

ALBERTA ENVIRONMENTAL APPEAL BOARD

Report and Recommendations

Dates of Hearing: May 15, October 17, and October 18, 2002
Date of Report and Recommendations: November 18, 2002

IN THE MATTER OF sections 91, 92, and 94 of the *Environmental Protection and Enhancement Act*, R.S.A. 2000, c. E-12 and sections 114 and 115 of the *Water Act*, R.S.A. 2000, c. W-3;

-and-

IN THE MATTER OF appeals filed by David Doull and the Lake Wabamun Enhancement and Protection Association with respect to *Environmental Protection and Enhancement Act* Approval No. 18528-00-03 issued by the Director, Northern East Slopes Region, Regional Services, Alberta Environment, and with respect to *Water Act* Licence Amendment No. 00037698-00-02, issued by the Director, Central Region, Regional Services, Alberta Environment, both to TransAlta Utilities Corporation.

Cite as: *Doull et al. v. Directors, Northern East Slopes Region and Central Region, Regional Services, Alberta Environment, re: TransAlta Utilities Corporation* (18 November 2002), Appeal Nos. 01-082, 01-084, 02-002, and 02-003-R (A.E.A.B.).

EXECUTIVE SUMMARY

Alberta Environment issued an Approval under the *Environmental Protection and Enhancement Act* and a Licence under the *Water Act* to TransAlta Utilities Corporation with respect to their Water Treatment Plant at Wabamun Lake, west of Edmonton, Alberta. The purpose of the plant is to mitigate the effects of TransAlta's other operations on the Lake.

The Board received a total of eight appeals – five with respect to the Approval and three with respect to the Licence. By the time these appeals were heard, four of the appeals had been either dismissed or withdrawn. The remaining appeals were by Mr. David Doull and the Lake Wabamun Environmental Protection Association – each appealed the Approval and the Licence.

Following several motions with respect to the issues to be considered in the hearing of these appeals, the Board determined that the following issues would be considered:

1. the adequacy of the water balance model as a basis for establishing the quantity of water to be returned to the Lake;
2. the ability of the water treatment plant to deliver the specified quantities of water;
3. the water quality of the Sundance Cooling Pond as a limiting factor on the ability to deliver the quantities of water required to the quality required; and
4. the method and timing of providing reports.

Based on the evidence that was presented, particularly by Alberta Environment and the independent witness Dr. Gan, the Board is of the view that a 10 percent safety factor should be added to the requirement for returning water to Wabamun Lake. Further, some additional information should be collected to improve the water balance model. The Board does not have concerns with the ability of the water treatment plant to return the quantities of water required. The Board also does not foresee that TransAlta's decision to use the Sundance Cooling Pond as the source of water for the water treatment plant makes it inherently likely that it will fail to satisfy the terms of the Approval and the Licence. Finally, with respect to additional reporting requirements, TransAlta has previously agreed to provide additional reporting and has also made a number of other commitments to address stakeholder concerns. The Board is of the view that the additional reporting requirements and the additional commitments are reasonable, and where appropriate, should be incorporated into the Approval or Licence.

BEFORE:

William A. Tilleman, Q.C., Chair;
Dr. Steve Hrudehy; and
Frederick Fisher, Q.C.

APPEARANCES:

Appellants: Mr. David Doull; and the Lake Wabamun Enhancement and Protection Association, represented by Ms. Linda Duncan and Mr. Locke Boros.

Directors: Mr. Daryl Seehagel, Director, Northern East Slopes Region, Regional Services, Alberta Environment, and Mr. Larry Williams, Director, Central Region, Regional Services, Alberta Environment, represented by Mr. William McDonald and Ms. Renee Craig, Alberta Justice.

Approval Holder: TransAlta Utilities Corporation, represented by Mr. Ronald M. Kruhlak and Mr. Corbin Devlin, McLennan Ross LLP.

Intervenor: Mr. C.G.P. Spilsted.

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I. BACKGROUND

[1] On July 30, 2001, the Director, Northern East Slopes Region, Regional Services, Alberta Environment (the “Directors”¹) issued Approval No. 18528-00-03 (the “Approval”) under the *Environmental Protection and Enhancement Act*, R.S.A. 2000, c. E-12² (the “Act” or “EPEA”) to TransAlta Utilities Corporation (the “Approval Holder,” “TransAlta,” or “TAU”), repealing and replacing Approval No. 18528-00-01 and Amending Approval No. 18528-00-02, allowing the construction, operation, and reclamation of a Class III potable water treatment plant (the “Water Treatment Plant” or “WLWTP2”) at the N½ 20-52-4-W5M and SE¼ 29-52-4-W5M at Wabamun Lake (the “Lake”), west of Edmonton, Alberta. On March 8, 2002, the Director, Central Region, Regional Services, Alberta Environment, issued Licence Amendment No. 00037698-00-02 (the “Licence”) under the *Water Act*, R.S.A. 2000, c. W-3,³ to the Approval Holder with respect to the same facility.⁴

[2] The Environmental Appeal Board (the “Board”) received Notices of Appeal on August 30, 2001, from Mr. Blair Carmichael and Mr. David Doull, on August 31, 2001, from the Lake Wabamun Enhancement and Protection Association (“LWEPA”), and on September 4, 2001, from Mr. Nick Zon. The Board also received a Notice of Appeal from Enron Canada Power Corporation (“Enron”) on August 30, 2001. These Notices of Appeal were with respect to the Approval issued under EPEA. The Notices of Appeal filed by Mr. Carmichael, Mr. Zon, and Enron were either withdrawn or dismissed and, as a result, the only remaining appellants for

¹ As the appeals are in respect to both the Approval, issued by the Director, Northern East Slopes Region, Regional Services, Alberta Environment (designated a Director under EPEA) and the Licence Amendment, issued by the Director, Central Region, Regional Services, Alberta Environment (designated a Director under the *Water Act*) reference will be made to the “Directors” in this Report and Recommendations.

² As of January 1, 2002, the *Environmental Protection and Enhancement Act*, R.S.A. 2000, c. E-12, has replaced the *Environmental Protection and Enhancement Act*, S.A. 1992, c. E-13.3.

³ As of January 1, 2002, the *Water Act*, R.S.A. 2000, c. W-3, has replaced the *Water Act*, S.A. 1996, c. W-3.5.

⁴ It should be noted that there is an existing water treatment plant (the “Existing Water Treatment Plant” or “WLWTP1”) operating adjacent to the Water Treatment Plant that is under appeal here. This facility was also constructed to mitigate the impacts of the Approval Holder. However, it was concluded that the Existing Water Treatment Plant was insufficient to mitigate the impacts in as timely a manner as demanded by the residents at the Lake, and as a result, it was determined that the construction of the Water Treatment Plant (WLWTP2) was necessary.

the purposes of this Report and Recommendations are Mr. Doull and LWEPA (collectively the “Appellants”).⁵

A. EPEA Appeals

[3] The Board acknowledged the Notices of Appeal and requested that the Approval Holder and the Directors respond to Mr. Carmichael’s request that the appeals with respect to the EPEA Approval be held in abeyance until the *Water Act* Licence had been issued. In the same letter, the Board requested that the Directors provide a copy of all correspondence, documents, and materials relevant to these appeals (the “Record”).⁶

[4] The Directors and the Approval Holder wrote to the Board, concurring with the request to hold the appeals in abeyance pending the finalization of the *Water Act* Licence. On September 7, 2001, the Board notified the Parties that it would hold the appeals in abeyance pending the issuance of the *Water Act* Licence.

[5] On November 9, 2001, the Board requested the Parties comment on the issue as to whether or not the Government of Alberta had participated in a public review of the Water Treatment Plant under the *Canadian Environmental Assessment Act*, S.C. 1992, c. 37 (“CEAA”).⁷ The Board notified the Parties on November 23, 2001, that it had reviewed the

⁵ Mr. Carmichael withdrew his appeals on June 10, 2002, after reaching an agreement with the Approval Holder in regard to the issue of reporting information. See: *Carmichael v. Directors, Northern East Slopes Region and Central Region, Regional Services, Alberta Environment*, re: *TransAlta Utilities Corporation* (13 June 2002), Appeal Nos. 01-080 and 01-134-DOP (A.E.A.B.). The Board dismissed Mr. Nick Zon’s appeal. See: *Zon v. Director, Northern East Slopes Region, Regional Services, Alberta Environment*, re: *TransAlta Utilities Corporation* (31 May 2002), Appeal No. 01-085-D (A.E.A.B.). The Board also dismissed the appeal filed by Enron on March 14, 2002. See: *Enron Canada Power Corporation v. Director, Northern East Slopes Region, Regional Services, Alberta Environment*, re: *TransAlta Utilities Corporation* (26 June 2002), Appeal No. 01-081-D (A.E.A.B.).

⁶ The Directors provided a copy of the Record on September 21, 2001, and copies were forwarded to the other Parties to these appeals.

⁷ In the Board’s letter to the Parties dated November 9, 2001, the Board asked:

“...the Board would like to receive comments from the parties on the questions:

1. Has the Government of Alberta participated in a public review under the Canadian Environmental Assessment Act (CEAA) in respect of the matters included in these notices of appeal?
1. If the Government of Alberta has not participated in a public review under CEAA in the past, are there plans to do so in the future?
1. If the Government of Alberta has participated in a public review under CEAA or plans to do so in the future, how does this affect the Board’s process?”

submissions and determined that the Government of Alberta had not participated in a review under CEAA.⁸

B. *Water Act Appeals*

[6] On March 8, 2002, the Director, Central Region, Regional Services, Alberta Environment, issued the Licence under the *Water Act* to the Approval Holder. The Board received Notices of Appeal with respect to the Licence on March 28, 2002, from Mr. Blair Carmichael, on April 3, 2002, from LWEPA, and on April 8, 2002, from Mr. David Doull. Again, as indicated previously, Mr. Carmichael withdrew his Notice of Appeal and the only remaining appellants for the purposes of this Report and Recommendations are Mr. Doull and LWEPA.⁹ The Directors and Approval Holder were notified of the appeals, and the Board requested the Directors forward a copy of all the documents related to these appeals (the “Water Record”) to the Board.¹⁰

[7] On April 4, 2002, the Board notified the Parties that it would deal with the appeals of the *Water Act* Licence in conjunction with the appeals of the EPEA Approval.

[8] The Board wrote to the Natural Resources Conservation Board (the “NRCB”) and the Alberta Energy and Utilities Board (the “AEUB”) regarding both the EPEA appeals and the *Water Act* appeals, asking whether these matters had been the subject of a hearing or review under their respective legislation. The NRCB replied in the negative. The AEUB stated the Approval Holder had applied for an approval under their legislation to increase capacity at the Sundance Thermal Power Plant on August 17, 2000. According to the AEUB, the application was routinely granted and no advertising or public hearing occurred. The AEUB provided a copy of Application No. 2000247 and Amendment of Approval No. U2001-045.¹¹ The Board

⁸ In its letter to the Parties dated November 23, 2001, the Board stated:

“The Board thanks the parties for their assistance in this regard. Based on this information, it would appear that section 87(5)(b)(ii) [now section 95(5)(b)(ii)] of the *Environmental Protection and Enhancement Act* is inapplicable in this circumstance...”

⁹ Mr. Blair Carmichael withdrew his appeals on June 10, 2002, after reaching an agreement with the Approval Holder in regard to the issue of reporting information. See: *Carmichael v. Directors, Northern East Slopes Region and Central Region, Regional Services, Alberta Environment*, re: *TransAlta Utilities Corporation* (13 June 2002), Appeal Nos. 01-080 and 01-134-DOP (A.E.A.B.).

¹⁰ The Board received a copy of the Water Record on April 10, 2002, and copies were forwarded to the other Parties to these appeals.

¹¹ See: Letter from Alberta Energy and Utilities Board, dated November 30, 2001.

reviewed the documents and determined that the AEUB approvals did not deal with the matters in this Hearing.

[9] A Preliminary Meeting was held on April 17, 2002, to determine the issues to be heard at the Hearing scheduled for May 15 and 16, 2002. The Board notified the Parties on April 19, 2002, that the issues to be heard at the Hearing were:

- Issue 1: the adequacy of the water balance model and the factors (e.g. surface runoff) that it relies upon as a basis for establishing the requirements for the quantity of treated water to be returned to Wabamun Lake by means of the water treatment plant;
- Issue 2: the ability of the water treatment plant, as approved, to be able to deliver the specified quantities of treated water to Wabamun Lake;
- Issue 3: the water quality of the Sundance cooling pond as it may be a factor in limiting the ability of the approved water treatment plant to deliver the quantities of water specified in the License to the quality required by the Approval; and
- Issue 4: the method and timing of providing reports to interested individuals and the actual content of the data reported as effective means to assure the Parties that the proposed mitigation is achieving the expected compensation for the impact of the Approval Holder upon water levels in Wabamun Lake.¹²

[10] On May 8, 2002, the Board received submissions on the above issues from the Directors and the Approval Holder. Mr. David Doull and LWEPA filed their submissions on May 9, 2002.¹³

[11] The Board received an intervenor request from Mr. C.G.P. Spilsted on April 25, 2002. The Board requested the Parties "...provide written comments to the Board with respect to Mr. C.G.P. Spilsted's potential participation at the hearing of these appeals...." Upon reviewing the request and the Parties' submissions, the Board decided that Mr. C.G.P. Spilsted would be given limited intervenor status at the hearing.¹⁴

¹² See: Issues Decision: *Carmichael et al. v. Directors, Northern East Slopes Region and Central Region, Regional Services, Alberta Environment*, re: *TransAlta Utilities Corporation* (25 June 2002), Appeal Nos. 01-080, 01-082, 01-084, 01-085, 01-134, 02-002, and 02-003-ID2 (A.E.A.B.).

¹³ No submissions were received from Mr. Carmichael or Mr. Zon.

¹⁴ See: Letter from the Board to the Parties and Mr. C.G.P. Spilsted, dated May 9, 2002.

C. Motions (Prior to the Hearing)

[12] On May 9, 2002, the Board received a letter from LWEPA regarding "...water quality concerns with respect to recent developments at Wabamun Lake, made public May 8, 2002." LWEPA submitted that the issues at the Hearing should be broadened to include water quality in general in order for the Board to receive "...sufficient and full disclosure in matters related to water quality."¹⁵

[13] The Board asked the Parties to respond to the following three questions in relation to the motion made by LWEPA:

- “1. Does the Board currently have sufficient information regarding the issues surrounding heavy metals and the fish mortality to determine whether to ‘...broaden the scope of the hearing...’?”
2. If the Board does not have sufficient information regarding these issues, should the Board adjourn the May 15 and 16 hearing, until such time that it has enough information to make this determination?
3. If the Board adjourns the hearing, what effect would an adjournment have on the parties to these appeals?”¹⁶

[14] The Board received answers from the Parties on May 15, 2002. Based on the information presented, the Board determined there was insufficient information to justify broadening the scope of the issues to be heard. However, the Board decided that an adjournment was required in order for the Directors to continue gathering information on the fish kill and heavy metals, and when the information became available, the Board would, if a motion was put forth, determine if the issues to be heard would be broadened. The Board determined that none of the Parties would be significantly adversely affected by the adjournment.¹⁷

[15] On August 15, 2002, the Directors provided the Board and the other Parties with copies of the information regarding the investigation into the fish mortality and heavy metals.¹⁸

¹⁵ See: Letter from LWEPA, dated May 8, 2002. The motion by LWEPA was apparently triggered by media reports that there had been fish mortality and heavy metals found at Wabamun Lake. See: “Officials probe fish kill, heavy metals near plant.” *Globe & Mail* (National Edition) (10 May 2002) A7.

¹⁶ Board’s letter, dated May 10, 2002.

¹⁷ See: Adjournment Motion: *Carmichael et al. v. Directors, Northern East Slopes Region and Central Region, Regional Services, Alberta Environment*, re *TransAlta Utilities Corporation* (30 May 2002), Appeal Nos. 01-080, 01-082, 01-084, 01-085, 01-134, 02-002, and 02-003-ID (A.E.A.B.).

¹⁸ See: Alberta Environment, *The Lake Wabamun Water Quality and Sediment Survey* (Edmonton: Alberta Environment, 2002) (the “Alberta Environmental Report”). Alberta Environment released this document as a preliminary report. It stated: “Final conclusions regarding water quality and specific sediment make-up in

They also attached reporting and monitoring information they had received from the Approval Holder.¹⁹

[16] On August 27, 2002, the Board received a request from Mr. C.G.P. Spilsted to participate actively in the Hearing.

