

also reconsider its position that it will not accept the Town's treated wastewater regardless of its quality.

[376] Sound environmental management must allow for the treating of the wastewater produced by humans to a level that it can be returned to the environment under conditions that will protect downstream users and aquatic ecosystems. As a result, downstream users, including those communities who are downstream of the Approval Holder's outfall, should not arbitrarily reject any treated wastewater discharge, without regard to the level of treatment provided to assure that the receiving water quality and valid uses are protected.

VI. CONCLUSIONS

[377] Since its creation in 1971, Alberta Environment has been a leader among provincial environmental agencies in Canada for regulating municipal wastewater discharge and receiving water quality. Alberta is now facing unprecedented pressures on our natural environment from rapid population growth and industrial development. These pressures are increasingly challenging to our natural environment which cannot produce a corresponding increase in freshwater resources to match these growth pressures. Recognition of these realities and corresponding challenges is a major reason why Alberta Environment developed and has committed to implementing its Water for Life Strategy.

[378] The Amending Approval, in terms of the stringency of conditions that it imposes on the treated wastewater from the Town of Strathmore would be the envy of many provincial environmental regulators in Canada. However, given the current and future challenges facing the Bow River ecosystem, it is simply not good enough. The Amending Approval does not adequately protect Alberta's water resource in the manner that the Water for Life Strategy requires.

[379] Notwithstanding the stringent water quality standards imposed on the Town of Strathmore's treated wastewater, this Panel, with over 26 years of combined service on the Environmental Appeals Board, and even more years of collective professional experience, has never encountered a decision with a more compelling case for reversal, given the seriously inadequate assessment of the major water quality challenges which face the Bow River

ecosystem and the need to protect the valid uses of the river by downstream users, including the Appellants.

[380] The Amending Approval, which relied upon the seriously inadequate assessments of water quality impacts, is inconsistent with some of Alberta Environment's basic policies that were cited as justification for issuing the Amending Approval. Consequently, the Amending Approval is not acceptable as it stands and must be substantially varied.

[381] The unfortunate position now facing the Town of Strathmore, much of its own making despite undertaking major improvements to the treatment of its municipal wastewater, cannot be resolved by adhering to the conditions of the Approval prior to the Amending Approval. However, the consequences of reversing (cancelling) the Amending Approval would be unacceptable, effectively leaving the Town of Strathmore without a way to dispose of its treated wastewater. Therefore, the Board finds a compelling case to substantially vary the Amending Approval, to serve the purposes of EPEA, the public interest, and the commitments made under the Water for Life Strategy. The Amending Approval must be varied to govern the management of the Town of Strathmore's treated wastewater in a manner consistent with those needs until a comprehensive new approval can be implemented in March 2008.

[382] The compelling reasons for substantially varying the Amending Approval are:

1. The specified limits for Total Phosphorus are not consistent with Alberta Environment's policy guidelines for water quality based effluent limits.
2. The discharge location on the secondary channel to the Bow River is not consistent with Alberta Environment's policy for disposal criteria for municipal wastewater discharges to surface waters.
3. The specified limits for ammonia with no concurrent limits on pH effectively authorizes a discharge to the secondary channel of the Bow River under conditions that are likely to be in contravention of the federal *Fisheries Act*.
4. The premise that the Town of Strathmore wastewater has been treated according to the specified limits and is therefore of sufficient quality that it could be used with no dilution for direct contact recreation or as a potable water supply in accordance with Alberta Environment's policy guidelines is incorrect.

5. The assessment of the impact on receiving water quality and potential impacts on downstream users on the Bow River to validate the approval limits and conditions are not adequate.

[383] The Amending Approval is inconsistent with Alberta Environment policy because it approves the addition of treated wastewater containing Total Phosphorus at a concentration of up to 1 mg/L to the Bow River at a point where the river appears to already exceed the Water Quality Guideline for the Protection of Freshwater Aquatic Life for Total Phosphorus of 0.05 mg/L.²¹⁰ The relevant policy states that the Total Phosphorus limit being released from the Plant should be set at or below 0.05 mg/L,²¹¹ a concentration that may not be achievable by current practicable treatment technologies available to the Town of Strathmore.

