the Board will ask each party
10 to advise the Board whether or not the party
11 recommends that the Board issues a license
12 amendment for the newly constructed sewage lagoon.

13 So it's a two-part question. So I'm going to
14 do a roll call, and I'm going to ask the
15 individuals the two questions, and question one
16 will be yes or no, and question two will be yes or
17 no. And I guess, Mike, Government-Department of
18 Environment will go first as usual.

19 MR. ATKINSON: Mike Atkinson, Government
20 of Nunavut-Department of Environment.

21 I've got two words to answer both questions.
22 Question one -- I'm going to use more than two
23 words -- I have to confess to not fully
24 understanding the kind of -- the implications of
25 the first question in terms of the administration
26 and enforcement of the license, but the Applicant's

1 applied for a renewal that incorporates other
2 components that were not being discussed at the
3 moment, and I see no reason why that renewal should
4 not be issued followed by an amendment to take
5 account of the current proceedings.

6 The answer to the second question about should
7 the license be issued, I believe I answered that
8 yesterday in my intervention, and I haven't changed
9 from that position.

10 ACTING CHAIR: Can I just hear, Mike,
11 what that was, yes or no?

12 MR. ATKINSON: It was yes, subject to
13 the recommendations.

14 ACTING CHAIR: Thank you just for the
15 record. Thank you very much. Environment Canada?

16 MS. SPAGNUOLO: Thank you, Mr. Chair.
17 Collette Spagnuolo with Environment Canada.

18 In regards to the first question, given that
19 the amendment application may affect some of the
20 terms and conditions in the existing expired
21 license such as the operation of the three-celled
22 lagoon, Environment Canada recommends that the
23 renewal application be processed first and then be
24 amended as required based on the amendment
25 application, similar to the Government of Nunavut's
26 recommendation.

1 We do recommend that the duration of the
2 renewal be limited so that the Hamlet, the Board,
3 and the interveners are given the opportunity to
4 evaluate the effectiveness of the P Lake system.
5 And I'd just like to qualify that by saying our
6 recommendation to process the renewal application
7 is based on receiving a commitment from the
8 Applicant that they will come into compliance with
9 all of the terms and conditions in the existing
10 expired license.

11 ACTING CHAIR: Thank you. And Item 2?

12 MS. SPAGNUOLO: In regards to question
13 number 2, a response is included in our closing
14 statements which will be read into the record, but
15 for your benefit right now, Environment Canada sees
16 no problems with issuing the amendment pursuant to
17 the recommendations that we have made and that the
18 other interveners have made here today.

19 ACTING CHAIR: Thank you very much.

20 INAC?

21 MR. ROGERS: Jim Rogers, Indian and
22 Northern Affairs Canada.

23 I can never say anything in two words. I do
24 agree with Environment Canada and the Government of
25 Nunavut that the renewals should be issued, first,
26 for the short term, and the amendment, if the Board

1 agrees to pass the amendment, the amendment passed
2 afterwards and included as part of the renewed
3 license.

4 As for the recommendation of the amendment as
5 it was in our presentation, INAC agrees that the
6 amendment can be issued meeting the conditions that
7 were laid out in our presentation and a
8 confirmation from the applicant that they will meet
9 the requirements of the existing license to come
10 into compliance.

11 ACTING CHAIR: Thank you, Jim. BGC?

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

13 Holger Hartmaier, BGC Engineering.

14 If I may, I'd like to abstain from the first
15 part with respect to the merging of the two
16 applications. BGC has not been involved in any of
17 the review of the existing structure and the
18 conditions under which it's being operated, so we'd
19 rather not make a yes-or-no pronouncement on that
20 one.

21 With respect to the second question of the
22 existing license -- or the license amendment for
23 the new sewage lagoon, we see no problem in
24 proceeding with that.