[17] The Board received a request for interim costs from LWEPA on August 29, 2002. The Board notified the Parties of LWEPA's application for interim costs and requested their comments by September 5, 2002. After reviewing the submissions, the Board notified the Parties on September 10, 2002, that it was denying the costs application.

[18] On August 28, 2002, and September 12, 2002, the Board received a motion from Mr. David Doull to expand the issues of the Hearing to allow the "...water quality issue to include the entire lake..." and to postpone the Hearing until such time that all the reports, including the final report from the Directors, become available and the Appellants have had the opportunity to assess the information. On September 6, 2002, the Board received a reconsideration request from the Approval Holder, arguing that because the Water Treatment Plant has been operational since May 2002, three of the four identified issues were now moot.²⁰ The Board provided the Parties the opportunity to respond to Mr. Doull's motion and the reconsideration request of the Approval Holder.

[19] LWEPA provided a response to the Board's letter on September 13, 2002. A further letter was received from LWEPA on September 20, 2002, in which LWEPA stated that it was under the belief that the motion it had submitted to the Board on May 8, 2002, remained validly before the Board.

[20] On September 26, 2002, the Board notified the Parties that it denied the motions filed by the Approval Holder and Mr. Doull, and the issues to be heard at the Hearing would

Wabamun Lake should not be drawn until AENV has completed its work and issues a final report in early 2003."

¹⁹ Included in the information provided by the Directors was the *Wabamun Lake Water Balance 1982-2001* (Alberta Environment, July 2002); *Tracer Test for the Wabamun Water Treatment Plant Tracer Study Report* (John Meunier/US Filter, July 2002); *Sundance Generating Plant 2001 Annual Water Use Return Report, Status of Monitoring Surveys for the Wabamun Lake Water Treatment Plant in Accordance with Approval No. 18528-00-03 for 2001* (AMEC Earth & Environmental Limited, April 2002); *Wabamun Lake Level Mitigation Plant: Year 2001/02 Ozone System Tracer Study Results* (Associated Engineering, April 2002); *Wabamun Lake Water Treatment Plant Proposal for Groundwater Monitoring* (January 2002); *Monthly Water Works Summary Report* (June 2002); *Wabamun Lake Water Treatment Plant Year 2001 Water Work Report*; and *2001 Wabamun Lake Fish Monitoring* (Golder Associates, January 2002).

remain as determined in its decision of June 25, 2002. The Board also granted Mr. Spilsted's request for greater participation in the Hearing. The Board confirmed the Hearing would be held as scheduled on October 17 and 18, 2002.

[21] On September 27, 2002, the Board gave the Parties the opportunity to update their written submissions and affidavits with respect to the four identified issues in preparation for the Hearing. The Directors, LWEPA, and Mr. Doull filed updated submissions, and the Approval Holder, while it did not provide an updated submission, provided some additional materials to assist with its presentation.

[22] Mr. Doull requested that the Approval Holder be compelled to produce power production records for the Wabamun Power Plant and the report prepared for the Approval Holder by Golder and Associates on the fish mortality and heavy metals at the Lake (the "Golder Report").²¹ The Approval Holder subsequently provided these documents to Mr. Doull, but indicated that the power production records and Golder Report had no relevancy to the issues as determined by the Board.²² The Board also received a copy of a report prepared for LWEPA, known as the Donahue Report, dealing with metal accumulations in Wabamun Lake. Since Mr. Doull advised the Board that he wanted to have the power production records, the Golder Report, and the Donahue Report considered by the Board, the Board notified the Parties on October 11, 2002, that it would hear admissibility submissions on these matters at the Hearing.

[23] On October 9, 2002, Mr. Doull submitted a request for the Board to reconsider its decision not to expand the scope of the Hearing to include water quality generally. The Board notified the Parties on October 15, 2002, that Mr. Doull's reconsideration request would also be dealt with at the beginning of the Hearing.

II. Preliminary Motions (at the Hearing)

[24] Mr. Doull argued that the Board should reconsider its decision not to expand the scope of the Hearing to include water quality generally because the reports done on water quality in Wabamun Lake (the Golder Report, the Donahue Report, and the Alberta Environment

²⁰ See: Letter from Approval Holder, dated September 6, 2002.

²¹ See: Letter from Mr. David Doull, dated October 2, 2002.

²² See: Letters from Approval Holder, dated October 4, 2002, and October 10, 2002.

Report) all say that more work is required because the evidence about what is causing fish kills is not complete. Mr. Doull noted that the Board adjourned the hearing in May 2002 to allow Alberta Environment to complete its study into the fish kill, and Mr. Doull interpreted this as an indication that the Board intended to expand the issues to include water quality.²³

[25] Mr. Doull also argued that the Board should receive the Golder Report, the Donahue Report, and power production records from the Wabamun Power Plant for May 2002 to September 2002 into evidence. He argued that the power production records were relevant because they indicated the level of operations of the power plant, which in turn determine the level of impact on Wabamun Lake. Mr. Doull argued in favour of admitting the two water quality reports on the same basis as he argued for expanding the scope of the Hearing.

[26] After hearing arguments from the Parties on these issues, the Board denied the request to expand the scope of the Hearing to include water quality in Wabamun Lake generally. However, the Board agreed to admit the power production records requested by Mr. Doull, but denied the request to admit the Donahue and Golder reports for lack of relevance to the four issues to be heard by the Board.

III. SUMMARY OF SUBMISSIONS AND EVIDENCE

A. Water Balance Model

[27] In its submission, LWEPA expressed concerns regarding the "...validity of data used in the Wabamun Lake Water Balance Model and the validity of the historical and ongoing calculations related to the impacts of TransAlta's operations on Lake Wabamun and the ability of the WLWTP[2] to meet TAU [*sic*] obligation to offset historical and ongoing impacts by December 31, 2006."²⁴

[28] LWEPA submitted that the results provided by the Approval Holder to the other Parties are inaccurate because inconsistent data have been inputted into the Wabamun Lake Water Balance Model. LWEPA provided examples of its concerns regarding the data inputted

²³ See: Adjournment Motion: *Carmichael et al. v. Directors, Northern East Slopes Region and Central Region, Regional Services, Alberta Environment*, re: *TransAlta Utilities Corporation* (30 May 2002), Appeal Nos. 01-080, 01-082, 01-084, 01-085, 01-134, 02-002, and 02-003 -ID (A.E.A.B.).

²⁴ See: LWEPA's Submission, dated May 8, 2002, at page 1.

into the model. LWEPA submitted that the "...cumulative effects of surface runoff within the Wabamun Watershed are not adequately reflected..." in the model calculations and that the "...surface runoff figures used in the Wabamun Lake Water Balance Model must be based on average surface runoff from a number of watersheds within the Entwistle and Stony Plain geographical areas."²⁵ It argued that the amount of surface runoff diverted from Wabamun Lake by the Approval Holder's operations is more than the values inputted into the model.

[29] LWEPA further submitted that the "...overall calculations for mean ground flows are totally inaccurate..." and further studies need to be conducted to "...determine the impacts and effects of surface mining and land reclamation on ground water flows."²⁶

[30] In its submission, LWEPA argued that:

"...the impacts of TAU's operations in the Wabamun Lake Watershed have had a far greater and detrimental impact on lake levels than has been taken into consideration by the Wabamun Lake Water Balance Model.... Based on the fact that surface runoff and ground water diversion data is incorrect we therefore submit that the historical debt caused by TAU's ongoing operations is also inaccurate."²⁷

[31] In its updated submission, dated October 9, 2002, LWEPA reiterated its previous concerns and submitted additional meteorological and lake level data. Comparisons were made of eleven-year periods between 1930-1940 and 1990-2001. LWEPA summarized this comparison by stating "...the extensive industrial activities, operated by TransAlta Utilities, have had a more significant and detrimental impact on lake levels in Lake Wabamun than previously determined."²⁸

[32] In response to the issue of the Wabamun Lake Water Balance Model, Mr. Doull expressed his concerns regarding the modeling system used by the Approval Holder. He stated that "...surface runoff is difficult to calculate in the area of the lake..." and that the "... 'SWMM Modeling System' is more accurate in an urban setting when water is moving over asphalt, cement, or hard ground."²⁹ He also stated that ground water movement is difficult to calculate

²⁵ See: LWEPA's Submission, dated May 8, 2002, at page 2.

²⁶ See: LWEPA's Submission, dated May 8, 2002, at page 2.

²⁷ See: LWEPA's Submission, dated May 8, 2002, at page 3.

²⁸ See: LWEPA's Submission, dated October 9, 2002.

²⁹ See: Mr. David Doull's Submission, dated May 8, 2002.

using this model and queried if there was newer technology now available that would provide more reliable results.

[33] In his supplemental submission, Mr. Doull questioned whether the modeling had taken into consideration the "...extensive additional mining at the Highvale Mine..."³⁰

[34] Mr. Spilsted argued that, as the Wabamun Lake Plant has the greatest impact on the Lake, a detailed outline of the plant production and distribution, along with that of the Sundance Plant, is required to determine the quantity of water loss. Mr. Spilsted asked for assurances that subsequent companies will be required to maintain the lake level and water quantity in perpetuity.

[35] Mr. Spilsted further submitted that promises made in relation to previous studies have been unsuccessful in correcting past and present damage to the Lake and the ecosystem, and the reports have not identified what must be done to prevent future damage to the fragile Lake and area.³¹

[36] In response to this first issue, the Directors stated that the Water Balance Model, as provided by the Approval Holder, was independently reviewed by the Directors' staff, including a "...full auditing of the data and assumptions."³² The Directors further stated that even though the model was first developed in 1995, it was reviewed in 2000 to ensure that "...inputs, assumptions and methodologies used were still reasonable and adequate."³³

³⁰ See: Mr. David Doull's Submission, dated October 9, 2002.

³¹ See: Mr. Spilsted's Submission, dated October 10, 2002.

³² See: Directors' Submission, dated May 8, 2002, at paragraph 33.

³³ See: Directors' Submission, dated May 8, 2002, at paragraph 31. The parameters in the model included:

1. direct precipitation to the lake surface;
1. natural evaporation from the lake surface;
1. enhanced evaporation from the lake due to Wabamun Power Plant;
1. surface runoff from the natural catchment, with accounting for the amount diverted from the lake due to mining at the Highvale and Whitewood mines and other TransAlta infrastructure such as cooling ponds and the power plant sites;
1. natural groundwater inflows to and outflows from the lake;
1. consumptive use of water from the lake from licences around the lake, plus Wabamun Power Plant process water (boiler) losses;
1. diverted groundwater due to coal mine pit pumping; and
1. quantities pumped to Wabamun Lake via the Wabamun Lake Water Treatment Facility."

[37] The Directors indicated that the Wabamun Lake Water Balance Model as used by the Approval Holder was reasonable, and the historic debt, calculated at 47.2 million m³ as of the end of 2000, was acceptable.

[38] In their supplemental submission, the Directors stated that they had reviewed the historic water balance over the past 20 years, using the same data and methods as used in the Wabamun Lake Water Balance Model, and found the "...Water Balance Model utilized by TransAlta accurately depicts the observed conditions that were present in Lake Wabamun for the last 20 years."³⁴

[39] The Approval Holder stated that the Wabamun Lake Water Balance Model results were compared to actual data, and "...the model closely matched the actual lake levels...."³⁵ The Approval Holder submitted that:

"In order for the simulated lake level to closely match recorded lake level, the model must correctly process both inflows (runoff, rainfall, WLWTP[2], etc.) and losses (groundwater, evaporation, consumptions etc.). Therefore, if the simulated lake level is rising and falling correctly, the model results for the components of inflows, losses and TransAlta's impacts can be considered valid."³⁶

[40] The Approval Holder stated that in 2000, the model was reviewed and upgraded to include:

- Use of an average of Stony Plain and Entwistle rainfall data instead of just Stony Plain;
- Use of updated rating curve for the new (1995) concrete overflow weir;
- Additional allowance for winter runoff inflow; and
- Enhancement of the calculation of the diverted areas."³⁷

The Approval Holder further stated that the proposed upgrades and the upgraded model were evaluated by Alberta Environment and Dr. Gan, an independent expert, and "...both were satisfied that the model provided a reasonable simulation of the behaviour of the lake."³⁸

³⁴ Directors' Submission, dated October 9, 2002, at paragraph 3.

³⁵ Approval Holder's Submission, dated May 8, 2002, at paragraph 25.

³⁶ Approval Holder's Submission, dated May 8, 2002, at paragraphs 26 and 27.

³⁷ Approval Holder's Submission, dated May 8, 2002, at paragraph 31.

³⁸ Approval Holder's Submission, dated May 8, 2002, at paragraph 32.

[41] The Approval Holder stated "...the Water Balance Model has been thoroughly reviewed, upgraded, tested and approved. The bottom line: TransAlta's historic debt amount and estimate of annual impacts, has not been significantly changed by these improvements."³⁹

B. Water Treatment Plant Capability

[42] LWEPA submitted that the Water Treatment Plant is not designed to meet the Approval Holder's "...obligation to repay the ongoing and historical debt to the lake by December 31, 2006."⁴⁰

[43] Mr. Doull submitted that errors were made in the calculations, including the date the Water Treatment Plant began operations, and he questioned whether it was realistic to assume the facilities would operate at 100 percent capacity. Mr. Doull also questioned whether the Approval Holder would be able to achieve forecasted water quantities.

[44] Mr. Doull stated that in "...principal I support the concept of additional water being added to the lake to expedite the restoration of TransAlta's Historical Impact on the lake..." but he had concerns regarding the amount of water to be returned to the Lake annually and the estimated annual impact of the Approval Holder's other facilities on the Lake.

[45] Mr. Doull concluded by stating that he wants "...serious penalties put in place if TransAlta does not pump their forecasted quantities. The above approvals leave too much discretion to the designated director and the 'Water Balance Model' has to [*sic*] many uncertainties for my satisfaction."⁴¹

[46] Mr. Doull questioned the effectiveness of the Water Treatment Plant during the past five months as the lake level has dropped eight inches since May 2002. He also requested the Approval Holder provide power production records because "...the Wabamun Plant has the greatest effect on the lake level, so whatever capacity it is being run at has a direct relationship to how much additional water should be pumped from the WLWTP[2]."⁴² Mr. Doull reiterated that penalties need to be in place to ensure the Approval Holder meets its targets.

³⁹ Approval Holder's Submission, dated May 8, 2002, at paragraph 35.

⁴⁰ LWEPA's Submission, dated May 8, 2002, at page 2.

⁴¹ Mr. David Doull's Submission, dated May 8, 2002, at page 6.

⁴² Mr. David Doull's Submission, dated October 9, 2002.

[47] In his October 10, 2002 submission, Mr. Spilsted expressed concerns regarding the quality and quantity of water being added to the Lake, and he submitted that intensive studies are still required.

[48] The Directors stated that the Approval Holder applied for an approval of the larger water treatment facility in response to the Public Advisory Group's recommendation to double the output of the Existing Water Treatment Plant. The Directors stated that the application was reviewed, supplemental questions were asked, and the Approval Holder provided the answers. This included an analysis of pilot tests of the various technologies available. The Directors concluded "...the chosen water treatment process was a reasonable treatment method to provide the additional required volume for the Wabamun Lake Water Treatment Facility."⁴³

[49] In their supplemental response, the Directors stated that the Water Treatment Plant had been in operation since May 2002, and the "...expanded plant has demonstrated the ability to produce sufficient treated water to meet the requirements prescribed in the Approval and Licence."⁴⁴

[50] The Approval Holder provided background for the Board on the reason the Water Treatment Plant was built and the choice of the specific treatment technology. According to the Approval Holder, the new treatment plant will more than double the capacity of the existing facility, "...pumping 8 million m³ per year instead of 6 million m³ as originally proposed..."⁴⁵ The Water Treatment Plant was constructed to enable the Approval Holder to repay its historic debt by December 31, 2006, as stipulated in its operating approval for the Wabamun Power Plant. According to the Approval Holder, the historic debt calculation was "...updated and is specifically defined in the Water Licence as 47.2 million m³ as of December 31, 2000."⁴⁶ The

⁴³ Directors' Submission, dated May 8, 2002, at paragraph 43.

⁴⁴ Directors' Submission, dated October 9, 2002, at paragraph 3.

⁴⁵ Approval Holder's Submission, dated May 8, 2002, at paragraph 3.

⁴⁶ Approval Holder's Submission, dated May 8, 2002, at paragraph 21. The Approval Holder also stated that it is required to "...submit a plan by September 2002 to offset its annual ongoing impact after the historic debt is repaid. 'Annual ongoing impact' is specifically defined as the impact to the lake level on a yearly basis of all of TransAlta's operations around Lake Wabamun."