[384] The adoption of an Amending Approval inconsistent with Alberta Environment policy occurred because an unreliable water quality assessment prepared by the Town's consultants was accepted by the Director and the Town. The assessment report concluded that the addition of the Town's treated wastewater to the Bow River would have a negligible impact on the water quality of the Bow River downstream. Further, no explicit case was made by the Director or the Town that the water quality assessment justified a variance from the policy described above. If such a case for variance from the guideline had been presented, the Board would have required a significantly more convincing basis than the water quality assessment report that was prepared for the Town.

[385] The Amending Approval authorizes a discharge to a location on a secondary channel of the Bow River that is inconsistent with Alberta Environment's disposal criteria for municipal wastewater discharges to surface waters.²¹² That disposal criteria call for a minimum of 10 to 1 dilution unless the absence of water quality concerns can be shown with a high degree of certainty. The secondary channel will provide no dilution for substantial periods of the year, and minimal dilution, well below the 10 to 1, criterion during the remainder of the year.

[386] In June 2005, Alberta Environment correctly rejected a proposal to discharge at an upstream location on the secondary channel, approximately 600 metres upstream of the

²¹⁰ Director's Record at Tab 12.

²¹¹ Director's Record at Tab 19.

confluence with the Bow River (surprisingly where the discharge location is now located under the Amending Approval). The subsequent July 2005 application for the Amending Approval called for a downstream location on the secondary channel that was within 50 to 100 metres of the confluence with the Bow River, thereby minimizing the size of the unacceptably low dilution zone. When the Siksika Nation was informed of this outfall location, a location which they believe to be on their lands or on lands they claim, a decision was made to move the outfall location an additional 500 metres back upstream to the location that had been previously rejected as unsuitable. The Amending Approval was issued for this upstream outfall location without conducting any appropriate water quality assessment to justify the variance from the discharge criteria policy that this change in outfall location required.

[387] The Amending Approval authorizes an ammonia limit as an arithmetic monthly mean discharge concentration of ammonia of up to 5 mg/L (July 1 to September 30), and up to 10 mg/L (October 1 to June 30) with no specified pH limit into a secondary channel of the Bow River where it will experience no or minimal dilution for substantial periods of the year. The toxicity of ammonia is very sensitive to pH, increasing about 10 fold from pH 7.5 to 8.5 and about 8 fold from pH 8.5 to 9.5. The Town of Strathmore's treated wastewater pH averaged 9.4 in 2005. On the face of it, these limits appear to authorize the Approval Holder to discharge treated wastewater, which may be deemed deleterious to fish, into waters frequented by fish in contravention of the federal *Fisheries Act*.

[388] The original outfall location in the secondary channel (50 to 100 metres from the confluence with the main stem) was presented to the federal Department of Fisheries and Oceans to obtain its opinion whether the pipeline and outfall project may damage fish habitat. The letter of advice from the federal Department of Fisheries and Oceans was issued for the original pipeline alignment and outfall location; however, it warned that its letter did not authorize the deposit of a deleterious substance into waters frequented by fish. When the outfall location was moved to the upstream location, the federal Department of Fisheries and Oceans was requested to approve the new location. They acknowledged the pipeline and new outfall location was covered by the previous letter of advice with regard to fish habitat. However, the warning about

the deposit of a deleterious substance was repeated with the words “does not” underlined and in bold.²¹³ The Director attempted to obtain an opinion from Golder to confirm that this new location raised no concerns regarding the deposition of deleterious substances, but the response from Golder did not answer the request. When questioned about this issue during the Hearing, Mr. Bechtold declined to offer an opinion about whether the upstream outfall location could be deemed hazardous to fish. The Board can only conclude that the possibility of the Amending Approval authorizing a discharge to the secondary channel that may contravene the federal *Fisheries Act* was not resolved.

[389] The Director asserted that the regulation of the Town’s treated wastewater by the Amending Approval was so stringent that even if left undiluted it would satisfy Alberta Environment’s guidelines to serve as source water for a potable water supply or for contact recreation. The Board disagrees with those assertions.