25 ACTING CHAIR: Okay, thank you. I think
26 that is the only people I need to ask that to. And

1 the Hamlet, sorry? Sorry, I'll ask the Hamlet.
2 You've heard the two points; would you please
3 answer to both points?
4 MR. ROY: This is Bhabesh,
5 Municipal Engineer, CGS.
6 Mr. Chairman, the first question is the -- the
7 first one, the existing -- renewal of the existing
8 license and amendment of the new one. I think the
9 new one can be implemented on the basis of the
10 existing one because the -- if you go -- if the
11 Board will issue a new license for the new
12 facility, then with that license, we cannot use the
13 existing facility, so I think the -- it should be a
14 wise decision to renew the existing which we
15 applied, and then on the basis of the existing
16 license we amend, accommodating the P Lake lagoon.
17 ACTING CHAIR: On the second point?
18 MR. ROY: As I think I already
19 indicated, that the second one cannot go
20 independently, otherwise, the existing system will
21 be left out.
22 ACTING CHAIR: Point taken. But at
23 present, supposedly there is no license, but they
24 are applying for a Type B license, and that's what
25 we're here for is to approve the Type B license --
26 amendment to the Type B license, and that

1 includes -- they don't have a Type A. They have a
2 Type B. So he's saying that we can do everything
3 at once, different people or not. Is that what you
4 want to hear? No, I mean we want to hear, but I
5 mean is that what you're asking me to do, may I
6 ask, sorry, Dionne?
7 MS. FILIATRAULT: Yes, Mr. Chairman, that's
8 fine. The response that he provided is sufficient
9 clarification.
10 ACTING CHAIR: Thank you. Then I will
11 carry on. I guess, Mike, thank you. I know you've
12 got to catch a plane.
13 MR. KEIM: We're delayed an hour;
14 we're good.
15 ACTING CHAIR: Oh, we're good; we're
16 delayed an hour anyway, so there's no --
17 MR. KEIM: 4:30.
18 ACTING CHAIR: 4:30, so no need to rush
19 then. Okay, presentation by any other person,
20 association, agencies who have advised me that they
21 wish to speak; I had none.
22 Questions of other persons, association,
23 agencies, et cetera, by the parties; I take it
24 there's none.
25 And upon completion of our -- now at the
26 completion of the presentations by all parties, the

1 Board will give the Applicant an opportunity to
2 reply to what is said. It's not your closing
3 remarks, is do you have any final comments. Sorry,
4 Dionne?

5 MS. FILIATRAULT: Mr. Chairman, just before
6 we proceed to the closing remarks from the -- 14,
7 yes, is that not where you just talked about Agenda
8 Item 14, that's the closing remarks from the
9 Proponent.

10 ACTING CHAIR: Oh, sorry, you told me
11 they could have a reply, and then I will advise
12 them they're going to have a closing remark after.

13 MS. FILIATRAULT: Oh, okay. And I just
14 want to confirm that we kind of moved quickly into
15 those two clarifications. Did we actually confirm
16 from the local people that nobody had any
17 additional questions?

18 ACTING CHAIR: We asked that before,
19 yes, and nobody had any questions. Thank you very
20 much.

21 I'll just ask it one more time. Does the
22 community members have any more questions for
23 anybody in this room, because once this is done,
24 we're finished, and we'll actually close this
25 meeting. No, I think everybody is good.

26 So basically I'm just trying to find out does

1 the Licensee have an opportunity to do a reply now,
2 or just strictly a closing remark only? Go ahead.
3 MS. FILIATRAULT: Mr. Chairman, Dionne
4 Filiatrault.

5 There were two points of clarification that the
6 Applicant had committed to provide us with today on
7 a series of questions that were provided, so before
8 you get into their reply, they should provide that
9 at this point. They can reply to any comments at
10 this point, and it's not necessarily a closing.
11 Then they will hear the closing of all the parties
12 and make a final closing statement.

13 ACTING CHAIR: So basically, what are
14 the two questions? One was the depth of the water
15 source, that was one that has already been
16 answered, or is there two other questions? What
17 are the questions again? I don't know what they
18 are.