Approval Holder further explained that, with respect to WLWTP1, it had "...experienced difficulties in the last 5 years in achieving its designed level of production...."⁴⁷

[51] In regards to the second issue, the Approval Holder stated that it studied different designs and technologies, but the method chosen had to "...produce sufficient additional volume, meet the stringent water quality limits set out in the operating approval, and fit within the space constraints of the site."⁴⁸ The pilot test using the ballasted flocculation method "...proved that it could successfully treat raw water from the cooling pond to achieve water volume and water quality requirements."⁴⁹

[52] In support of its decision to implement the ballasted flocculation method, the Approval Holder argued that it was a proven technology, even though it is new technology to Western Canada, and the technology has been shown to be "...highly efficient in removal of turbidity, algae and suspended solids."⁵⁰ It continued by listing the features it considered were critical in accepting the design:

- “(a) The technology could reliably treat Sundance Cooling Pond water to meet both quality and quantity requirements;
- (b) The technology is effective in handling low raw water temperature and water density changes due to temperature;
- (c) Chemical requirements for this technology are less than for WLWTP1 for the same quantity and quality of water;
- (d) The small footprint required for the new facility allowed incorporation with WLWTP1;
- (e) Zooplankton removal rates were 99.9% without the use of chlorine and close to 100% with the use of chlorine (any remaining zooplankton being dead); and
- (f) The pilot plant achieved a removal rate for algae of over 99%.”⁵¹

[53] The Approval Holder further stated that the ballasted flocculation technology can reliably meet water quality and quantity requirements, and there is an improvement in the process stability over other technologies, including that used in the Water Treatment Plant. An example provided of the improved process is the ability to quickly re-establish "...performance

⁴⁷ Approval Holder's Submission, dated May 8, 2002, at paragraph 5.

⁴⁸ Approval Holder's Submission, dated May 8, 2002, at paragraph 37.

⁴⁹ Approval Holder's Submission, dated May 8, 2002, at paragraph 40.

⁵⁰ Approval Holder's Submission, dated May 8, 2002, at paragraph 43.

after upsets and is also much less subject to interruption due to water density changes resulting from temperature fluctuations.”⁵² According to the Approval Holder, allowances have been made in the design for normal operating disturbances.

[54] In addition, the Approval Holder submitted that the manufacturer has confidence in the technology and the ability to meet the requirements of 8 million m³ per year.⁵³ The Approval Holder argued that the Water Treatment Plant:

“...has already begun production. Production requirements now find themselves in the terms of the EPEA Approval and Water Licence, and TransAlta must deal with any unforeseen contingencies. For these reasons, it is submitted that the issue of WLWTP2’s ability to deliver is largely moot. In any event, there is no valid reason to doubt TransAlta’s confidence in WLWTP2’s ability to deliver.”⁵⁴

C. Cooling Pond Water Quality

[55] In response to this issue, Mr. Doull submitted that, based on his discussions with “...several local engineering consultants and previous Alberta Environment Director’s [*sic*]...”, the North Saskatchewan River would have been a better source of water for the Water Treatment Plant. He stated that the Sundance Cooling Pond “...virtually receives all the wastes from everything on the Sundance Site (E.g. Mine Water, Sewage Lagoon Wastes, Actual Plant Wastes etc.)...”⁵⁵ He expressed concerns that neither the Approval Holder nor the Directors have provided a report on the content of the water in the Sundance Cooling Pond.

[56] The Directors believed there was no reason why the Water Treatment Plant would not be able to meet the Approval conditions. They had reviewed the application based on the assumptions that:

- “(a) the same water source would be utilized as the ... [WLWTP1];
- (b) a similar treatment process would be utilized as the ... [WLWTP1]; and

⁵¹ Approval Holder’s Submission, dated May 8, 2002, at paragraph 43.

⁵² Approval Holder’s Submission, dated May 8, 2002, at paragraph 44.

⁵³ See: Approval Holder’s Submission, dated May 8, 2002, at paragraph 46. The Approval holder stated that the contract with the manufacturer required a “substantial letter of credit” that is being held until the first year run is completed and quantity requirements have been met.

⁵⁴ Approval Holder’s Submission, dated May 8, 2002, at paragraph 48.

⁵⁵ Mr. David Doull’s Submission, dated May 8, 2002.

- (c) the pant [*sic*] proposed by the application would have the same emission limits as the ... [WLWTP1].”⁵⁶

[57] According to the Approval Holder, in its initial Water Licence application, it had applied to divert additional water from the North Saskatchewan River to the cooling pond. However, it later “...determined that additional makeup was not required due to the decision to use the blow down of treated water discharge...,” and its application was revised to “...indicate no change in the rate in diversion from the North Saskatchewan River.”⁵⁷

[58] The Approval Holder stated that the cooling pond had previously been studied and was found to be a suitable source of water, and the technology was chosen on the basis of using the cooling pond as the raw water source. It stated that “...because the cooling pond provides a stable supply of raw water ... there is no concern that the quality of water in the cooling pond affects the ability of the WLWTP2 to deliver the required volume or water quality.”⁵⁸

[59] According to the Approval Holder, the cooling pond was determined to be a preferable source of water over the North Saskatchewan River for a number of reasons. Some of the reasons provided included the stability of the water in the cooling pond compared with the river that fluctuates seasonally. The Approval Holder further stated that the cooling pond:

“...reduces production issues and interruptions caused by high turbidity, high total suspended solids (TSS) and nutrient loading during periods of spring run-off and high rainfall events. In particular, TSS in the river is an order of magnitude higher than the TSS in the cooling pond. The cooling pond effectively lowers concentrations of each of these parameters and reduces the wide and rapid variability experienced with raw water supplied from a river.”⁵⁹

⁵⁶ Directors’ Submission, dated May 8, 2002, at paragraph 45.

⁵⁷ Approval Holder’s Submission, dated May 8, 2002, at paragraph 18.

⁵⁸ Approval Holder’s Submission, dated May 8, 2002, at paragraph 50.

⁵⁹ Approval Holder’s Submission, dated May 8, 2002, at paragraph 52. The Approval Holder listed other positive factors for using cooling pond water:

- “(a) Concentrations of some metals (aluminum, barium, iron, lead, manganese, mercury, nickel, titanium and zinc) are greater in the river. For example, concentrations of mercury in the river are at least 100% greater than in the cooling pond.
- (a) The cooling pond, because of its higher temperature, acts as a buffer to prevent transfer of some organisms directly to the Lake; that is, some organisms would not be able to survive or complete their life cycle due to the temperature or the lack of hosts.
- (a) The cooling pond reduces production difficulties caused by seasonal temperature variations. WLWTP1, particularly the existing clarifier, might prove unable to handle the increased seasonal temperature variation if raw water were drawn from the river.

[60] The Approval Holder stated that the cooling pond was favoured over the North Saskatchewan River even though the cooling pond had "...higher concentrations of algae and some ions (sodium, potassium, cyanide and sulphide)..."⁶⁰ These factors were considered in the design of the Water Treatment Plant.

[61] The Approval Holder further submitted that using the North Saskatchewan as the raw water source would have resulted in "significant delays" and additional costs.⁶¹

[62] The Approval Holder further stated that it:

"...is confident in the production capacity of WLWTP2, having undertaken a thorough selection process to determine the most appropriate technology, having considered the benefits and particular characteristics of using the cooling pond as the supply source, and having reliance upon the performance guarantees given by the manufacturer.

As with issue (B), it is submitted that issue (C) is largely moot. The technology and raw water source has been predetermined because TransAlta is legally compelled to deliver a specified quantity and quality of water to the lake within a specific time frame. In any event, there is no valid reason to doubt WLWTP[2]'s ability to deliver, based on the quality of water in the Sundance Cooling Pond or at all."⁶²

D. Method and Timing of Reports

[63] LWEPA submitted that the Approval Holder should be required to provide water diversion volume results on a monthly basis to the Appellants and the monitoring committee. However, in its supplemental submission, LWEPA stated that it "...has accepted the reporting

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- (a) Substantial variation in total suspended solids on a seasonal basis would reduce the annual production capacity.
 - (a) In the event of any makeup line leak from the river, supply to the plant would be lost and production would be reduced.
 - (a) Spring run-off would necessitate river makeup pump trips, and during this time production would be reduced.
 - (a) Sufficient capacity already existed in the existing pipeline from the river to the cooling pond."

See: Approval Holder's Submission, dated May 8, 2002, at paragraph 53.

⁶⁰ Approval Holder's Submission, dated May 8, 2002, at paragraph 54.

⁶¹ See: Approval Holder's Submission, dated May 8, 2002, at paragraph 56.

⁶² Approval Holder's Submission, dated May 8, 2002, at paragraphs 59 and 60.

process put into place by TransAlta Utilities on their website. However, we wish to continue to receive monthly reports currently sent to our Treasurer.”⁶³

[64] Mr. Doull provided his suggestions with respect to the Approval Holder providing information to interested individuals. He stated:

- “1. I would like to see AENV deal with issues on an individual basis versus the idea that they form a group that they can manipulate or control (E.g. Condition 4.1.5 of the Wabamun Power Plant Approval). It is the government’s job to deal with the stakeholders [*sic*] concerns.
2. Since 1995 I have heard from both TransAlta and Alberta Environment Staff that they would create a better policy for the exchange of information etc. Due to the ongoing changes in both TAU and AENV staff this has never really happened.
3. As for giving better access to the public on the WLWTP[2]’s progress I would think most interested parties would be happy to have a spreadsheet set-up on the Internet showing the same information as indicated on the attached spreadsheet....”⁶⁴

[65] In his supplemental submission, Mr. Doull argued that the method and timing of providing information remains “...a very contentious issue for all appellants given what has taken place in the past few weeks (e.g. TAU reluctance to produce power records, copies of the recent Golder reports etc.)”⁶⁵ He further stated that, generally, “...any exchange of information has only been done with either a great deal of difficult [*sic*] or no success at all....”⁶⁶

[66] In his written submission, Mr. Spilsted expressed concerns regarding public notification of water quality, lake levels, and the amount of water returned to the Lake.⁶⁷ He further submitted that a lake basin study was required to determine effects of runoff in the mined areas around the Lake.⁶⁸

[67] In response to the issue of reporting data, the Directors submitted that the Approval Holder is required to submit reports on water quality and quantity to them, and they assess the data to ensure the Approval Holder complies with the terms and conditions of the

⁶³ LWEPA’s Submission, dated October 9, 2002.

⁶⁴ Mr. David Doull’s Submission, dated May 8, 2002, at page 5.

⁶⁵ Mr. David Doull’s Submission, dated October 9, 2002.

⁶⁶ Mr. David Doull’s Submission, dated October 9, 2002.

⁶⁷ See: Mr. C.G.P. Spilsted’s Submission, dated April 25, 2002.

⁶⁸ See: Mr. C.G.P. Spilsted’s Submission, dated May 13, 2002.

Approval and Licence. The Directors confirmed these reports are public documents and, thus, are available to the public, but they "...are prepared to recommend that TransAlta post information onto the Internet so that it is readily available to the public."⁶⁹

[68] The Approval Holder stated that the condition in its Wabamun Power Plant approval to increase its water treatment capacity, resulted from "...a new level of public consultation and incorporating the concerns of stakeholders into to [sic] a variety of approval conditions."⁷⁰ The Approval required the construction of the Water Treatment Plant be completed by September 30, 2002.

[69] The Approval Holder further explained that the application for the Approval was provided to all Statement of Concern filers, and a meeting was held with the Statement of Concern filers to review the Wabamun Lake Water Balance Model.⁷¹

[70] In response to the issue on providing data to interested parties, the Approval Holder argued that it already "...must provide an annual water return and water balance run, in addition to monthly reporting which will include extensive information."⁷² The Approval Holder "...recognizes the need to inform stakeholders, in a more understandable format, regarding the performance of the WLWTPs [(WLWTP1 and WLWTP2)] and TransAlta's progress in restoring its historic debt to Lake Wabamun."⁷³

[71] The Approval Holder committed to providing the following data on its website by July 1, 2002, and the data is to be updated on an ongoing basis, allowing a one month delay for quality assurance control:

- “(a) monthly lake levels;
- (b) monthly water production;
- (c) monthly production v[s]. licence requirements; and
- (d) progress on historical debt.”⁷⁴

⁶⁹ Directors' Submission, dated May 8, 2002, at paragraph 49.

⁷⁰ Approval Holder's Submission, dated May 8, 2002, at paragraph 10.

⁷¹ See: Approval Holder's Submission, dated May 8, 2002, at paragraph 14. The Approval Holder retained an independent expert, Dr. Gan, to review the Water Balance Model for LWEPA.

⁷² Approval Holder's Submission, dated May 8, 2002, at paragraph 61.

⁷³ Approval Holder's Submission, dated May 8, 2002, at paragraph 62.

⁷⁴ Approval Holder's Submission, dated May 8, 2002, at paragraph 63.

[72] The Approval Holder also agreed to update the community through its newsletter and will continue to participate in the Lake Wabamun Area Community Advisory Committee.⁷⁵

[73] The Approval Holder concluded by stating that:

“...it has always tried to respond to stakeholder requests in a reasonable fashion and is concerned that it has continued to expend significant resources on this appeal process when it has demonstrated an exemplary record of consultation. It must not be overlooked that this appeal relates solely to a mitigative measure which arose from TransAlta’s consultation with stakeholders and which no one wants to see delayed.”⁷⁶

IV. DISCUSSION AND ANALYSIS

A. Legislative Background

[74] Section 2 of EPEA and section 2 of the *Water Act* describe the purposes of the respective acts and are similar in intent. Of particular relevance to these appeals is section 2 of EPEA, which provides:

“The purpose of this Act is to support and promote the protection, enhancement and wise use of the environment while recognizing the following:

- (a) the protection of the environment is essential to the integrity of ecosystems and human health and to the well-being of society;
- (b) the need for Alberta’s economic growth and prosperity in an environmentally responsible manner and the need to integrate environmental protection and economic decisions in the earliest stages of planning;
- (c) the principle of sustainable development, which ensures that the use of resources and the environment today does not impair prospects for their use by future generations;
- (d) the importance of preventing and mitigating the environmental impact of development and of government policies, programs and decisions;...
- (f) the shared responsibility of all Alberta citizens for ensuring the protection, enhancement and wise use of the environment through individual actions;
- (g) the opportunities made available through this Act for citizens to provide advice on decisions affecting the environment;...
- (j) the important role of comprehensive and responsive action in administering this Act.”

⁷⁵ See: Approval Holder’s Submission, dated May 8, 2002, at paragraph 64.

⁷⁶ Approval Holder’s Submission, dated May 8, 2002, at paragraph 66.

[75] Section 2 of the *Water Act* provides:

“The purpose of this Act is to support and promote the conservation and management of water, including the wise allocation and use of water, while recognizing:

- (a) the need to manage and conserve water resources to sustain our environment and to ensure a healthy environment and high quality of life in the present and the future;
- (b) the need for Alberta’s economic growth and prosperity;
- (c) the need for an integrated approach and comprehensive, flexible administration and management systems based on sound planning, regulatory actions and market forces;
- (d) the shared responsibility of all Alberta citizens for the conservation and wise use of water and their role in providing advice with respect to water management planning and decision-making;...
- (f) the important role of comprehensive and responsive action in administering this Act.”

[76] It is apparent the Legislature intended the citizens of Alberta to be a part of the decision-making process, and the Appellants in these appeals are properly participating by providing advice on decisions that affect the environment, including water planning and management. The intent of the Appellants’ submissions is to build a better Approval and Licence.⁷⁷

[77] Under EPEA, an approval is required for specific projects as listed in the *Activities Designation Regulation*, Alta. Reg. 211/96.⁷⁸ A “water treatment plant” is included within the definition of “waterworks system,” which is listed as a designated activity requiring an approval.⁷⁹ Therefore, before the Approval Holder could proceed with the construction and

⁷⁷ In this Hearing, the Board heard appeals on an Approval under EPEA and a Licence under the *Water Act*. TransAlta was required to obtain an Approval and a Licence as a result of the jurisdiction given to the different Directors under the two relevant Acts. The Board appreciates the willingness of the Parties to hear the appeals relating to the Approval and the Licence concurrently. In the Board’s view, this permitted a more coordinated review as the evidence and issues were interrelated. A concurrent hearing was also a wise use of resources and time for all concerned.

⁷⁸ Section 60 of EPEA states:

“No person shall knowingly commence or continue any activity that is designated by the regulations as requiring an approval or registration unless that person holds the required approval or registration.”