[390] Alberta Environment’s guidelines to serve as a source for potable water supply are framed in terms of the level of treatment that the potable water treatment plant would provide. In the absence of detailed knowledge about the Siksika Nation’s Ayoungman Plant, knowledge that the Director did not have before issuing the Amending Approval, and which remains incomplete even at the conclusion of the Hearing, the conclusion about serving as source water for a potable water supply cannot be determined in accordance with the guidelines that were cited. In the case of the treated wastewater being able to satisfy contact recreation criteria, if left undiluted the Board finds that Alberta Environment’s guidelines include additional parameters that are not regulated by the Amending Approval. Thus a determination of this issue cannot properly be made. As there is evidence that members of the Siksika Nation do swim in the Bow River near the confluence with secondary channel, there is a distinct possibility that treated wastewater with limited dilution may be encountered. Given that all the required parameters to determine whether it is acceptable to swim at this location have not been considered, no conclusion can be made about whether it is acceptable to discharge treated wastewater with unknown but potentially minimal dilution.

²¹³ Director’s Record at Tab 39.

[391] The Amending Approval was issued by the Director without an adequate basis of information and evidence to justify that decision. In large part, the water quality assessment prepared by the Town of Strathmore's consultants was an inadequate basis to rely upon in granting the Amending Approval.

[392] Among the critical assessments that should have been available to the Director before making this decision were:

1. Meaningful estimates of the mixing behaviour of the treated wastewater plume as it entered the reaches of the Bow River adjacent to Siksika Lands at least as far as the downstream location of the drinking water infiltration wells of the Ayoungman Plant.
2. Detailed information on the treatment capability and operating performance of the Ayoungman Plant serving the Siksika Nation.
3. Detailed information on the locations and the hydrogeological communication with the Bow River of the individual drinking water wells located on Siksika Lands.
4. Meaningful assessment of the implications, both short-term and long-term, on the growth of algae and nuisance weeds that may occur in the downstream mixing zone below the Town of Strathmore's outfall all the way to the drinking water intakes. These potential outcomes needed to be assessed with respect to adverse operating and nuisance conditions ranging from reduced transmission of water through infiltration gravels into the intake wells, to increased production of disinfection byproducts, taste, and odour problems, and ultimately the potential for production of cyanobacterial toxins.
5. Meaningful assessment of potential water quality changes on downstream recreational water uses along the northern side of the Bow River as it flows through the Siksika Lands.

[393] The Board recognizes that Alberta Environment faces complex jurisdictional issues concerning potable water systems on First Nations lands. The Board notes that Alberta Environment acknowledged the Siksika Nation's concern about their potable water supply. However, the Director's Record shows that the first attempt to secure any information about the Siksika Nation's potable water system was directed to Health Canada 22 days before the Amending Approval was issued. Health Canada advised that the Director needed to obtain that

information from the Siksika Nation, but the Director's Record shows no evidence of any further attempt to secure the information.

[394] The issues surrounding jurisdiction over water and wastewater on First Nations lands create a serious dilemma for Alberta Environment. While acknowledging that First Nations residents are entitled to the same consideration and protection as any other Albertan, Alberta Environment is not able to refer to its own regulatory regime to know what potable water treatment capability and what operating requirements are maintained by the Siksika Nation. The Siksika Nation asserted, and no evidence to the contrary was offered, that there is currently no regulatory regime in place to assure safe drinking water for First Nations. In recognition of that apparent reality, Alberta Environment would be prudent to pursue its offer of technical assistance to the Siksika Nation, and perhaps it may be useful to regularly share information regarding both the inherent capability of the Siksika Nation's potable water treatment facilities and its operating performance, as evidenced by water quality monitoring and a review of its operating procedures.

[395] The Amending Approval was primarily conceived to allow the long-term discharge of the Town of Strathmore's treated wastewater to the Bow River by means of a 21 kilometre pipeline and an outfall to a secondary channel of the Bow River approximately 600 metres upstream of the confluence with the Bow River. The Board finds that the possible water quality impacts of this scheme on the secondary channel, on the Bow River main channel during wastewater plume mixing, and potentially on downstream water users, including the Appellants, are not consistent with Alberta Environment guidelines or the Water for Life Strategy.

[396] In the short-term, until a comprehensive new approval can be developed for the Town of Strathmore to manage its treated wastewater, all reasonable means need to be pursued to avoid discharge to the secondary channel and the Bow River. The options for achieving this objective are constrained by the practical realities of what the Town of Strathmore is able to do over the short-term and the Board's recommendations are set with those realities in mind.