19 MR. HOHNSTEIN: Thank you, Mr. Chairman.
20 David Hohnstein.

21 It was a question I had posed yesterday
22 regarding the slope alongside of the lagoon and the
23 drainage coming into that lagoon and, I guess, the
24 effectiveness of the deflection berm and where that
25 water would be going. I think Dillon had deferred
26 that to just confirm their response.

0362

1 ACTING CHAIR: And what's the second
2 question, David?
3 MR. HOHNSTEIN: It was all-encompassing
4 in that one, yeah.
5 ACTING CHAIR: Colin, are you ready to
6 answer that question?
7 MR. JOYAL: I'll give it a shot.
8 Thank you, Mr. Chairman. Colin Joyal, Dillon
9 Consulting.
10 In response to that, I'll just defer or I'll
11 draw your attention to Item 30 in the November
12 13th, 2007 letter to the Water Board, and maybe
13 I'll just -- I can just read through it. It
14 pertains to issues that are related to the
15 question. "Description" -- and this was an issue
16 that came up at the technical hearing: (As Read)
17 Ditch liner detail provided by the
18 Applicant does not prevent seepage from
19 entering the lagoon, since it does not go
20 below the active zone. Seepage inflow is
21 noted at site through the recently
22 completed berm.
23 So that was an issue that came up October 10th.
24 And the response submitted was that: (As Read)
25 The berm and cutoff trench were, as
26 mentioned in the BGC memo, recently

1 completed and, for this reason, were in an
2 unfrozen state. Thus, the reported seepage
3 noted in the 2007 fall was likely through
4 the still unfrozen active layer and the
5 unfrozen cutoff trench beneath the berm.
6 This will be monitored. If the ditch
7 seepage is present at an unacceptable rate,
8 remediation action will be undertaken. Of
9 note is the constructed containment is
10 approximately 4,000 cubic metres greater
11 than the design requirements. Also in the
12 first years of operation, the lagoon has
13 38,000 cubic metres of spare hydraulic
14 capacity because of hydraulic retention is
15 designed for a 20-year life. Should there
16 be seepage through the ditch in the first
17 several years of operation, it will not
18 adversely impact the operational lagoon.
19 So to address the question, there is a detail
20 given on Drawing 110, Detail 5 of the north berm
21 section. There is a response here that it will be
22 observed, and if there is any seepage, it will be
23 monitored, or if there is any overflow of that
24 ditch, it will be monitored in regards to the
25 hydraulic capacity of the facility. Because it's
26 designed for a 20-year horizon, and we're in year

1 one, it should not adversely affect the operation
2 of the lagoon.

3 With respect to the design of those -- of that
4 ditch, the contours and topography in the area was
5 taken into consideration. The design calculations
6 are not provided in the design reports at this
7 time.

8 ACTING CHAIR: Thank you very much.

9 Okay. Sure, Holger.

10 MR. HARTMAIER: Holger Hartmaier with
11 BGC.

12 I just wanted to follow up on Colin's comments
13 on that detail. The detail that is being shown is
14 the detail that we had commented on at the October
15 1st meeting, and it obviously is not working as far
16 as the -- providing an adequate cutoff through the
17 active zone. The problem is the berm section for
18 the road is not thermally designed to bring the
19 permafrost up into the base of the bedrock where
20 the seepage is occurring, so we still have an issue
21 with respect to making sure that the -- you know,
22 some kind of a revised ditch detail is provided
23 that's going to work. So that was in our
24 intervention.

25 The other comment is that, yes, the lagoon does
26 have adequate capacity to store any runoff water

1 that may be seeping into it, but be aware that this
2 represents a change in the operation of the
3 reservoir, which is exactly one of those trigger
4 points that we want the consultant to be aware of.
5 If you're suddenly storing a lot of spring runoff
6 in the lagoon, impounding water, that does change
7 the operational aspect of the reservoir with
8 respect to the amount of water that's in the lagoon
9 and the potential impact on the geothermal
10 property. So that's an automatic trigger for some
11 kind of a geotechnical review of the operations.