⁷⁹ In the *Activities Designation Regulation*, Alta. Reg. 211/96, section 5(1) states that “... activities listed in Schedule 1 are designated as activities in respect of which an approval is required.” The construction, operation or reclamation of a waterworks system is listed in Schedule 1, Division 5. “Water treatment plant” is defined in section 2(4)(f) of the *Activities Designation Regulation*, and “waterworks system” is defined in section 2(4)(h) of the *Activities Designation Regulation*.

operation of the Water Treatment Plant, an approval had to be obtained from the Director. As the Water Treatment Plant also involved the diversion of water, a Licence was required as stated in the *Water Act*.⁸⁰

[78] When the Board makes a decision regarding appeals of this type, its options are to recommend to the Minister to confirm, reverse, or vary the decision of the Director.⁸¹ In these appeals, the Board has the option to recommend to the Minister to confirm, reverse, or vary either or both of the Directors' decisions – the Approval and the Licence. It is important to note that the Appellants did not file these appeals in order to have the Board reverse or confirm the Approval and the Licence. The Appellants were generally in favour of the construction of the Water Treatment Plant as its purpose is to increase the water level in Wabamun Lake. Their intention in filing these appeals was to ensure the best possible Approval and Licence were issued. In fact, the Directors had stated at the Preliminary Hearing that the principle of the appeal process is to develop a better approval,⁸² and the Board agrees.

[79] The issues raised by the Appellants demonstrate their intent to improve the Approval and Licence as they principally expressed concerns with the data inputted into the model and the accuracy of the model. When the Hearing was adjourned in May 2002, the

⁸⁰ Section 49(1) of the *Water Act* provides:

“Subject to subsection (2), no person shall

- (a) commence or continue a diversion of water for any purpose, or
- (a) operate a works,

except pursuant to a licence unless it is otherwise authorized by this Act.”

⁸¹ Section 99(1) of EPEA states:

“In the case of a notice of appeal referred to in section 91(1)(a) to (m) of this Act or in section 115(1)(a) to (i), (k), (m) to (p) and (r) of the Water Act, the Board shall within 30 days after the completion of the hearing of the appeal submit a report to the Minister, including its recommendations and the representations or a summary of the representations that were made to it.

Section 100(1) of EPEA states:

“On receiving the report of the Board, the Minister may, by order,

- (a) confirm, reverse or vary the decision appealed and make any decision that the person whose decision was appealed could make,
- (b) make any direction that the Minister considers appropriate as to the forfeiture or return of any security provided under section 97(3)(b), and
- (c) make any further order that the Minister considers necessary for the purpose of carrying out the decision.”

⁸² See: Issues Decision: *Carmichael et al. v. Directors, Northern East Slopes Region and Central Region, Regional Services, Alberta Environment*, re: *TransAlta Utilities Corporation* (25 June 2002), Appeal Nos. 01-080, 01-082, 01-084, 01-085, 01-134, 02-002, and 02-003-ID2 (A.E.A.B.) at paragraph 44.

Appellants were aware the Approval Holder was proceeding with the construction of the Water Treatment Plant and it would, in all likelihood, be operational prior to the reconvening of the Hearing. However, the Appellants did not seek a stay to prevent the Approval Holder from proceeding.

B. Overview

[80] All of the Parties to these appeals agree that the various operations of the Approval Holder at Wabamun Lake have reduced the quantity of water in the Lake historically – often referred to as the historic debt. Furthermore, the Parties agree that these operations cause an ongoing reduction in water available to the Lake – often referred to as the ongoing impacts. The Directors have specifically identified the operations that have contributed to the reduction of water quantity in the Lake, both historically and ongoing, in the Approval and Licence issued to the Approval Holder.⁸³

⁸³ Condition 1.1.2(b) of the Approval states:

“In all PARTS of this approval ... ‘annual ongoing impact’ means the impact to the level of Wabamun Lake for a particular year from the following facilities, with volumes to be specified in the water balance model submitted to Alberta Environment under the *Water Act* licence 12086 and accepted by the Director designated under the *Water Act*:

- (a) Wabamun Power Plant;
- (a) Sundance Power Plant;
- (a) Keephills Power Plant;
- (a) Highvale coal mine; and
- (a) Whitewood coal mine

as approved under the Act or licenced under the *Water Act*.”

Condition 1.2 (b) of the Licence states:

“‘annual ongoing impact’ means the impact to the level of Wabamun Lake for a particular year from the following facilities with volumes to be determined from running the Wabamun Lake Water Balance Model:

- (a) Wabamun Power Plant;
- (a) Sundance Power Plant;
- (a) Keephills Power Plant;
- (a) Highvale coal mine; and
- (a) Whitewood coal mine

as approved under the ... [*Water Act* or approved under EPEA].”

[81] While not strictly part of the pluses and minuses that make up the water balance,⁸⁴ the historic debt is an intrinsic part of remedying the overall impact of the Approval Holder on the Lake. It represents the cumulative unmitigated impact of the Approval Holder on lake levels.

[82] The ongoing impacts on the Lake's water balance are a result of both reducing water inputs to the Lake and enhancing water losses from the Lake.⁸⁵ Reduced quantities of water available to the Lake inevitably mean that lake levels are lower than they would be if there was no adverse impact on the water balance.

[83] Water levels on Wabamun Lake are a valid concern for all Parties because the water levels are now at historic lows. The low lake levels, and particularly the historic lows, are of particular concern to the Appellants and others around the Lake because it is negatively impacting their ability to use and enjoy the Lake. Examples of the issues that concern the Appellants in this regard are increased weed growth, receding lakefronts that negatively impact the ability to use their property,⁸⁶ and the negative environmental effects on the Lake from industrial uses.⁸⁷

[84] The Approval, which authorizes the construction, operation, and reclamation of the WLWTP2, was a measure designed to mitigate the impacts of the Approval Holder's operations on the Lake by providing added quantities of water. All of the Parties agree that mitigating the Approval Holder's impacts on the Lake is a desirable common objective. Among other things, it is hoped that mitigating the impacts of the Approval Holder on lake levels will improve the overall ecology of the Lake and address many of the concerns of the Appellants, including the presence of weeds and receding lakefronts.

⁸⁴ See: Submission of the Approval Holder, dated October, 9, 2002, at Tab A, Presentation "Lake Wabamun Water Balance Modeling," by Mr. Robin J. Fitzgerald, page 6. See also: Exhibit 11, Presentation entitled "Water Balance Modeling for Lake Wabamun" by Dr. Thian Yew Gan.

⁸⁵ See: Submission of the Approval Holder, dated October, 9, 2002, at Tab A, Presentation entitled "Lake Wabamun Water Balance Modeling," by Mr. Robin J. Fitzgerald, page 6. See also: Exhibit 11, Presentation entitled "Water Balance Modeling for Lake Wabamun" by Dr. Thian Yew Gan.

⁸⁶ See: Exhibit 7, Photograph from the Edmonton Journal entitled "Mr. Tyke Drever, 72 stands on his ever-growing beach at his cabin on Wabamun Lake," submitted by Mr. C.G.P. Splisted.

⁸⁷ See: *Bailey et al. #2 v. Director, Northern East Slopes Region, Environmental Service, Alberta Environment*, re: *TransAlta Utilities Corporation* (18 May 2001), Appeal Nos. 00-074, 077, 078, and 01-001-005-R (A.E.A.B.). The *Bailey* Report and Recommendation looks at some of the concerns expressed by the Appellants with respect to low lake levels.

[85] The mitigation provided by the operation of the WLWTP2 involves two aspects: restoring a quantity of water estimated to be a historic water deficit created by the past operations of the Approval Holder (the historic debt) and replacing water lost to Wabamun Lake as a result of continuing impacts (the ongoing impacts) of the Approval Holder. The Approval and the Licence require that the Approval Holder operate the Water Treatment Plant as a mitigative measure to offset both the historic debt and the ongoing impacts. The Approval provides:

“4.1.3 By no later than December 31, 2006, the approval holder shall have discharged sufficient treated water into Wabamun Lake to offset the historic debt

4.1.4 In addition to the requirements under clause 4.1.3, the approval holder shall operated the WLWTF [(WLWTP1 and WLWTP2)] at sufficient capacity to offset the annual ongoing impacts of the previous year.”

The Licence provides:

“9.1 By no later than December 31, 2006, the licensee shall have discharged sufficient treated water into Wabamun Lake to offset the historic debt

9.2 Beginning January 1, 2002, and until the historic debt is satisfied as required by condition 9.1, the licensee shall discharge a minimum of:

- (a) 20 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2003;
- (b) 40 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2004;
- (c) 60 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2005; and
- (d) 80 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2006.

9.3 The minimum discharge volumes in 9.2 shall include the annual ongoing impact.”

[86] Given the common objective of mitigating the impacts on the Lake, it is in the best interest of all the Parties if the operation of the WLWTP2 succeeds in mitigating the impacts of the Approval Holder on Wabamun Lake. The issues in these appeals relate to whether the provisions of the EPEA Approval and the *Water Act* License are adequate to ensure that the WLWTP2 will fully mitigate both the historical and ongoing impacts of the Approval Holder on the Lake.

[87] The issues set for this hearing, that will now be discussed, were:

Issue 1: the adequacy of the water balance model and the factors (e.g.

surface runoff) that it relies upon as a basis for establishing the requirements for the quantity of treated water to be returned to Wabamun Lake by means of the water treatment plant;

- Issue 2: the ability of the water treatment plant, as approved, to be able to deliver the specified quantities of treated water to Wabamun Lake;
- Issue 3: the water quality of the Sundance cooling pond as it may be a factor in limiting the ability of the approved water treatment plant to deliver the quantities of water specified in the License to the quality required by the Approval; and
- Issue 4: the method and timing of providing reports to interested individuals and the actual content of the data reported as effective means to assure the Parties that the proposed mitigation is achieving the expected compensation for the impact of the Approval Holder upon water levels in Wabamun Lake.

C. Issue 1 - Adequacy of the Water Balance Model

[88] Mr. Doull argued that the Wabamun Lake Water Balance Model was flawed because it relied upon the “SWMM model” for estimating surface runoff. This model is designed for land development scenarios where the ground is hard, leading to greater runoff than would occur around Wabamun Lake where the ground is, according to Mr. Doull, more prone to absorbing water.⁸⁸

[89] In his oral testimony, Mr. Spilsted referred to the need to add water to the Lake. He stated that he was not satisfied with what has been done regarding the quantity of water that has been added.⁸⁹ He further argued that he disagrees with the terms of the Licence with respect to how long the Water Treatment Plant will be required to continue adding the water to the Lake and how much water needs to be added to the Lake.⁹⁰

[90] Mr. Spilsted questioned the experts for TransAlta on the geological information that was inputted into the model. The witnesses for TransAlta indicated that the information used in the model was obtained from TransAlta, and, in some areas, they exercised “geological judgment.”⁹¹ Mr. Spilsted also questioned the Directors’ witnesses as to whether the impacts of the power plants and mining operations around the Lake were properly taken into consideration.

⁸⁸ Transcript, dated October 17 and 18, 2002, at page 150.

⁸⁹ Transcript, dated October 17 and 18, 2002, at page 192, lines 11 to 15.

⁹⁰ Transcript, dated October 17 and 18, 2002, at page 194, lines 16 to 17.

The witnesses responded by stating that these impacts "...are accounted for in the water balance model as it is modified each year to reflect the actual impacts on the lake."⁹²

[91] LWEPA noted that the Approval Holder's operations comprised almost 40 percent of the Wabamun Lake watershed and that the Lake is a fairly large lake with a relatively small catchment basin. According to LWEPA, of 30 streams that once fed the Lake from the watershed, less than half flow into the Lake today. LWEPA's concern is that this surface runoff and groundwater inflow to the mining areas have all been diverted, with most of this water not reaching the Lake.⁹³ By presenting historical data and comparisons of Wabamun Lake levels with other nearby lakes, LWEPA called into question the adequacy of the historic water deficit owed by the Approval Holder, as estimated by the Wabamun Lake Water Balance Model.⁹⁴ LWEPA noted that during the 1930s, a historically dry period with average annual precipitation of 432 mm, Wabamun Lake levels stayed above 724 m elevation.⁹⁵ Yet, during the 1990s, with average annual precipitation amounts of 510 mm, Wabamun Lake levels dropped below 724 m.⁹⁶ LWEPA presented their own estimates of the historic water deficit coming up with 66.8 million m³ at the end of year 2000.⁹⁷ They compared this with the Approval Holder's estimate of 47.2 million m³ at the end of year 2000.⁹⁸ Finally, LWEPA observed that the WLWTP1 began operations in 1997 and was on-stream in 1998, yet despite adding water to the Lake since then, the level of Wabamun Lake has continued to decline to a new record low level of 723.73 m.⁹⁹

[92] The Approval Holder made Dr. Thian Yew Gan, from the University of Alberta, available to the Appellants to critically review the Wabamun Lake Water Balance Model. Dr. Gan stressed the complexities of the hydrological cycle and that modeling such processes is a combination of science and art.¹⁰⁰ He indicated that because the Wabamun Lake Water Balance

⁹¹ Transcript, dated October 17 and 18, 2002, at page 380, lines 6 to 26, and at page 381, lines 1 to 17.

⁹² Transcript, dated October 17 and 18, 2002, at page 491, lines 4 to 21.

⁹³ Transcript, dated October 17 and 18, 2002, at pages 204 to 206.

⁹⁴ Transcript, dated October 17 and 18, 2002, at page 207.

⁹⁵ Transcript, dated October 17 and 18, 2002, at page 219, lines 12 to 16.

⁹⁶ Transcript, dated October 17 and 18, 2002, at page 220, line 25, page 221, line 23, and page 222, line 16.

⁹⁷ Exhibit 8, "Graphs Containing Information taken from Canadian Meteorological Data," submitted by LWEPA.

⁹⁸ Exhibit 3, "Calculation of Water Volume Debt, based on TransAlta Impacts," submitted by TransAlta.

⁹⁹ Transcript, dated October 17 and 18, 2002, at page 227, lines 24 to 26, and page 228, lines 1 to 2.

¹⁰⁰ Transcript, dated October 17 and 18, 2002, page 252, lines 7 to 9. "And hydrology models have to be a simplified version of nature."

Model is simply accounting for water quantity on the basis of inputs and outputs to Wabamun Lake, there is no concern about the mathematical structure of the model. The model is most appropriately used on an annual basis because it does not consider time-dependent processes, like snow ablation that occur over shorter time horizons.¹⁰¹ Accordingly, the biggest concerns relate to uncertainties in the data inputted into the model, rather than the model itself. Dr. Gan indicated that there was substantial uncertainty in the groundwater flow estimates because this information was the product of another model rather than direct measurements. According to Dr. Gan, this substantial uncertainty was mitigated by the fact that groundwater flows represented a small proportion of the total water balance budget.¹⁰²

[93] There was also uncertainty introduced to the model by relying on precipitation data collected from Stony Plain and Entwistle to represent precipitation occurring over Wabamun Lake.¹⁰³ Dr. Gan was more confident in the evaporation data because he was able to compare it favourably with data from his own studies on evaporation in the neighbouring Paddle River region.¹⁰⁴ Dr. Gan found that there was much more uncertainty in the estimate of enhanced evaporation caused by the warming effect of the Wabamun Power Plant cooling water discharge to the Lake, but he noted that the values used in the Wabamun Lake Water Balance Model were stated to be overestimates because the basic non-enhanced evaporation input for Wabamun Lake used in the model was overestimated by about 30 percent. Even taking this adjustment into account, Dr. Gan had less confidence in this aspect of the model.¹⁰⁵ However, he noted that the contribution of the enhanced evaporation aspect of the model to the overall water budget was also only a few percent at most.¹⁰⁶

[94] Dr. Gan was asked to consider the numbers that LWEPa presented on the historic water debt, to evaluate them overnight, and present his views to the Board the next day. The

¹⁰¹ Transcript, dated October 17 and 18, 2002, at page 253, lines 7 to 12.

¹⁰² Transcript, dated October 17 and 18, 2002, at page 253, lines 13 to 25.

¹⁰³ Transcript, dated October 17 and 18, 2002, at page 254, lines 1 to 10.

¹⁰⁴ Transcript, dated October 17 and 18, 2002, at page 254, lines 11 to 26, and page 255, lines 1 to 23.

¹⁰⁵ Transcript, dated October 17 and 18, 2002, at page 294, lines 9 to 13. "What I'm saying is that even if you prorate the 7 percent by a number 1.3 there are still uncertainties involved because this model is not doing well, is not simulating the natural lake evaporation properly."