[397] In the Board's view, in the long-term, other beneficial uses of the Town of Strathmore's treated wastewater such as irrigation or wetlands development need to be fully pursued before a reasonable case could be made to intentionally add the Town of Strathmore's nutrient loading to the Bow River. A long-term proposal to discharge treated wastewater to the

Bow River should only be considered if the pre-condition of regional controls on Total Phosphorus in the Bow River basin have reduced this parameter to below the Alberta Surface Water Quality Guideline, or a site-specific objective for the Bow River in Reach 7, whichever is more stringent. The determination of Bow River water quality should be measured by using an appropriate and meaningful long-term statistic for Total Phosphorus that is representative of the seasonal conditions when excess nutrient impacts in the Bow River are shown to be most severe. If these regional improvements in water quality are achieved, then discharge of the Town's treated wastewater to the Bow River should satisfy the following conditions:

1. The treated wastewater discharge would have to be to the central main flow of the main channel of the Bow River, as far as practicable upstream of the Siksika Lands.
2. The discharge would have to be via a full diffuser designed to achieve substantially complete mixing (i.e. more than 90 percent) within 1 kilometre of the discharge location.
3. Realistic calculations using appropriate Bow River minimum flows at Carseland Weir (i.e. 7Q10, as specified in AEP 1995) and the maximum discharge limits on the Town of Strathmore approval should demonstrate with some confidence that the incremental addition of Total Phosphorus will not bring the Bow River's Total Phosphorus concentrations back above the in-stream criteria specified in the pre-condition stated above.
4. Site-specific aquatic ecosystem water quality studies should confirm that the criteria in the pre-condition are appropriate for the Bow River in Reach 7.
5. A specific risk assessment should be conducted addressing potable water, recreational activities and activities traditionally undertaken by the Siksika Nation that are directly affected by water quality. The activities traditionally undertaken by the Siksika can only be included in this assessment if the Siksika Nation commits to participate fully in the design and completion of this study.

[398] Some of the Bow River studies required to satisfy the above conditions may be appropriate to pursue under the Water for Life Strategy or as part of the regional work that is undertaken.

[399] The Board acknowledges that guidelines and policies need to be living documents that can be adapted to specific circumstances. Accordingly, the Director should be able to interpret how guidelines and policies should apply to individual circumstances, such as discharges to the Bow River. However, when the Director determines a need to vary a guideline

or a policy, there must be an obligation for the Director to present a clear and compelling rationale for doing so with appropriate grounding in reliable scientific evidence. Ultimately, such decisions to vary from established guidelines or policies must remain consistent with the objectives of EPEA, and with the scope and intent of the Water for Life Strategy.

VII. RECOMMENDATIONS

A. Specific Recommendations

[400] In accordance with section 99 and 100 of the *Environmental Protection and Enhancement Act*, the Board recommends the Minister of Environment order that the Amending Approval be varied.²¹⁴

[401] The Board recommends that the Town of Strathmore's Amending Approval effectively be reversed, varying it substantially to include conditions with a series of staged, interim measures to manage the treated wastewater until an acceptable, comprehensive solution can be implemented when the new approval takes effect in March 2008. (The current approval, including the provisions added by the Amending Approval, expires in March 2008.)

1. Immediate Move to Irrigation

[402] The Board recommends that the Amending Approval be varied to require the Town of Strathmore to:

- (1) immediately begin preparations to allow for the disposal of treated wastewater by irrigation as soon as possible and to the maximum amount possible;
- (2) immediately request any authorizations that are required from the Director to begin the disposal of treated wastewater by irrigation as soon as possible and to the maximum amount possible;

²¹⁴ Section 100 of EPEA provides:

- "(1) 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, ... and
 - (c) make any further order that the Minister considers necessary for the purpose of carrying out the decision."

- (3) begin the disposal of treated wastewater by irrigation as soon as possible to the maximum amount possible upon receiving any authorizations required from the Director and as soon as conditions permit;
- (4) stop all discharges of treated wastewater to the Bow River within two weeks of beginning irrigation; and
- (5) notify the Siksika Nation and the Siksika Elders in writing: (a) when it receives any required authorizations from the Director to begin irrigation, (b) when it commences irrigation, and (c) when it stops discharging treated wastewater from the pipeline to the Bow River.