12 ACTING CHAIR: Thank you. Hamlet?

13 MR. JOYAL: Thank you. Colin Joyal,
14 Dillon Consulting.

15 Just to be clear, the intent is not to modify
16 the operation of the facility. The intent is to
17 address the situation and monitor it and provide a
18 response if necessary. That comment is related to
19 the ability to have an opportunity to observe
20 conditions and monitor it without at that time
21 adversely affecting the performance of the lagoon.

22 ACTING CHAIR: Thank you. Okay, any
23 other reply -- oh, Jim, sorry, INAC?

24 MR. ROGERS: Just a quick
25 clarification. Was that the north dike that you
26 were suggesting that detail was for, or for the

0366

1 south road channel?
2 ACTING CHAIR: Hamlet?
3 MR. JOYAL: Thank you. Colin Joyal,
4 Dillon Consulting.
5 There are details provided on Drawing 110.
6 Detail 5 is for the north berm section. On the
7 south road, that issue was brought up earlier, and
8 that is one of the details that was issued in a
9 change-order and will be included in the as-built
10 drawings if they're re-issued.
11 ACTING CHAIR: Thank you very much. Any
12 other replies? No, okay. We'll move on. We're at
13 the stage now where the -- final closing. Now, I
14 understand that Department of Environment did not
15 go. Would you still wish to sit there and have
16 somebody from our Staff read it for you, or do you
17 want to do it?
18 MR. ATKINSON: Sure.
19 ACTING CHAIR: Mike, would you please
20 come up and do it. What I'm going to do if I can,
21 I'm going to call on DFO (sic), Environment, INAC,
22 and then there's going to be an hour break because
23 the Licensee needs at least an hour to prepare
24 their final closing remarks, which means,
25 hopefully, we'll be back here by 4 if we can get
26 through them fairly quick, if not, 4:30 because we

1 leave on a plane coming in too, so we want to get
2 out. So do I call them right now or Dionne first?
3 MS. FILIATRAULT: It may be worthwhile,
4 Mr. Chairman, to clarify if the Proponent still
5 needs an hour. They did have the lunch hour and
6 some breaks in between here that maybe they don't
7 need a whole hour and just to give you a better
8 idea.
9 ACTING CHAIR: Yes, no, they did come
10 back after lunch and told me they would need an
11 hour. Do you still need an hour or a half an hour
12 is sufficient?
13 MR. ROY: Half hour.
14 ACTING CHAIR: Half hour, good; we've
15 gained a half an hour. Michael, please proceed.
16 CLOSING STATEMENT BY GN-DOE:
17 MR. ATKINSON: Thank you very much.
18 Mike Atkinson, Government of Nunavut-Department of
19 Environment.
20 Just in closing, I would add that since 2006,
21 the Government of Nunavut-Department of Environment
22 has been involved in the review of the proposed
23 amendment to the Hamlet of Cape Dorset Type B water
24 license.
25 At this hearing, we have provided final
26 comments and recommendations for the license

1 conditions in matters relating to seepage,
2 geothermal analysis, operation and maintenance,
3 discharge criteria, sludge management, and use of
4 the current treatment system as a contingency
5 measure, abandonment and restoration, and
6 monitoring.

7 We've also listened closely to the dialogue
8 here and the information presented by the Proponent
9 and other interveners and still stand by all of the
10 recommendations that we provided to the Board in
11 our intervention. We also stand by our final
12 conclusion that that was subject to the recommended
13 license conditions and those suggested by other
14 interveners. The Board should proceed with the
15 issuance of the amendment.

16 Finally, I would say that Department of
17 Environment would like to thank the Water Board for
18 the opportunity to present information to them and
19 to the Community of Cape Dorset for their valuable
20 contributions and hospitality during these
21 hearings. Thank you.

22 ACTING CHAIR: Quyannamiik. Environment
23 Canada? Okay, she has already left. Would
24 somebody please read their presentation into the
25 record. State your name for the record, and who
26 you're representing, I guess.