¹⁰⁶ Transcript, dated October 17 and 18, 2002, at page 295, lines 2 to 9. "I think the enhanced evaporation is not going to be a major, not going to be playing a major role in the evaporation budget because even based on the estimation percent divided by 1.3 is about 5 percent so you are talking about 5 percent of the 80 percent water budget, so it's still, you are talking about a few percentage of the overall budget. So therefore enhanced evaporation

Board realizes that this was a challenging task and thanks Dr. Gan for his efforts. Dr. Gan's analysis¹⁰⁷ explained where the differences between the LWEPA estimate of historic deficit and the Approval Holder's estimate of historic deficit arose. Dr. Gan found that the largest discrepancy in the numbers was that LWEPA used mean annual runoff for their calculations while the model for the Approval Holder used actual annual runoff numbers from Tomahawk Creek. Dr. Gan found the latter to be a more realistic approach.¹⁰⁸ He conceded in cross-examination by LWEPA that an even better approach would be to use the average of two or more local watersheds.¹⁰⁹

[95] Dr. Gan addressed the concept of a safety factor as it is commonly used in engineering practice.¹¹⁰ Dr. Gan acknowledged that a safety factor of 10 percent might be appropriate for the model predictions for these circumstances.¹¹¹

[96] Mr. Robin Fitzgerald, of Klohn Crippen, appearing as part of the Approval Holder's witness panel, outlined the history of the Wabamun Lake Water Balance Model. He explained how the model accounts for 12 separate elements of inflow and outflow. He noted that "...the inflows are based on directly measured data or data from reliable sources, and they represent 80 percent or more each year of the model inflows."¹¹² The performance of the model was illustrated in a chart that showed the Wabamun Lake Water Balance Model simulations for lake levels compared with the recorded lake levels.¹¹³ This chart showed excellent correlation of the simulated lake levels with the recorded lake levels. Mr. Fitzgerald went on to explain that the simulation line has the model assumptions about TransAlta's impacts imbedded in it to achieve the fit. Then the simulated lake levels without TransAlta's impacts are estimated by

even though it involves uncertainties is still not going to affect the answer by a whole lot."

¹⁰⁷ Exhibit 15.

¹⁰⁸ Transcript, dated October 17 and 18, 2002, at pages 560 to 569.

¹⁰⁹ Transcript, dated October 17 and 18, 2002, at page 569 to 570.

¹¹⁰ Transcript, dated October 17 and 18, 2002, at page 576, lines 17 to 24. "In design purposes safety factor is used so that you will not run – to be on the safe side you will be a bit conservative, yeah. So you, for example, may this structure should be of such a size or the pipes should be 3 feet diameter you raise it to 3 feet 6 inches diameter, for example, so that the capacity getting – chances is less. That is my understanding of safety factor."

¹¹¹ Transcript, dated October 17 and 18, 2002, at page 578, lines 13 to 19. "I think that is reasonable estimate because you have a bit of problems with groundwater that a few percentage, a bit of problem with surface runoff and diverted, and so 10 percent is reasonable. It could be slightly higher or slightly lower, but shouldn't be much more than 10 percent or much less than 10 percent."

¹¹² Transcript, dated October 17 and 18, 2002, at page 338, lines 1 to 4.

¹¹³ Exhibit 4, entitled "Debt Reduction 1996 – 2002," at page 14.

subtracting these assumed impacts from the net water available to Lake Wabamun. Mr. Fitzgerald maintained that this calibration must be valid because the assumptions have been able to duplicate the actual water levels as they rise and fall.¹¹⁴ Furthermore, Mr. Fitzgerald explained that they performed a sensitivity analysis on the uncertainty of the data inputs. Mr. Fitzgerald stated that as a result of the sensitivity analysis, he had a high level of confidence in the data inputs.¹¹⁵

[97] Mr. Fitzgerald addressed the concern about the role of SWMM model in estimating the runoff component of the model. He explained that although SWMM had been used to test the use of the Tomahawk Creek for estimating runoff in the Wabamun catchment, “SWMM is not now part of the [Wabamun Lake] Water Balance Model.”¹¹⁶

[98] Mr. Fitzgerald provided additional evidence after Dr. Gan presented his explanation¹¹⁷ of where the difference lay between the Wabamun Lake Water Balance Model calculations presented by the Approval Holder¹¹⁸ and the LWEPA calculations¹¹⁹ on the historic water deficit. Mr. Fitzgerald noted that the Wabamun Lake Water Balance Model included some conservatism in his view because they included a disputed area of 15 square kilometres to the diverted runoff drainage area of 73.5 square kilometre, thereby considering it as being runoff that is diverted from Wabamun Lake. Likewise, Mr. Fitzgerald referred to the assumption of 5.6 percent for winter base flow, a number that he viewed to be reasonable, but conservative.

[99] Mr. Jerome Clarkson provided evidence, as part of the Approval Holder’s witness panel, on the matter of the groundwater flow estimates. He noted that the groundwater inflow to the Whitewood mine is ultimately returned to Wabamun Lake and does not represent an adverse

¹¹⁴ Transcript, dated October 17 and 18, 2002, at page 341, lines 17 to 22. “In order to achieve this type of calibration, we have to be both analyzing the behaviour correctly on rising limbs and falling limbs, and an excessive fudge, if you like, on one part of the process would clearly show up on the other. So we take care to try and get everything correct.”

¹¹⁵ Transcript, dated October 17 and 18, 2002, at page 342, lines 12 to 22. “For instance, in 2001 a 20 percent error in runoff would result in only a 2.7 percent difference in total inflow and a 7.5 percent difference in annual TransAlta impact. Similarly, a 20 percent error in natural evaporation because of the dominance of natural evaporation would result in a 17 percent difference in total inflows but only a 5 percent difference in annual TransAlta impact. However, based on reviews and previous work, reviews by ourselves and others, we’re confident that all data inputs are a lot more accurate than 20 percent.”

¹¹⁶ Transcript, dated October 17 and 18, 2002, at page 345.

¹¹⁷ Exhibit 15.

¹¹⁸ Exhibit 4.

¹¹⁹ Exhibit 8.

impact on lake level that can be attributed to the Approval Holder. He noted that the groundwater pumped from the Highvale mine is not returned to the Lake and thereby does represent a loss to the lake water balance. However, this quantity is measured and is known, representing only about 400,000 m³ per year. Finally, he discussed the groundwater outflow from the Lake, describing this as essentially leakage from the Lake that is completely independent from the impact of the Approval Holder. He noted that: “No one can say for certainty what the actual groundwater outflow value is, but I would say that the number that we've arrived at is reasonable.”¹²⁰

[100] Mr. Mike Seneka presented evidence for the Directors on the validity of the Wabamun Lake Water Balance Model. Mr. Seneka conducted an extensive review of the Wabamun Lake Water Balance Model submitted by the Approval Holder. In addition, he performed his own analysis of Wabamun Lake water levels using the same principles incorporated into the Approval Holder’s model to simulate water levels for the period 1982 to 2001. He found, except for a period from 1987 to 1990 during which there was a consistent difference that he was not able to resolve, “very good” agreement between simulated and recorded lake levels.¹²¹

[101] Mr. Seneka undertook a comparison of Wabamun Lake with Lake Isle, Lac St. Anne, and Pigeon Lake. He noted that the first three lakes “...would be expected to share similar climates and basin physiography based on their close proximity to each other.”¹²² However, he also pointed out a critical difference of Wabamun Lake in relation to the two other nearby lakes, in that the ratio of catchment area to lake area for Wabamun Lake is much smaller (under 3 to 1) compared with Lake Isle (10 to 1) and Lac St. Anne (11 to 1). This difference makes water levels in Wabamun Lake much more vulnerable to changes in weather cycles. He noted that “...this characterizes Wabamun even in the pre-TransAlta period.”¹²³

[102] Mr. Seneka was asked to consider the uncertainty in all of the input and output data that is used in the Wabamun Lake Water Balance Model, and he indicated that, in his view, he was confident in all of the data inputs to within 5 to 10 percent, except for the outflows from

¹²⁰ Transcript, dated October 17 and 18, 2002, at page 350 to 352.

¹²¹ Transcript, dated October 17 and 18, 2002, at page 438.

¹²² Transcript, dated October 17 and 18, 2002, at page 445, lines 3 to 5.

¹²³ Transcript, dated October 17 and 18, 2002, at page 445, lines 18 and 19.

other human activities which he estimated at within 20 percent because these numbers are based on licensed values, not measured values. Given an opportunity to indicate how he might change the model to improve its performance, Mr. Seneka replied: “I am not sure that I would change anything.”¹²⁴

[103] The Approval Holder and the Directors noted that the Appellants did not bring any expert witnesses to support their challenge of the adequacy of the Wabamun Lake Water Balance Model. Yet, the Appellants, with particular credit to Mr. Boros on behalf of LWEP, raised a number of challenging questions about the adequacy of the Wabamun Lake Water Balance Model that had to be answered by the Approval Holder’s witness panel, the Directors’ panel, and by Dr. Gan.¹²⁵ The experts appearing before the Board clearly agreed that the Wabamun Lake Water Balance Model has no fundamental, structural flaws. According to the experts, any uncertainty in its predictions will arise from the data inputs rather than any structural deficiencies in the model.

[104] Based on the evidence that was provided, the Board agrees that there does not appear to be any structural flaws with the model. The Board is of the same view as Dr. Gan that “...the complexities of the hydrological cycle and that modeling such processes is a combination

¹²⁴ Transcript, dated October 17 and 18, 2002, at page 532, lines 5 and 6.

¹²⁵ The Board addressed the role of Dr. Gan in its letter of October 23, 2002, where it stated:

“[The Appellants]... objected to the Board referring to Dr. Gan as an ‘independent witness.’

At the April 17, 2002 preliminary meeting, the Board was informed by the parties that TransAlta had retained Dr. Gan to provide a critique of the water balance model and that Dr. Gan had met with the parties to review his findings. TransAlta indicated that they would be prepared to make Dr. Gan available to the parties again after the preliminary meeting, and if necessary would make Dr. Gan available for the hearing. The Board notes that the parties referred to Dr. Gan as an ‘independent expert’ during the course of the preliminary meeting, although they noted that TransAlta had paid for Dr. Gan.

Based on this information, the Board concluded that Dr. Gan had information that may be relevant to the Board’s considerations, and as a result, on April 19, 2002, accepted TransAlta’s offer to have Dr. Gan attend the hearing as a witness.

Subsequent to this April 19, 2002 letter, Mr. Kruhlak contacted Board staff to advise that while TransAlta was prepared to have Dr. Gan attend as a witness, they had not intended to call Dr. Gan as part of their panel as he was not necessary for them to present their case. The Board confirmed in its May 13, 2002 letter that Dr. Gan would be presented as an ‘independent witness’. The reference to an independent witness – a term initially used by the parties at the preliminary meeting – was only intended to make it clear that Dr. Gan was not being presented as part of anyone’s case, but at the request of the Board because he had potentially relevant information with respect to the matters before the Board. The effect of presenting Dr. Gan in this manner ensured that *all* parties had an opportunity to cross-examine Dr. Gan.”

of science and art.”¹²⁶ The Board also agrees with Dr. Gan when he indicated that because the Wabamun Lake Water Balance Model is simply accounting for water quantity on the basis of inputs and outputs to Wabamun Lake, there is no concern about the mathematical structure of the model.

[105] The experts also agreed that Wabamun Lake has a small catchment for converting precipitation into runoff compared with its closest neighbouring lakes, Lake Isle and Lac Ste. Anne. The experts argued that this feature makes Wabamun Lake water levels more vulnerable to climatic variability. The warmer weather of recent years has been driving evaporation rates higher, leading to lower water levels. Further, the low ratio of catchment to lake area makes Wabamun Lake much more vulnerable to negative impacts on its water balance, including those caused by the Approval Holder.

[106] The Board agrees that the smaller catchment basin of Wabamun Lake makes it more susceptible to climatic changes, and as a result, every effort needs to be made to ensure that the inputs into the Wabamun Lake Water Balance Model are as accurate as possible to take into account the nature of the basin.

[107] All Parties to these appeals agree that water levels are at historic low levels. This is a serious impact on the Lake that the EPEA Approval and the *Water Act* License are seeking to redress by requiring the Approval Holder to replace its historic water deficit to the Lake while balancing its ongoing water deficit impact on Wabamun Lake.

[108] The Wabamun Lake Water Balance Model appears to consistently simulate actual water levels at Wabamun Lake. While the Board does not believe that this, by itself, can determine the accuracy of the Wabamun Lake Water Balance Model, the Board believes that such correlation is a very strong indication that the model is performing well. However, notwithstanding the correlation to actual water levels in Wabamun Lake achieved by the model, it is still a model that simulates reality and depends on inferences and judgments to determine the water deficit repayments that are required of the Approval Holder. Given that the water levels are recognized as so important to the multiple uses of Wabamun Lake, the Board believes that

¹²⁶ Transcript, dated October 17 and 18, 2002, at page 252, lines 7 to 9. “And hydrology models have to be a simplified version of nature.”

there is an obligation to be reasonably confident that the measures required of the Approval Holder will fully mitigate the Approval Holder's impact on the Lake.

[109] The evidence of the experts with respect to the potential vulnerabilities of the Wabamun Lake Water Balance Model relates to the reliability of the inputs. The Board discussed this at some length with Mr. Seneka and Dr. Gan. In response to questions from the Chairman, the following exchange with Mr. Seneka occurred:

“(Chairman) Okay. You mentioned the different factors that influence Wabamun Lake levels. You mention the natural inflows that include direct precipitation to the lake surface, surface runoff and so on. Then you also mentioned inflows and outflows affected by TransAlta's operations. What I am going to do is take you through each one of these and I would like you to give me your competence in the accuracy of either the number or the estimate.

So, for example, what I am going to say is one of the inflows that come in to the lake is – I should say the natural inflow course is direct precipitation to the lake surface. Within a scale of plus or minus X percent how confident are you with that number and I'm going to walk you through every one of these numbers, or every one of these factors?

(Mr. Seneka) Okay.

(Chairman) So direct precipitation to plus or minus 5 percent, 10 percent, no doubt?

(Mr. Seneka) I would say it is in the order of plus or minus less than 10 percent.

(Chairman) Second, surface runoff from the surrounding watershed. Plus or minus?

(Mr. Seneka) That would be 5 percent probably, maybe 5 to 10 percent.

(Chairman) Okay. Subsurface or groundwater contributions?

(Mr. Seneka) It is hard to say as I don't have the specific expertise in groundwater modelling. But if you are asking me for a guess and would take it as such, I would say probably plus or minus 25 to 50 percent.

(Chairman) Natural outflows. First was lake evaporation from the lake surface?

(Mr. Seneka) For sure less than 10 percent.

(Chairman) Second was overflow or outflow from the lake when the lake is above the outlet elevation?

(Mr. Seneka) That would be on the order of probably about 5 percent.

(Chairman) And groundwater outflow?

(Mr. Seneka) Again, the same as for inflow.

(Chairman) Inflows and outflows, I'm reading from your Affidavit which is at paragraph 6 if you wanted to get that. And I am sorry I didn't tell you that earlier. I apologize to Mr. McDonald, too.

Paragraph 6, inflows and outflows affected by TransAlta's operations that are accounted for by the Model A, enhanced lake evaporation caused by the introduction of heated water.

So on that one what is your confidence level?

(Mr. Seneka) I would say within 5 to 10 percent.

(Chairman) The second one was the surface runoff to the lake which has been reduced by the removal of portions of the watershed such as mine areas, cooling ponds and plant areas?

(Mr. Seneka) Again, on the order of 5 perhaps, less than 10 percent.

(Chairman) The next one was groundwater and other water that is pumped from coal mine pits during dewatering.

(Mr. Seneka) I would say on the order of 10 percent on that.

(Chairman) And next is other licenced consumptive uses of Wabamun Lake water for the Wabamun power plant losses?

(Mr. Seneka) Again, within 10 percent.

(Chairman) And finally, water that is discharged to Wabamun Lake by TransAlta via the Wabamun Lake water treatment facility to offset the historical and operational effects of TransAlta's operations?

(Mr. Seneka) I would expect that to be reasonably metered, less than 5 percent.

(Chairman) Sure, okay. And with those other outflows in paragraph 7 caused by human activities?

(Mr. Seneka) I would say probably within 20 percent. Those are values that are licenced values, not necessarily actually reported values to the department.¹²⁷

[110] In response to questions from the Chairman, the following exchange occurred with Dr. Gan:

“(Chairman) And we heard earlier today, though, you might not have been here, that some of the input data, Mr. Seneka had questions in terms of the comfort level of that data within roughly about 10 percent of all of those inputs, some were a little higher, some might have been a little lower, but it was roughly 10 percent. In other words he felt comfortable with the water balance model inputs and outputs to an area of roughly within about 10 percent.

(Dr. Gan) I think that is reasonable estimate because you have a bit of problems with groundwater that's a few percentage, a bit of problem with surface runoff and diverted, and so 10 percent is reasonable. It could be slightly higher or slightly lower, but shouldn't be much more than 10 percent or much less than 10 percent.”¹²⁸

[111] The Board concludes that because there is clearly so much at stake, as Wabamun Lake is more vulnerable to adverse impacts on its water balance than neighbouring lakes, and in order to account for the acknowledged vulnerabilities associated with the reliability of the inputs into the water balance model, it is prudent, reasonable, and appropriate that a safety factor should be incorporated into the requirements for mitigating the impacts with respect to the best estimate of the historic debt and the ongoing impact. Based on the evidence provided especially by Dr.

¹²⁷ Transcript, dated October 17 and 18, 2002, at page 528, line 10 to page 531, line 8.

Gan, but also by Mr. Seneka, the Board will recommend that a 10 percent safety factor should be incorporated into the historical debt and into the ongoing impacts.

D. Issue 2 - Ability to Deliver Specified Quantities

[112] Mr. Doull expressed concern about the ability of the water treatment plants to deliver the water required to deal with water level problems in Wabamun Lake because he noted that the Approval Holder's initial application was to pump 23 million m³, but the Approval now refers only to pumping 20 million m³.¹²⁹ He also expressed concern that the water treatment plants would have to operate at full capacity and questioned whether they were capable of delivering the required quantities given past performance deficiencies.

[113] LWEPA also expressed concerns about whether the capacity of the Water Treatment Plant is sufficient at 8 million m³ given that the Existing Water Treatment Plant has been operating for years, yet, the level of Wabamun Lake has continued to decline.

[114] The Approval Holder provided Mr. Matwichuk as a witness to describe a review that was performed of the Existing Water Treatment Plant (WLWTP1) by Associated Engineering that identified a number of upgrades that would improve the treatment capacity of WLWTP1, but that these improvements were insufficient to ensure that the Approval Holder could meet the commitments made to Alberta Environment for returning treated water to Wabamun Lake. Mr. Matwichuk reviewed the process selection, design and pilot testing of the processes selected for WLWTP2. The manufacturer provided performance guarantees. These included successfully completing a 30-day performance trial to meet both quantity and quality criteria. This 30-day trial was successfully completed on July 8, 2002. Up to September 30, 2002, WLWTP2 had produced over 2 million m³ of water. There is also a one-year performance test that carries a substantial financial penalty for the manufacturer if not completed successfully.

[115] The witness panel for the Directors, specifically Mr. Seehagel and Mr. Chiarella, advised how the proposals for WLWTP2 were presented by the Approval Holder and how these proposals appeared suitable to achieve the required treatment capacity with the required

¹²⁸ Transcript, dated October 17 and 18, 2002, at page 578, lines 3 to 19.

¹²⁹ Transcript, dated October 17 and 18, 2002, at page 150, lines 23 to 26. "And when they had their application, their initial application they were going to pump 23 million cubic meters. Now they are going to pump 20. They are pumping less. Are they sure they are going to make it?"

treatment quality. Performance for WLWTP2 reported to Alberta Environment since commissioning of WLWTP2, indicates that this plant will perform to expectations.

[116] This issue arose from the inadequate performance of WLWTP1 that ultimately led to the proposal to construct and operate WLWTP2 in order to meet the Approval Holder's obligations to return water to Wabamun Lake. The evidence shows that, to date, WLWTP2 is meeting expectations. And, there is a performance guarantee in place to require the manufacturers to ensure that WLWTP2 will perform at this level for a full year so that seasonal variations in performance will also be tested.

[117] The Board is satisfied from evidence before it that the Approval Holder will meet the requirements specified in the Approval and in the Licence with respect to the volumes of water that they are required to produce. The question of the Approval Holder's ability to meet these requirements was tested in cross-examination by Mr. Doull and then in a question by the Chairman in the following exchange:

“(Mr. Doull) Okay. The 8 million is for Wabamun Lake water treatment plant No. 2. What does Wabamun Lake water treatment plant No. 1 put out?

(Mr. Matwichuk) What does it put out?

(Mr. Doull) I can't remember. Help me out.

(Mr. Matwichuk) What it puts out, the design is 15 million cubic metres.

(Mr. Doull) Yes, that is right. So your impact, your claim is 9. So there is 14 million going in the lake now, if I have my math correct? Your impact -- Wabamun Lake treatment plant No. 1 was designed to put in 15 million cubic metres. In recent information or ongoing information TransAlta has said their impact is somewhere around 9 million. We have had the discussion it is higher than that. We will probably still have it by the time we are out of this. So if Wabamun Lake water treatment plant No. 2 puts out 8 million, subtract your 9 million from the you have got 6. So 14 million cubic metres is going in the lake; is that correct?

(Mr. Matwichuk) I can't get into the annual volume. All my mandate was is to have the plant -- to meet our commitment as per the conditions in the approval.

(Mr. Doull) Well, nobody here can answer?

(Mr. Campbell) Jerome Campbell. I can speak to that. So although the plant No. 1 has been designed to produce 15 million, our best year ever was 13 million.

(Mr. Doull) That is right. Last year.

(Mr. Campbell) Yes.

(Mr. Doull) Otherwise it never, ever came close to meeting it?

(Mr. Campbell) That is correct. ...

(The Chairman) Mr. Doull, don't argue with him, please. Just ask him a question and then let him finish his answer. And if he hasn't answered the question you want him to –

(Mr. Doull) Mr. Tilleman, it is a long day. Maybe this should have continued over until tomorrow. But we are going to finish it off today, obviously.

(The Chairman) While you are thinking about your next question let me try to paraphrase something that you have asked him that he can answer which is what is the capacity of treatment plant 1 and 2 now annually? Do you have an idea how much both of them are producing on an annual basis? Is that what you wanted him to say Mr. Doull?

(Mr. Doull) Yes.

(The Chairman) Do you have any idea, gentlemen, now with No. 1 doing whatever it is doing, with No. 2 at 80 percent of what it was planned to do even early, what is your best projection on what they might pump now on an annual basis?

(Mr. Campbell) I'm confident that we will be able to deliver 20 million cubic metres a year to Lake Wabamun as our licence requires. That is the combined facilities.¹³⁰

[118] No evidence was provided that seriously calls into question the ability of the WLWTP2, as approved, to meet its performance targets. The principal concern expressed is simply that TransAlta will not be able to meet these requirements. If this does occur, TransAlta will be in breach of its Approval and Licence, and the Directors will be able to take the appropriate remedial and enforcement measures to require TransAlta to remedy the situation. As a result, no case has been made to challenge the Approval or the Licence with respect to the ability of the approved facility to deliver the required quantities of water. However, given the capacity of the WLWTP2 and given that the Board has recommended that a 10 percent safety factor be added to the historical debt and the ongoing impacts of the TransAlta operations at the Lake, it is necessary to extend the length of time that WLWTP2 will be required to operate and, therefore, also extend the term of the Approval and Licence.

[119] The other argument that is presented with respect to this issue is raised by Mr. Doull. Mr. Doull repeats an argument that he presented in his appeal of the Wabamun Power Plant¹³¹ - that the Board amend the Approval and Licence to incorporate penalty provisions such

¹³⁰ Transcript, dated October 17 and 18, 2002, at page 363, line 12 to page 363, line 25.

¹³¹ See: *Bailey et al. #2 v. Director, Northern East Slopes Region, Environmental Service, Alberta Environment*, re: *TransAlta Utilities Corporation* (18 May 2001), Appeal Nos. 00-074, 077, 078, and 01-001-005-R (A.E.A.B.).

that, if TransAlta is unable to meet its performance target, automatic penalties are assessed. As the Board stated in the Wabamun Power Plant appeal:

“The Appellants have also asked the Board to amend the Approval to incorporate penalties and sanctions, for failure to mitigate the impacts on the Lake, directly into the Approval. The Board is of the view that this is not consistent with the provisions of the Act. The Act is designed with what is called a ‘tool box’ of enforcement options. The ‘tool box’ permits the Director to respond appropriately to a wide range of situations where enforcement or mitigation is required. The ‘tool box’ offers a fact specific response from Alberta Environment and even from the Crown Prosecutor if necessary. We do not want to fetter that discretion.

Further, one of the key elements of enforcement or mitigation action that can take place under the Act is the ability to appeal the enforcement or mitigation action to the Board. If the Board were to incorporate penalties and sanctions directly into the Approval, it would be taking away from the flexibility of the Director to respond to situations as they arise. It would be taking away the statutory right of TransAlta to appeal that enforcement or mitigation action based on a fact specific case. Again, the Board is not prepared to recommend the type of change requested by the Appellants.”¹³²

The Board has not been presented with any arguments that would change its position with respect to this question.

E. Issue 3 - Water Quality of Sundance Cooling Pond

[120] Mr. Doull raised a number of concerns with the water quality in the Sundance Cooling Pond that the Approval Holder chose to use as the raw water supply for both WLWTP1 and WLWTP2. Given that difficulties were encountered in the ability of WLWTP1 to produce the required quantities of water to the required quality using the Sundance Cooling Pond as the raw water supply, Mr. Doull made the inference that using the North Saskatchewan River would have provided a more secure raw water source.

[121] The witness panel for the Approval Holder, specifically Mr. Matwichuk, Mr. Campbell, Mr. Bolton and Mr. Digel, acknowledged the difficulties that had been experienced with WLWTP1. These difficulties were the reason that WLWTP2 was needed. However, the case for using the Sundance Cooling Pond rather than the North Saskatchewan River was

¹³² See: *Bailey et al. #2 v. Director, Northern East Slopes Region, Environmental Service, Alberta Environment*, re: *TransAlta Utilities Corporation* (18 May 2001), Appeal Nos. 00-074, 077, 078, and 01-001-005-R (A.E.A.B.), at paragraphs 106 and 107.

defended by referring to treatment difficulties that are encountered for Edmonton's water supply that is drawn directly from the North Saskatchewan River. Mr. Campbell did acknowledge that using raw water from the Sundance Cooling Pond did lead to treated water production losses because of being unable to have the treated water cooled to within 3°C of the Lake water, as required. Other problems with zooplankton and algae had posed problems for WLWTP1, but these problems appear to have been overcome with WLWTP2.

[122] The witness panel for the Directors, specifically Mr. Hoyes and Mr. Williams, indicated that the choice to use raw water from the Sundance Cooling Pond was a choice made by the Approval Holder. The Directors were only concerned with the performance of these plants and did not prescribe which raw water source the Approval Holder must use. Mr. Williams did acknowledge that the flexibility to avoid using the North Saskatchewan River for a month to six weeks at the discretion of the Approval Holder would allow that source to be an excellent raw water source. Mr. Williams did express concern over the greater potential to transfer foreign organisms into Wabamun Lake if North Saskatchewan River water was used directly compared with using the Sundance Cooling Pond, notwithstanding the reality that the make-up water for the Sundance Cooling Pond is drawn from the North Saskatchewan River. Mr. Hoyes noted that any request for additional major withdrawals from the North Saskatchewan River would have to be approved with full consideration of obligations to downstream users, although the Approval Holders witness panel had indicated that the raw water supply needs for the water treatment plants could be accommodated within the existing withdrawal License held by the Approval Holder.

[123] The issue that the Board stated with respect to the quality of water in the cooling pond was: "...the water quality of the Sundance cooling pond as it may be a factor in limiting the ability of the approved water treatment plant to deliver the quantities of water specified in the License to the quality required by the Approval." The principal concern of the Board with respect to the quality of the input water into the Water Treatment Plant is how it affects the ability of WLWTP2 to meet the performance criteria. This appears to be the criteria that the Directors used in assessing this portion of the application for the WLWTP2. As stated, the Directors were only concerned with the performance of these plants and did not prescribe which raw water source the Approval Holder must use.

[124] The rationale presented by the Approval Holder for choosing the Sundance Cooling Pond rather than the North Saskatchewan River was not convincing. However, other than the impact of the higher temperature of the Sundance Cooling Pond water on the ability of the Approval Holder to produce treated water that remains within the 3-degree limit, there was no evidence presented that the Sundance Cooling Pond water supply will prevent WLWTP2 from performing to its expectations. As long as the WLWTP2 is capable of meeting the performance criteria specified in the Approval and Licence with respect to quantity and quality of output water, the Board has no concerns with the source of the input water.

[125] Again, if at anytime TransAlta becomes incapable of meeting these requirements, it will be in contravention of its Approval and Licence. In such a situation, the Board believes the Directors will be able to take the appropriate remedial and enforcement action to correct the variation from the requirements.

F. Issue 4 - Method and Timing of Reporting

[126] This issue had been primarily a concern for Mr. Carmichael. His concerns were accommodated by the Approval Holder such that Mr. Carmichael withdrew his appeal. The agreement reached by Mr. Carmichael provides:

“...TransAlta has agreed to provide the following information:

1. monthly lake levels;
2. monthly water production;
3. monthly production versus licence requirements; and
4. progress on historical debt.

As you are aware, TransAlta proposes to have this information posted on their website. However, as you have requested a paper copy, they would be prepared to forward this to you and we understand that this may now conclude your appeal.”¹³³

Yet, Mr. Doull and LWEPA believe that reporting could be improved by the Approval Holder.

¹³³ See: *Carmichael v. Directors, Northern East Slopes Region and Central Region, Regional Services, Alberta Environment*, re: *TransAlta Utilities Corporation* (13 June 2002), Appeal Nos. 01-080 and 01-134-DOP (A.E.A.B.), at paragraph 21.

[127] Further to its agreement, the Approval Holder committed to providing the following data on its website by July 1, 2002, and the data is to be updated on an ongoing basis, allowing a one month delay for quality assurance control:

- “(a) monthly lake levels;
- (b) monthly water production;
- (c) monthly production v[s]. licence requirements; and
- (d) progress on historical debt.”¹³⁴

[128] The Approval Holder also agreed to update the community through its newsletter and will continue to participate in the Lake Wabamun Area Community Advisory Committee.¹³⁵

[129] LWEPA made a number of recommendations with respect to

“...proposed amendments relating to some guarantees of the right of the public to participate in any future deliberations or decisions regarding the water model, the water balance model, and any mitigation or prevention measures for the lake, and the need for a mechanism to ensure comprehensive integrated approach to water planning decision making at Lake Wabamun into the future.”¹³⁶

These recommendations were summarized in Exhibit 10.

[130] The Board understands the concerns that LWEPA has raised. LWEPA is concerned that the approach to public consultation adopted by the Directors in the approval process for the Wabamun Power Plant was not followed. The Board shares LWEPA’s disappointment that the successful approach, previously used by Mr. Ostertag, was not used in this case.¹³⁷ However, the Board is of the view that EPEA and the *Water Act* provide for a legally mandated mechanism that *requires* public consultation.¹³⁸ This mechanism ensures that

¹³⁴ See: Approval Holder’s Submission, dated May 8, 2002, at paragraph 63.

¹³⁵ See: Approval Holder’s Submission, dated May 8, 2002, at paragraph 64.

¹³⁶ Transcript, dated October 17 and 18, 2002, at page 589, lines 18 to 26.

¹³⁷ See: *Bailey et al. #2 v. Director, Northern East Slopes Region, Environmental Service, Alberta Environment*, re: *TransAlta Utilities Corporation* (18 May 2001), Appeal Nos. 00-074, 077, 078, and 01-001-005-R (A.E.A.B.), at paragraph 129. In this decision the Board stated: “Through the hearing, there has been a common, but unusual theme surrounding the participatory expertise and good judgement exercised by Director Ostertag with respect to the public consultation process. The Director is again to be commended for this. The Board is of the view that the approach taken by the Director with respect to the TransAlta approval process is the approach that should be followed by Alberta Environment with respect to major approvals. We believe that Director Ostertag’s approach is the primary reason why we are recommending that this Approval, for the most part, be untouched.”

¹³⁸ The purpose provisions of EPEA and the *Water Act* both contemplate public consultation. Section 2 of EPEA provides: “The purpose of this Act is to support and promote the protection, enhancement and wise use of the environment while recognizing the following: ... (g) the opportunities made available through this Act for citizens to provide advice on decisions affecting the environment....” Section 2 of the *Water Act* provides: “The purpose of

LWEPA and other stakeholders have an opportunity to be involved in the decision-making process.