1 CLOSING STATEMENT BY EC:

2 MR. HOHNSTEIN: Thank you, Mr. Chair.
3 David Hohnstein. I've been asked to read into the
4 record, Environment Canada's closing remarks for
5 the Cape Dorset water license amendment: (As Read)

6 Environment Canada would like to thank the
7 Nunavut Water Board for the opportunity to
8 intervene at this hearing and the Hamlet
9 and the people of Cape Dorset for their
10 hospitality during our stay.

11 Environment Canada is sympathetic to
12 the concerns expressed by some of the
13 citizens of Cape Dorset regarding the
14 location of the P Lake lagoon. Environment
15 Canada hopes that these concerns highlight
16 to the Department of Community and
17 Government Services and the Hamlet of Cape
18 Dorset the importance of public
19 consultation during the planning and the
20 design stages and that this lesson will be
21 applied to future municipal projects in
22 Nunavut.

23 Environment Canada also recognizes that
24 the proposed sewage treatment system will
25 result in a significant improvement over
26 the current treatment of municipal waste

1 water in Cape Dorset. However, successful
2 treatment of the waste water will be highly
3 dependent on the operation and maintenance
4 of the lagoon by the Hamlet. Environment
5 Canada respectfully requests that the Board
6 consider the recommendations made in our
7 written intervention and our presentation,
8 as we feel these recommendations will help
9 ensure the protection of the receiving
10 environment.

11 In particular, monitoring of the
12 effectiveness of the waste water treatment
13 in both the P Lake lagoon itself as well as
14 the ancillary components downstream of the
15 lagoon and the inclusion of an appropriate
16 test to provide an indication of toxicity
17 are necessary to provide assurances that
18 Telik Inlet will be protected.

19 The Board should note that Environment
20 Canada has received the letter from CGS,
21 dated November 13th, 2007, and our
22 recommended terms and conditions are in
23 addition to the responses provided by CGS
24 in their letter. Provided the terms and
25 conditions recommended by Environment
26 Canada and interveners are included in the

0371

1 license, Environment Canada recommends that
2 the Nunavut Water Board approve the license
3 subject to these terms and conditions.
4 Thank you. Environment Canada.
5 ACTING CHAIR: Thank you very much,
6 David. I don't think the Staff has any closing
7 remarks; never do. Bill, do you have any closing
8 remarks?
9 MR. TILLEMAN: No, thank you.
10 ACTING CHAIR: Sorry, I missed INAC.
11 CLOSING STATEMENT BY INAC:
12 MR. ROGERS: Thank you, Mr. Chair, Jim
13 Rogers.
14 I apologize to the Board for being long-winded.
15 As the Board knows and the Hamlet knows, the Hamlet
16 is not in compliance with their existing, expired
17 license, which the Board has raised for renewal.
18 As the enforcer of the terms and conditions of
19 a license issued by the Nunavut Water Board, INAC
20 still has some discomfort with the renewal unless
21 we, and I presume the Board, has confidence that
22 the Licensee will strive to come into compliance
23 with the existing terms and conditions.
24 INAC requests that the Licensee contact the
25 INAC inspector for assistance in reaching this
26 compliance. INAC also believes that the designs

1 and construction of the P Lake lagoon cannot be
2 proven to be adequate until tested through
3 operation and, therefore, the reaction of the
4 lagoon, the berms, and the other infrastructure.

5 Monitoring should provide sufficient data or
6 information to indicate what is happening before,
7 then during operation. To improve our confidence,
8 INAC believes monitoring would be prudent,
9 especially monitoring of the berm and ground
10 foundation temperatures with near continuous
11 measurements, inputs into the lagoon either through
12 recording of inputs, such as the number of
13 truckloads, the amount of precipitation falling,
14 and any overland flow that flows into it, or
15 measuring the levels of the water upstream,
16 downstream, and doing a water balance, monitoring
17 of water quality downstream of the lagoon to meet
18 discharge limits, and also to indicate if seepage
19 is occurring through the berm, and monitoring of
20 the rates of decant. Some of this monitoring
21 should not wait until the Board has issued a
22 decision. We are missing a window of opportunity.