[131] While the Board encourages the Directors to have greater regard for the type of process that was followed with respect to the Wabamun Power Plant in the future, the Board will not tie the hands of the Directors to augment the public consultation process prescribed in EPEA and the *Water Act* to suit the specific circumstance that they face.

[132] The Board does recognize the importance of ensuring that the public has access to information regarding compliance with the Approval and Licence. As a result, the Board is of the view that it is reasonable to ensure that the information that TransAlta agreed to be provided to Mr. Carmichael is also available to the public. Therefore, the Board will recommend that the Approval be amended to make this information available to the public.

[133] In response to these concerns, the Approval Holder made a number of additional commitments. These commitments were summarized in Exhibit #17, which provides:

- “1. TransAlta will consult with stakeholders in the development of a plan for the post 2006 operation of the water treatment plant, to the satisfaction of the Director.
2. TransAlta will continue to report publicly on the operational performance of the water treatment plant as long as TransAlta is responsible for its operations.
3. TransAlta will provide, on a yearly basis, an expert assessment of the results of the Water Balance Model inputs and outputs in a public meeting with interested stakeholders.
4. Rainfall and solar radiation data obtained as a result of the West Central Airshed Society’s application to Alberta Environment for the expansion of air monitoring stations in the Wabamun area, subject to the approval, will

this Act is to support and promote the conservation and management of water, including the wise allocation and use of water, while recognizing: ... (d) the shared responsibility of all Alberta citizens for the conservation and wise use of water and their role in providing advice with respect to water management planning and decision-making;....”

Further, both EPEA and the *Water Act* provide a statement of concern process, whereby a person who is directly affected by an activity may participate in the decision making process. Section 73(1) of EPEA provides: “Where notice is provided under section 72(1) or (2), any person who is directly affected by the application or the proposed amendment, addition, deletion or change, including the approval holder in a case referred to in section 72(2), may submit to the Director a written statement of concern setting out that person's concerns with respect to the application or the proposed amendment, addition, deletion or change.” Section 109(1) of the *Water Act* provides: “If notice is provided (a) under section 108(1), any person who is directly affected by the application or proposed amendment, and (b) under section 108(2), the approval holder, preliminary certificate holder or licensee, may submit to the Director a written statement of concern setting out that person's concerns with respect to the application or proposed amendment.”

be used by TransAlta to improve meteorological data inputs to the Water Balance Model.

5. TransAlta is will [*sic*] install, subject to approval, improved water temperature monitoring sensors in the vicinity of the Water Treatment Plant in an effort to further improve our capacity to produce water to the lake.
6. TransAlta will continue to consult with Dr. Gan to identify opportunities to improve the Water Balance Model in ways that could result in material improvements in the accuracy of the results.”

The Board believes these commitments are reasonable and that TransAlta should implement these recommendations.

V. CONCLUSIONS

A. Issue 1 - Adequacy of the Water Balance Model

[134] Although the Preliminary Meeting set four issues for the Hearing of these appeals, Issue 1, the adequacy of the Wabamun Lake Water Balance Model, dominated the evidence as might be expected, given the key role that the Wabamun Lake Water Balance Model plays in assessing the impact of the Approval Holder on water levels in Wabamun Lake. That estimated impact is the key determinant of the requirements placed on the Approval Holder to run the WLWTP2, the facility that is the subject of these appeals.

[135] Given the importance of water levels to the multiple uses of Wabamun Lake, there is an obligation to be reasonably confident that the measures required of the Approval Holder will fully mitigate the Approval Holder’s impact on the Lake. Regardless of the performance of the model, substantial judgments have had to be made in determining the historic impact of the Approval Holder on Wabamun Lake. In this case, application of a safety factor of an additional 10 percent above the best model estimate of historic water debt as well as on the ongoing impact is a reasonable requirement.

[136] The possibility that the Wabamun Lake Water Balance Model could yield even more valid results by collecting precipitation data right at Wabamun Lake, rather than relying upon an average of precipitation data from Stony Plain and Entwistle, warrants a trial. Suitable monitoring equipment should immediately be acquired, installed and operated at a suitable Wabamun Lake site for a period lasting for the duration of the EPEA Approval.

[137] Given that the pumping records from the Highvale mine dewatering must be relied upon to estimate water inflows to Wabamun Lake that are intercepted by these mine developments and these in turn are used to estimate the historic water deficit owed by the Approval Holder, these records should be included among the reporting requirements of the Approval.

B. Issue 2 - Ability to Deliver Specified Quantities

[138] This issue was not effectively challenged at the hearing, thereby the Appellants failed to substantiate the need for any changes to the Approval or License.

C. Issue 3 - Water Quality of Sundance Cooling Pond

[139] There were some clear inadequacies in the logic presented to support the choice of using the Sundance Cooling Pond rather the North Saskatchewan River as the raw water source for the water treatment plants. However, only the temperature of the cooling pond was documented as a factor substantially affecting the ability of the Water Treatment Plant to produce adequate quantities of water to meet the Approval Holder's obligations to return treated water to Wabamun Lake. Despite these observations, the water quality of the Sundance Cooling Pond does not appear to threaten the ability of the Approval Holder to fully discharge the obligations for returning treated water to Wabamun Lake. The Approval Holder chose this source of water supply for reasons that remain unclear to the Board. However, the Approval Holder, under the terms of the Approval, will have to live with the consequences of that choice if difficulties should arise in meeting the obligations for producing the required quantities of water for return to Wabamun Lake.

D. Issue 4 - Method and Timing of Reporting

[140] The Board is of the view that the commitments made by TransAlta, pursuant to the agreement reached with Mr. Carmichael and those offered in response to the concerns raised by the Appellants, are reasonable and should be implemented. Where appropriate, these commitments should be incorporated into the Approval or Licence.

VI. RECOMMENDATIONS

[141] In accordance with section 99 of the Act, the Board makes the following recommendations to the Minister of Environment.

[142] The “historical debt” defined in condition 1.1.2 (n) of the EPEA Approval should be amended to read “56.2 million cubic metres” from the current “51.1 million cubic metres” to represent the accumulated impact of the Approval Holder on Wabamun Lake levels for the period from June 1992 to December 31, 1999. The definition of “historical debt” included in condition 1.2(d) of the *Water Act* Licence should be amended to match the historical debt identified in the EPEA Approval. These changes reflect a 10 percent safety factor over the best estimate of “historical debt” that was used in the original Approval and it approximates Dr. Gan’s revised numbers based on his various scenarios and different assumptions. This change will require the Approval Holder to provide 5.1 million cubic metres of water to Wabamun Lake more than was required in the original Approval as part of the historical debt, which at its current rate of pumping will add only a few extra months to the pumping.

[143] The “annual ongoing impact” as defined in condition 1.1.2(b) of the EPEA Approval and condition 2.1.2(b) of the *Water Act* License should be amended to apply a multiplier of 1.1 times the best estimate of ongoing impact derived from the Wabamun Lake Water Balance Model. Again, these changes reflect a 10 percent safety factor to ensure mitigation of annual ongoing impacts.

[144] Condition 9.2 of the *Water Act* Licence should be amended to account for the additional 10 percent safety factor with respect to both the historical debt and the annual ongoing impact. With the addition of 10 percent to the historical debt and 10 percent to the annual ongoing impacts, the total volume of water that is recommended to be pumped during the term of the Approval would be 88 million cubic metres. In order to ensure that the Approval Holder can comply with this requirement, the term of the Approval should be extended to June 30, 2007. In addition, other appropriate changes should be made to dates specified in the Approval and the Licence to ensure that the Approval Holder can comply with these requirements.

[145] In order to improve the Wabamun Lake Water Balance Model, the water quantities pumped annually from the Highvale mine should be reported to Alberta Environment under the EPEA Approval.

[146] In order to improve the Wabamun Lake Water Balance Model, a functional precipitation gauge to supply precipitation data should be located at a suitable site near Wabamun Lake, as approved by the Director. The precipitation data collected at this site should be reported and used in the Wabamun Lake Water Balance Model to compare with the precipitation data averaged between Stony Plain and Entwistle that is currently used. The higher value from either source shall be used in the Wabamun Lake Water Balance Model. If a difference of less than 5 percent between these data sources is observed after three years of comparative recording, the new Wabamun Lake site may be abandoned in favour of using the average of data from Stony Plain and Entwistle.

[147] As agreed to by the Approval Holder, the *Water Act* Licence should be amended to ensure that stakeholders are consulted in the development of a plan for post 2006 operation of the water treatment plants to the Director's satisfaction.

[148] As agreed to by the Approval Holder, the Licence should be amended to require that TransAlta provide, on a yearly basis, an expert assessment of the results of the Wabamun Lake Water Balance Model inputs and outputs. This information should be presented in a public meeting with interested stakeholders.

[149] As agreed to by the Approval Holder, the Licence should be amended to require that rainfall and solar radiation data obtained as a result of the West Central Airshed Society's application to Alberta Environment for the expansion of air monitoring stations in the Wabamun area, should this application be approved, be used by TransAlta to improve meteorological data inputs to the Wabamun Lake Water Balance Model.

[150] As agreed to by the Approval Holder, the Licence should be amended to require TransAlta to install improved water temperature monitoring sensors in the vicinity of the Water Treatment Plant in an effort to further improve the capacity to produce water to the Lake.

[151] As agreed to by the Approval Holder, the Licence should be amended to require the Approval Holder to providing the following data on a website:

- (a) monthly lake levels;
- (b) monthly water production;
- (c) monthly production vs. licence requirements; and
- (d) progress on historical debt.

This data is to be provided until the Approval expires, and it is to be updated on a monthly basis, allowing for a one-month delay for quality assurance control.

[152] Attached for the Minister's consideration is a draft Ministerial Order implementing these changes.

[153] With respect to section 100(2) and 103 of the Act, the Board recommends that copies of this Report and Recommendations and any decision of the Minister be sent to:

1. Mr. David Doull;
2. the Lake Wabamun Enhancement and Protection Association, represented by Ms. Linda Duncan and Mr. Locke Boros;
3. Mr. Daryl Seehagel, Director, Northern East Slopes Region, Regional Services, Alberta Environment, represented by Mr. William McDonald and Ms. Renee Craig, Alberta Justice;
4. Mr. Larry Williams, Director, Central Region, Regional Services, Alberta Environment, represented by Mr. William McDonald and Ms. Renee Craig, Alberta Justice;
5. TransAlta Utilities Corporation, represented by Mr. Ronald M. Kruhlak and Mr. Corbin Devlin, McLennan Ross LLP; and
6. Mr. C.G.P. Spilsted.

VII. Costs

[154] If any Party has reserved the right to costs, they are requested to file their application for costs with the Board within two weeks of the date of the Minister's Order respecting this Report and Recommendations.

Dated on November 18, 2002, at Edmonton, Alberta.

"original signed by"
William A. Tilleman, Q.C., Chair

"original signed by"
Dr. Steve E. Hruday, Member

"original signed by"
Frederick C. Fisher, Q.C.

VIII. EXHIBIT LIST

Exhibit No.	Description
1	<p>Notice of Public Hearing Advertisement placed in the Edmonton Journal on April 18, 2002, the Stony Plain Reporter on April 19, 2002 and the Wabamun Community Voice on April 23, 2002, advising of a hearing to be held on May 15 and 16, 2002, in Edmonton.</p> <p>A News Release was forwarded to the Public Affairs Bureau regarding the hearing and placed on the Alberta Government website on May 3, 2002. It was also distributed on the same day to 95 daily newspapers, radio stations and television stations within Alberta.</p>
2	<p>Notices of Appeal filed in relation to <i>Water Act</i> Licence Amendment No. 00037698-00-02:</p> <p style="padding-left: 40px;">Mr. David Doull (02-003), Mr. Locke Boros, Lake Wabamun Enhancement and Protection Association (02-002)</p> <p>Notices of Appeal filed in relation to EPEA Approval No. 18528-00-03:</p> <p style="padding-left: 40px;">Mr. Blair Carmichael (01-134) Mr. Nick Zon (01-085) Mr. Locke Boros, Lake Wabamun Enhancement and Protection Association (01-084) Mr. David Doull (01-082) Mr. Blair Carmichael (01-080)</p>
3	<p>“Calculation of Water Volume Debt, based on TransAlta Impacts” prepared by Klohn Crippen Consultants Ltd. Submitted by TransAlta Utilities Corporation.</p>
4	<p>Letter dated October 9, 2002, from TransAlta to the Board attaching:</p> <ul style="list-style-type: none"> • Power Point Presentation “Lake Wabamun Water Balance Modeling”, by Robin J. Fitzgerald of Klohn Crippen Consultants Ltd.; • -Various reports regarding water treatment plant facility, TransAlta website; and • -Chart regarding calculation of historical water volume debt. <p>Submitted by TransAlta Utilities Corporation.</p>

Exhibit No.	Description
5	<p>Letter dated October 10, 2002 from TransAlta to Mr. David Doull enclosing power production records for the Wabamun Power Plant for May to September 2002.</p> <p>Submitted by Mr. David Doull.</p>
6	<p>Page 2 of 14 from “World Lakes Database” “Wabamun Lake” taken from Atlas of Alberta Lakes.</p> <p>Submitted by Mr. David Doull.</p>
7	<p>Photograph “Mr. Tyke Drever, 72 stands on his ever-growing beach at his cabin on Wabamun Lake. Drever stopped shifting his pier because it became too exhausting trying to keep up with the retreating lake”.</p> <p>Submitted by Mr. C.G.P. (Pat) Spilsted.</p>
8	<p>Graphs containing information taken from Canadian meteorological data:</p> <ul style="list-style-type: none"> • Precipitation 1930–1940 • Lake Wabamun 1930–1940 Lake Levels and Average Precipitation • Average Precipitation-Stony Plain/Entwistle and Calmar/Camrose/Winfield • Precipitation 1990-2000 • Lake Wabamun 1990-2000 Lake Level and Average Precipitation • Pigeon Lake 1972–1999 Lake Level and Average Precipitation • Lake Wabamun 1972–2001 Lake Level and Average Precipitation. <p>Submitted by Mr. Locke Boros and Ms. Linda Duncan of the Lake Wabamun Enhancement and Protection Association (LWEPA).</p>
9	<p>Alberta Energy and Utilities Decision 2002-014 for TransAlta Energy Corporation, 900-MW, Keephills Power Plant Expansion, Application No. 2001200 dated February 2002.</p> <p>Submitted by LWEPA.</p>
10	<p>LWEPA’s proposed draft revisions to TransAlta’s Approval and Licence presented during their evidence.</p> <p>Submitted by LWEPA.</p>
11	<p>Dr. Gan’s presentation titled “Water Balance Modeling for Lake Wabamun Lake”.</p> <p>Submitted by Dr. Gan, independent witness.</p>
12	<p>One Overhead presented by Dr. Gan during cross-examination of Mr. Doull:</p> <ul style="list-style-type: none"> • “Canadian Hydrological Data (c) 1997 Environment Canada. Station: 05DE009 Tomahawk Creek Near Tomahawk

Exhibit No.	Description
	<ul style="list-style-type: none"> • Canadian Hydrological Data (c) 1997 Environment Canada. Station 05EA010 Sturgeon River Near Magnolia Bridge • Canadian Hydrological Data (c) 1997 Environment Canada. Station 05DE003 Wabamun Creek near Duffield” <p>Submitted by Dr. Gan, independent witness.</p>
13	<p>Seven Photographs of TransAlta Utilities Corporation Water Treatment Plant:</p> <ul style="list-style-type: none"> • Aerial view • Plant 2 • Filters • Operators Doing Water Analysis • Cooling Towers • Ozone System • Clarifier <p>Submitted by TransAlta Utilities Corporation.</p>
14	<p>Wabamun Watch Executive Members Submitted by Alberta Environment.</p>
15	<p>Three Overheads:</p> <ul style="list-style-type: none"> • Estimated Historical Debt from 1996 to 2000. Reasons for Discrepancies between LWEPA and Klohn Crippen’s Estimated Mitigation of TAU. • Reasons for Discrepancies between LWEPA and Klohn Crippen’s Estimated Mitigation of TAU (2 pages). <p>Submitted by Dr. Gan, independent witness.</p>
16	<p>CD of Environment Canada Data. Submitted by LWEPA.</p>
17	<p>TransAlta Utilities Corporation - Additional Commitments. Submitted by TransAlta Utilities Corporation.</p>
18	<p>Marked for Identification Purposes Only: Map of Wabamun Lake “Diverted Areas – Highvale Mine”. Excerpt from Application for Extension of Mine Licence No. C2000-33 and Amendment of Environmental Protection and Enhancement Act Approval No. 11187-01-00, Highvale Mine 1769, Volume 1. Submitted by Mr. David Doull.</p>
19	<p>Marked for Identification Purposes Only: Various documents and maps numbered 1 through 50. 1. Page 30 of 42 from TransAlta Approval 18528-00-03</p>

Exhibit No.	Description
	2.-6. Various maps of Lake Wabamun 7.-9. Landtitles search 10. Zon <i>et al.</i> v. Director of Air and Water Approvals Division, Alberta Environmental Protection, <i>re: TransAlta Utilities Corporation</i> , December 9, 1997, EAB Appeal Nos. 97-005-015-R. at page 25. 11.-13. Letter dated July 6, 1998 from Frank Schwartz to Bill McMillan, Equus Consulting. 14.-15. Letter dated June 11, 1998 from Frank Schwartz to Bill McMillan, Equus Consulting. 16.-17. Letter dated June 12, 1998 from Ellie Prepas Sustainable Forest Management Network to Bill McMillan, Equus Consulting. 18. E-Mail dated June 29, 1998 from Dave Schindler, University of Alberta, to Bill McMillan, Equus Consulting. 19.-31. Extracts from the Sundance Thermal Generating Plant Licence Renewal Application. 32.-50. Extracts of documents related to the Sundance Power Plant. Submitted by Mr. Doull.