23 INAC also believes that the final surveillance
24 network points under the surveillance network
25 program sites for the amendment or the P Lake
26 amendment be set up in consultation with the INAC

1 and Environment Canada inspectors, and then that
2 these points, once identified and marked, would be
3 used by the Hamlet, by the inspectors, and then the
4 Water Board would be informed.

5 Operation: If the Applicant is willing to take
6 the risk and with the low volumes to be inputted
7 into the lagoon if operation begins within the next
8 60 days -- such as April 1st, so we feel about 25
9 to 30 cubic metres would enter the lagoon if there
10 was just the input from the sewage -- INAC will not
11 oppose the issuance of the amendment and the
12 beginning use of the lagoon, but it is a risk.
13 Monitoring would assist in limiting that risk and
14 allowing you to develop contingencies.

15 Finally, I would like to suggest again to the
16 Hamlet -- or that INAC is willing to work with the
17 Hamlet, the Government of Nunavut, the Board and
18 its Staff on the water and licensing process and
19 enforcement of any issued or to-be-issued licenses.
20 Phone us, we're willing to work with the process to
21 improve it for later on. And that's my comments.
22 Thank you, Mr. Chairman.

23 ACTING CHAIR: Thank you, Jim. We will
24 now adjourn until quarter to 4, gives a little more
25 than half an hour, but we'll adjourn to quarter to
26 4. We will come back with the closing of the

1 Applicant.
2 Once that is done, I will do our, the Board's,
3 closing remarks, and then we will adjourn. So we
4 will go away for half an hour and come back at
5 quarter to 4.
6 (PROCEEDINGS ADJOURNED AT 3:09 P.M.)
7 (PROCEEDINGS RESUMED AT 3:47 P.M.)
8 ACTING CHAIR: We'll come back into
9 regular session. I just want to do a roll call
10 with Bill. Are you there, sir?
11 MR. TILLEMAN: Yes, sir.
12 ACTING CHAIR: Thomas, are you there?
13 THE CHAIR: Yes.
14 ACTING CHAIR: Bill, are you there?
15 MR. TILLEMAN: Yes, sir.
16 ACTING CHAIR: Sorry, I didn't hear you.
17 Thanks, Bill.
18 Okay, is the Licensee now ready to do their
19 presentation? I'll call on the Hamlet, and I think
20 it's going to be a two-part. Let's just do it --
21 we'll do the first one. And Mr. Palluq will do the
22 second one, Johnathan. So please proceed, Art.
23 CLOSING STATEMENT BY HAMLET:
24 MR. STEWART: Thank you, Mr. Chairman.
25 Art Stewart, SAO, Hamlet of Cape Dorset.
26 As the Applicant on behalf of the Mayor and

1 Hamlet Council, I wish to thank the Members of the
2 Water Board, the Water Board Staff, stenographer,
3 translators, interveners, consultants, CGS, and
4 those participating by phone and the public for
5 their input into this hearing.

6 Our Hamlet is in desperate need of a solution
7 to our sewage problems, and we strongly feel that
8 the P Lake lagoon will solve these problems. Each
9 of the interveners have suggested that a water
10 license be granted subject to certain conditions.
11 We are confident that these conditions can be met
12 if they are reasonable, practical, attainable, and
13 enforceable.

14 We respectfully request that a license for the
15 P Lake facility be granted. Thank you very much,
16 Mr. Chairman.

17 ACTING CHAIR: Thank you, Art.
18 Johnathan?

19 MR. PALLUQ: Johnathan, Assistant
20 Regional Director for CGS.

21 I would like to thank everyone first, Nunavut
22 Water Board, and the Board of directors, their
23 Staff, and I would like to thank the Hamlet Staff,
24 community, the public. I thank you for your
25 hospitality in Cape Dorset, and I would like to
26 also thank the interveners: Department of

1 Environment, Environment Canada, INAC, BGC, Dillon,
2 and AMEC, also our staff here.

3 We have been having a discussion the last two
4 days what is going to be purposeful for the
5 Community of Cape Dorset, the sewage lagoon when
6 the P Lake -- lagoon for P Lake. I'm sure it's
7 going to be purposeful for the Community, and it
8 has to be built properly.