- * Appeal Nos. 01-080 and 01-134, Board issued a Discontinuance of Proceedings dated June 13, 2002 as Mr. Carmichael withdrew his appeals (*Carmichael v. Directors, Northern East Slopes Region and Central Region, Regional Services, Alberta Environment, re: TransAlta Utilities Corporation*). Appeal No. 01-085, Board issued a Decision dated May 31, 2002 dismissing Mr. Zon's appeal (*Zon v. Director, Northern East Slopes Region, Regional Services, Alberta Environment, re: TransAlta Utilities Corporation*).

IX. DRAFT MINISTERIAL ORDER

Ministerial Order
/2002

Environmental Protection and Enhancement Act,
R.S.A 2000, c. E-12.

Water Act,
R.S.A. 2000, c. W-3

Order Respecting Environmental Appeal Board
Appeal Nos. 01-082, 01-084, 02-002 and 02-003

I, Dr. Lorne Taylor, Minister of Environment, pursuant to section 100 of the *Environmental Protection and Enhancement Act*, make the order in the attached Appendixes being an Order Respecting Environmental Appeal Board Appeal Nos. 01-082, 01-084, 02-002, and 02-003.

Dated at the City of Edmonton, in the Province of Alberta this ___ day of _____, 2002.

Honorable Dr. Lorne Taylor
Minister of Environment

Draft Appendix A – EPEA Approval

Order Respecting Environmental Appeal Board Appeal Nos.
01-082, 01-084, 02-002, and 02-003.

With respect to the decision of Mr. Daryl Seehagel, Director, Northern East Slopes Region, Regional Services, Alberta Environment (the “EPEA Director”), to issue Approval No. 18528-00-03 (the “Approval”) dated July 30, 2001, under the *Environmental Protection and Enhancement Act*, to TransAlta Utilities Corporation, I, Dr. Lorne Taylor, Minister of Environment:

1. Order that the decision of the EPEA Director to issue the Approval is confirmed, subject to the following provisions.
2. Order that the Approval is varied by deleting the expiry date specified on the cover page of the Approval and replacing it with “June 30, 2007”.
3. Order that Approval is varied by deleting condition 1.1.2 (b) and replacing it as follows:
“‘annual ongoing impact’ means 1.1 times the impact to the level of Wabamun Lake for a particular year from the following facilities, with volumes to be specified in the water balance model submitted to Alberta Environment under the *Water Act* licence 12086 and accepted by the Director designated under the *Water Act*:
 - (a) Wabamun Power Plant;
 - (b) Sundance Power Plant;
 - (c) Keephills Power Plant;
 - (d) Highvale coal mine; and
 - (e) Whitewood coal mineas approved under the Act or licenced under the *Water Act*.”.
4. Order that the Approval is varied by deleting condition 1.1.2(n) and replacing it as follows:
“‘historical debt’ means the accumulated impact to Wabamun Lake level caused by the approval holder’s combined operations incurred from June 1992 to December 31, 1999, defined as 56.2 million cubic metres as of December 31, 1999;”.
5. Order that the Approval is varied by deleting condition 4.1.3 and replacing it as follows:
“By no later than June 30, 2007, the approval holder shall have discharged sufficient treated water into Wabamun Lake to offset the historical debt, unless the lake level surpasses the elevation of 724.55m above sea level (outlet control weir). If the lake level surpasses the elevation of 724.55m first, then the historical debt is considered repaid.”.

Draft Appendix B – *Water Act* Licence

Order Respecting Environmental Appeal Board Appeal Nos.
01-082, 01-084, 02-002, and 02-003.

With respect to the decision of Mr. Larry Williams, Director, Central Region, Regional Services, Alberta Environment (the “*Water Act* Director”), to issue Licence Amendment No. 00037698-00-02 (the “Licence”) dated March 8, 2002, under the *Water Act*, to TransAlta Utilities Corporation, I, Dr. Lorne Taylor, Minister of Environment:

1. Order that the decision of the *Water Act* Director to issue the Licence is confirmed, subject to the following provisions.
2. Order that the Licence is varied by deleting condition 1.2 (b) and replacing it as follows:
“‘annual ongoing impact’ means 1.1 times the impact to the level of Wabamun Lake for a particular year from the following facilities with volumes to be determined from running the Wabamun Lake Water Balance Model:
 - (i) Wabamun Power Plant;
 - (ii) Sundance Power Plant;
 - (iii) Keephills Power Plant;
 - (iv) Highvale coal mine; and
 - (v) Whitewood coal mine,as licenced under the Act or approved under the Environmental Protection and Enhancement Act;”.
3. Order that the Licence is varied by deleting condition 1.2 (d) and replacing it as follows:
“‘historical debt’ means the accumulated impact to Wabamun Lake level caused by TransAlta Utilities’ combined operations incurred from June 1992 to December 31, 1999, which was 56.2 million cubic metres as of December 31, 1999;”.
4. Order that the Licence is varied by deleting conditions 9.1 and replacing it as follows:
“By no later than June 30, 2007, the licensee shall have discharged sufficient treated water into Wabamun Lake to satisfy the historical debt, unless the actual mean weekly water surface elevation of Wabamun Lake rises to an elevation of 724.55 metres or greater above sea level. If the actual mean weekly water surface elevation of Wabamun Lake meets or surpasses the elevation of 724.55m, then the historical debt is considered satisfied.”.
5. Order that the Licence is varied by deleting conditon 9.2 and replacing it as follows:
“Beginning January 1, 2003, and until the historical debt is satisfied as required by condition 9.1, the licensee shall discharge a minimum of:
 - (a) 20 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2003;

- (b) 40 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2004;
- (c) 60 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2005;
- (d) 80 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2006; and
- (e) 88 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to June 30, 2007.”.

6. Order that the Licence be varied by adding the following immediately after condition 3.3:

“3.4 As part of the annual water return, the approval holder shall report the quantities of water pumped annually from the Highvale mine to the Director. The approval holder shall use the information regarding the quantities of water pumped annually from the Highvale mine to improve the Wabamun Lake Water Balance Model.

3.5 To the satisfaction of the Director, the approval holder shall install a precipitation gauge at a suitable site near Wabamun Lake. The information collected from the precipitation gauge shall be reported as part of the annual water return. The information collected from the precipitation gauge shall be compared to the precipitation data obtained from the Stony Plain and Entwistle sites. The higher value of the data collected from the precipitation gauge or the average of the Stony Plain/Entwistle data shall be used in the Wabamun Lake Water Balance Model. If the difference between the data collected from the precipitation gauge and the average of the Stony Plain/Entwistle data is less than 5 percent after three years of comparing the data, the approval holder may abandon the precipitation gauge and only use the average of the Stony Plain/Entwistle data in the Wabamun Lake Water Balance Model.

3.6 To the satisfaction of the Director, on an annual basis, the approval holder shall undertake an expert assessment of the Wabamun Lake Water Balance Model inputs and outputs. On an annual basis, the approval holder shall present this information in a public meeting to stakeholders.

3.7 Should the application to Alberta Environment by the West Central Airshed Society for the expansion of air monitoring stations in the Wabamun area be approved, the approval holder shall use the rainfall and solar radiation data that is obtained to improve the meteorological data inputs into the Wabamun Lake Water Balance Model.

3.8 To the satisfaction of the Director, the approval holder shall install and operate improved water temperature monitoring sensors in order to improve the capacity of the WLWTF to produce water to Wabamun Lake.

3.9 To the satisfaction of the Director, the approval holder shall maintain on a publicly accessible website the following information: (a) monthly lake levels; (b) monthly water production from the WLWTF; (c) monthly production vs. licence requirements; and (d) progress on historical debt. The data shall be updated on a monthly basis, subject to a one-month delay, until June 30, 2007.”.

7. Order that the Licence be varied by adding the following immediately after condition 10.6:

“10.6 To the satisfaction of the Director, the approval holder shall ensure that stakeholders are consulted in the development of the operational plan.”.

Ministerial Order
38/2003

Environmental Protection and Enhancement Act,
R.S.A 2000, c. E-12.

Water Act,
R.S.A. 2000, c. W-3

Order Respecting Environmental Appeal Board
Appeal Nos. 01-082, 01-084, 02-002 and 02-003

I, Dr. Lorne Taylor, Minister of Environment, pursuant to section 100 of the *Environmental Protection and Enhancement Act*, make the order in the attached Appendixes being an Order Respecting Environmental Appeal Board Appeal Nos. 01-082, 01-084, 02-002, and 02-003.

Dated at the City of Edmonton, in the Province of Alberta this 11 day of February, 2003.

“original signed by” _____
Honorable Dr. Lorne Taylor
Minister of Environment

Appendix A
Environmental Protection and Enhancement Act Approval

Order Respecting Environmental Appeal Board Appeal Nos.
01-082, 01-084, 02-002, and 02-003.

With respect to the decision of Mr. Daryl Seehagel, Director, Northern East Slopes Region, Regional Services, Alberta Environment (the “EPEA Director”), to issue Approval No. 18528-00-03 (the “Approval”) dated July 30, 2001, under the *Environmental Protection and Enhancement Act*, to TransAlta Utilities Corporation, I, Dr. Lorne Taylor, Minister of Environment:

1. Order that the decision of the EPEA Director to issue the Approval is confirmed, subject to the following provisions.
2. Order that the Approval is varied by deleting the expiry date specified on the cover page of the Approval and replacing it with “June 30, 2007”.
3. Order that Approval is varied by deleting condition 1.1.2 (b) and replacing it as follows:
“‘annual ongoing impact’ means 1.1 times the impact to the level of Wabamun Lake for a particular year from the following facilities, with volumes to be specified in the water balance model submitted to Alberta Environment under the *Water Act* licence 12086 and accepted by the Director designated under the *Water Act*:
 - (a) Wabamun Power Plant;
 - (b) Sundance Power Plant;
 - (c) Keephills Power Plant;
 - (d) Highvale coal mine; and
 - (e) Whitewood coal mineas approved under the Act or licenced under the *Water Act*.”.
4. Order that the Approval is varied by deleting condition 1.1.2(n) and replacing it as follows:
“‘historical debt’ means the accumulated impact to Wabamun Lake level caused by the approval holder’s combined operations incurred from June 1992 to December 31, 1999, defined as 56.2 million cubic metres as of December 31, 1999;”.

5. Order that the Approval is varied by deleting condition 4.1.3 and replacing it as follows:
“By no later than June 30, 2007, the approval holder shall have discharged sufficient treated water into Wabamun Lake to offset the historical debt, unless the lake level surpasses the elevation of 724.55m above sea level (outlet control weir). If the lake level surpasses the elevation of 724.55m first, then the historical debt is considered repaid.”.

Appendix B ***Water Act Licence***

Order Respecting Environmental Appeal Board Appeal Nos. 01-082, 01-084, 02-002, and 02-003.

With respect to the decision of Mr. Larry Williams, Director, Central Region, Regional Services, Alberta Environment (the “*Water Act Director*”), to issue Licence Amendment No. 00037698-00-02 (the “Licence”) dated March 8, 2002, under the *Water Act*, to TransAlta Utilities Corporation, I, Dr. Lorne Taylor, Minister of Environment:

1. Order that the decision of the *Water Act Director* to issue the Licence is confirmed, subject to the following provisions.
2. Order that the Licence is varied by deleting condition 1.2 (b) and replacing it as follows:
“‘annual ongoing impact’ means 1.1 times the impact to the level of Wabamun Lake for a particular year from the following facilities with volumes to be determined from running the Wabamun Lake Water Balance Model:
(i) Wabamun Power Plant;
(ii) Sundance Power Plant;
(iii) Keephills Power Plant;
(iv) Highvale coal mine; and
(v) Whitewood coal mine,
as licenced under the Act or approved under the Environmental Protection and Enhancement Act;”.
3. Order that the Licence is varied by deleting condition 1.2 (d) and replacing it as follows:
“‘historical debt’ means the accumulated impact to Wabamun Lake level caused by TransAlta Utilities’ combined operations incurred from June 1992 to December 31, 1999, which was 56.2 million cubic metres as of December 31, 1999;”.
4. Order that the Licence is varied by deleting conditions 9.1 and replacing it as follows:
“By no later than June 30, 2007, the licensee shall have discharged sufficient treated water into Wabamun Lake to satisfy the historical debt, unless the actual mean weekly water surface elevation of Wabamun Lake rises to an elevation of 724.55 metres or greater above sea level. If the actual mean weekly water surface elevation of Wabamun Lake meets or surpasses the elevation of 724.55m, then the historical debt is considered satisfied.”.

5. Order that the Licence is varied by deleting condition 9.2 and replacing it as follows:
“Beginning January 1, 2003, and until the historical debt is satisfied as required by condition 9.1, the licensee shall discharge a minimum of:
 - (a) 20 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2003;
 - (b) 40 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2004;
 - (c) 60 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2005;
 - (d) 80 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to December 31, 2006; and
 - (e) 88 million cubic metres of treated water into Wabamun Lake for the period from January 1, 2003 to June 30, 2007.”.
6. Order that the Licence be varied by adding the following immediately after condition 3.3:
 - 3.4 As part of the annual water return, the approval holder shall report the quantities of water pumped annually from the Highvale mine to the Director. The approval holder shall use the information regarding the quantities of water pumped annually from the Highvale mine to improve the Wabamun Lake Water Balance Model.
 - 3.5 To the satisfaction of the Director, the approval holder shall install a precipitation gauge at a suitable site near Wabamun Lake. The information collected from the precipitation gauge shall be reported as part of the annual water return. The information collected from the precipitation gauge shall be compared to the precipitation data obtained from the Stony Plain and Entwistle sites. The higher value of the data collected from the precipitation gauge or the average of the Stony Plain/Entwistle data shall be used in the Wabamun Lake Water Balance Model. If the difference between the data collected from the precipitation gauge and the average of the Stony Plain/Entwistle data is less than 5 percent after three years of comparing the data, the approval holder may abandon the precipitation gauge and only use the average of the Stony Plain/Entwistle data in the Wabamun Lake Water Balance Model.
 - 3.6 To the satisfaction of the Director, on an annual basis, the approval holder shall undertake an expert assessment of the Wabamun Lake Water Balance Model inputs and outputs. On an annual basis, the approval holder shall present this information in a public meeting to stakeholders.
 - 3.7 Should the application to Alberta Environment by the West Central Airshed Society for the expansion of air monitoring stations in the Wabamun area be approved, the approval holder shall use the rainfall and solar radiation data that is obtained to improve the meteorological data inputs into the Wabamun Lake Water Balance Model.
 - 3.8 To the satisfaction of the Director, the approval holder shall install and operate improved water temperature monitoring sensors in order to improve the capacity of the WLWTF to produce water to Wabamun Lake.

3.9 To the satisfaction of the Director, the approval holder shall maintain on a publicly accessible website the following information: (a) monthly lake levels; (b) monthly water production from the WLWTF; (c) monthly production vs. licence requirements; and (d) progress on historical debt. The data shall be updated on a monthly basis, subject to a one-month delay, until June 30, 2007.”.

7. Order that the Licence be varied by adding the following immediately after condition 10.6:

“10.6 To the satisfaction of the Director, the approval holder shall ensure that stakeholders are consulted in the development of the operational plan.”.