9 And it's going to be -- the monitoring
10 program's going to be an effect, and it's going to
11 be ongoing in order to be able to see anything, if
12 it's working, if it's operable, and to maintain it,
13 and it's for the sewage waste and before it spreads
14 to the ocean to other -- and the surroundings of
15 the environment here, to protect it. It's called
16 O & M manual, operation and maintenance, that has
17 to be -- it's going to be part of it.

18 And the outcome is everybody's in favour to
19 renew the license, and if they want to make a
20 recommendation that's going to be part of the
21 license, and would they want to -- it's going
22 through Hamlet's application, and that's going to
23 be enforced.

24 We still have to protect the land, the
25 environment. Presently, it has to be -- it has
26 to -- we have to follow the regulations to protect

1 the land and the ocean. And the P Lake presently,
2 that's going to be a good choice, and we'd like to
3 see the license to be granted to the Applicants,
4 and we also like to see the license to be renewed.
5 And if it has to be renewed again for such as when
6 the decant, if it should get deep, it might get
7 damaged by the wind. We'd like to remain to work
8 closely with the regulators and their staff, and we
9 like to work closely with them when we use to
10 communicate with one other.

11 We are willing to work with regulatory staff to
12 work out the details of the conditions on that
13 renewal license, and also for the Nunavut Water
14 Board, and if there are any conditions achievable
15 and practical. It has to be practical, the
16 conditions, the recommendation that you will be
17 making.

18 I would like to thank everyone here again and
19 Inuit from this community and the residents here
20 who did not (sic) show up for the meeting. This is
21 my conclusion. Thank you.

22 ACTING CHAIR: Thank you, Johnathan. We
23 are now onto Agenda Item 15, before I proceed, I
24 would like -- I always hate to say I would like --
25 I want to call on Thomas and Bill, if they have any
26 comments or require any more clarification. I'll

1 start with Bill.
2 MR. TILLEMAN: No, sir, thank you very
3 much, and thanks to the parties. No comments or
4 clarifications from me, sir. Thank you.
5 ACTING CHAIR: Thank you. Thomas?
6 THE CHAIR: I don't have any
7 questions at this time or require any
8 clarifications. Thank you.
9 CLOSING STATEMENT BY NWB BOARD:
10 ACTING CHAIR: Quyannamiik. On behalf
11 of the Board Members, I would like -- I want to
12 thank the parties, including especially the
13 Applicant; the Staff; the interveners; our
14 interpreters, Mary Hunt and Ben Kogvik; our court
15 reporter, Karoline Schumann, thank you for your
16 indulgence; PIDO, Trevor Bourque; our local page,
17 Dana Pootoogoo; and especially all the Community
18 Members and the Elders for their valued
19 participation at this hearing. I know you're my
20 family and you're my friends, and quyannamiik for
21 coming.
22 Thanks also to the Hamlet of Cape Dorset,
23 especially Art Stewart and the Mayor, Fred Schell,
24 and the Cape Dorset Suites, Timoon and Christine,
25 for their outstanding hospitality and patience with
26 the Board in dealing with weather-related

1 challenges.

2 As we are at the close of the hearing, I will
3 make some comments to let the parties know what
4 happens next.

5 I now close the hearing record for the
6 application for amendment submitted by the Hamlet
7 of Cape Dorset. What this means is no additional
8 information will be accepted on this application
9 prior to the Board making a final decision. The
10 Board will make its decision on the application in
11 due course consistent with usual time lines for
12 issuing its decision.

13 Have a good afternoon, safe travel home,
14 especially for the visitors to Cape Dorset. Please
15 come back. It's a great community to come to.

16 I now declare this hearing closed. We will
17 have a closing prayer by Lootie Toomasie.
18 Quyannamiik.

19 (CLOSING PRAYER)

20 (WHICH WAS ALL THE EVIDENCE TAKEN AT 3:59 P.M.)

21

22

23

24

25

26

1 I, Karoline Schumann, Court Reporter, hereby
2 certify that I attended the above Hearing and took
3 faithful and accurate shorthand notes, and the
4 foregoing is a true and accurate transcript of my
5 shorthand notes to the best of my skill and
6 ability.

7 Dated at the City of Calgary, Province of
8 Alberta, this 31st day of January, 2008.
9

10

11

12 Karoline Schumann, CSR(A)
Official Court Reporter

13

14

15

16

17

18

19

20

21

22

23

24

25

26

EXHIBITS

PAGE NUMBER:

1	
2	
3	EXHIBIT NO. 9:
4	HARD COPY OF THE INAC PRESENTATION, THE HAMLET OF
5	CAPE DORSET P LAKE SEWAGE LAGOON, DATED JANUARY 23,
6	24, 2008, SUBMITTED BY JIM ROGERS..... 347
7	EXHIBIT NO. 10:
8	ELECTRONIC COPY OF THE INAC PRESENTATION, HAMLET OF
9	CAPE DORSET P LAKE SEWAGE LAGOON, JANUARY 23, 24,
10	2008, SUBMITTED BY JIM ROGERS..... 348
11	EXHIBIT NO. 11:
12	INAC JULY 14, 2007, POND INLET MUNICIPAL WATER
13	LICENSE INSPECTION 3BM-PON0409, LETTER DATED
14	DECEMBER 6, 2007, SUBMITTED BY ANDREW KEIM.... 349
15	EXHIBIT NO. 12:
16	INAC JULY 16, 2007, HALL BEACH MUNICIPAL WATER
17	LICENSE INSPECTION 3BM-HAL0308, LETTER DATED
18	DECEMBER 17, 2007, SUBMITTED BY ANDREW KEIM... 349
19	EXHIBIT NO. 13:
20	BGS CAPE DORSET SEWAGE LAGOON REVIEW OF FINAL
21	SUBMISSION, DATED JANUARY 8, 2008, SUBMITTED BY
22	HOLGER HARTMAIER..... 349
23	EXHIBIT NO. 14:
24	BGC EXECUTIVE SUMMARY, CAPE DORSET SEWAGE LAGOON,
25	REVIEW OF FINAL SUBMISSION, DATED JANUARY 17, 2008,
26	SUBMITTED BY HOLGER HARTMAIER..... 349

1	EXHIBIT NO. 15:	
2	BGC INDEPENDENT GEOTHERMAL EVALUATION OF PROPOSED	
3	DESIGN, DATED JANUARY 17, 2008, SUBMITTED BY HOLGER	
4	HARTMAIER.....	350
5	EXHIBIT NO. 16:	
6	CADUCEON CERTIFICATE OF ANALYSIS REPORT TO HAMLET	
7	OF POND INLET, NUMBER B07-32335, DATED OCTOBER 30,	
8	2007, SUBMITTED BY PATRICIO FUENTES.....	350
9	EXHIBIT NO. 17:	
10	CADUCEON CERTIFICATE OF ANALYSIS REPORT TO HAMLET	
11	OF POND INLET, NUMBER B07-34682, DATED NOVEMBER 20,	
12	2007, SUBMITTED BY PATRICIO FUENTES.....	350
13	EXHIBIT NO. 18:	
14	CADUCEON CERTIFICATE OF ANALYSIS REPORT TO HAMLET	
15	OF POND INLET, NUMBER B07-31475, DATED OCTOBER 23,	
16	2007, SUBMITTED BY PATRICIO FUENTES.....	351
17	EXHIBIT NO. 19:	
18	CADUCEON CERTIFICATE OF ANALYSIS REPORT TO HAMLET	
19	OF POND INLET, NUMBER B07-34075, DATED NOVEMBER 12,	
20	2007, SUBMITTED BY PATRICIO FUENTES.....	352
21	EXHIBIT NO. 20:	
22	CADUCEON CERTIFICATE OF ANALYSIS REPORT TO HAMLET	
23	OF POND INLET, NUMBER B07-33259, DATED OCTOBER 31,	
24	2007, SUBMITTED BY PATRICIO FUENTES.....	352
25		
26		