[403] The Board recommends that the Amending Approval be varied to provide that once the discharge to the Bow River has stopped and until a new Operational Plan (the "Operational Plan") has been authorized by the Director, any amount of treated wastewater that the Town of Strathmore cannot dispose of by irrigation, shall be stored, if room in the lagoons is available, or trucked to another disposal facility as authorized by the Director. The only exception to this is the one time discharge during 2007 peak spring flows discussed below. The Board recommends that the Amending Approval be varied to make it clear that when the Town of Strathmore is undertaking the one time discharge during the 2007 peak spring flows, it will still be required to use irrigation to the maximum extent possible. The Board notes that there should be no need to dispose of excess treated wastewater by storage or trucking during the one time discharge during the 2007 peak spring flow.

2. 2007 Peak Spring Flows – One Time Discharge

[404] The Board recommends that the Amending Approval be varied to require the Town of Strathmore to provide an assessment of when peak flows in the Bow River are expected to be reached this spring and to develop a plan for a one time discharge of treated wastewater to the Bow River at full pipeline capacity during this 2007 peak spring flow period. The plan for this one time discharge should consider ways to minimize impacts on the Siksika Nation and the Bow River ecosystem. The plan should also consider ways to minimize water quality impacts on the secondary channel, including making use of the maximum flow in the secondary channel and any other practical methods to maximize movement of the treated wastewater discharge into the main channel of the Bow River. The Board recommends that the Amending Approval be varied to require that once the assessment and the plan have been provided to and reviewed by the

Director, and upon receiving the written authorization of the Director, the Town of Strathmore shall implement the plan for the one time discharge to draw down the treated wastewater that is currently being stored in the lagoons at the Plant as much as practical.

[405] The purpose of this discharge is to reduce the emergent situation that currently faces the Town of Strathmore, with the wastewater storage lagoons nearing capacity, while balancing the interests of the other water users and the Bow River ecosystem. The Board recommends that the Amending Approval be varied to require the Town of Strathmore to provide a copy of the assessment, the plan, and the Director's authorization to the Siksika Nation and the Siksika Elders and to notify the Siksika Nation and the Siksika Elders in writing a minimum of 24 hours before starting the discharge. The Board strongly encourages the Town of Strathmore to work with the Siksika Nation and the Siksika Elders in developing and implementing the plan.

[406] During the one time discharge, monitoring conditions similar to those provided for in the Board's stay letter of February 16, 2007 are required. Therefore, the Board recommends that the Amending Approval be varied to require that:

- (1) during the one time discharge of treated wastewater from the pipeline to the Bow River during the 2007 peak spring flows, the Town of Strathmore shall (a) measure the total volume of wastewater being discharged, and (b) provide this information to the Director, the Siksika Nation, and the Siksika Elders on a weekly basis; and
- (2) during the one time discharge of treated wastewater from the pipeline to the Bow River during the 2007 peak spring flow, the Town of Strathmore shall (a) conduct the monitoring as described in the table entitled

“Recommendations - Table 1”,²¹⁵ (b) provide this monitoring information to the Director, the Siksika Nation, and the Siksika Elders on a weekly basis, and (c) continue the monitoring for a minimum of three days after the last discharge of treated wastewater from the pipeline.

In the Board’s view, the flows in the Bow River during 2007 peak spring flows should be sufficient that the conditions included in the stay regarding monitoring of individual wells on the Siksika Lands and the precautionary provision of bottled water are not necessary.

3. Dye Study

[407] The Board notes that the dye study would mainly be used if discharges to the Bow River were going to continue. However, given the difficulty in carrying out the dye study in a timely manner because of river and ice conditions, and the fact that an emergency discharge is a possibility, the Board is of the view that the dye study should still be completed. The information from the dye study may also be useful information to have for considering the next

²¹⁵ Recommendations – Table 1
Monitoring Program for Strathmore’s Treated Wastewater,
the Bow River, and the Ayoungman Water Treatment Plant

Location (Sampling locations to be approved by the Director.)	Parameters (Additional parameters may be specified by the Director.)	Frequency
Treated Wastewater.	<i>E. Coli</i> , Fecal Coliforms, Total Coliforms, Total-P, Dissolved-P, Ammonia-N, Total Kjeldahl-N, Nitrate-Nitrite-N, Total Suspended Solids, Total Dissolved Solids, Electrical Conductivity, C-BOD5, Turbidity, Colour, TOC, DOC, SAR, and pH.	Daily.
Bow River upstream of Secondary Channel.	<i>E. Coli</i> , Total-P, Ammonia-N, Nitrate-Nitrite-N, Turbidity, and Colour.	Weekly.
Bow River downstream of Secondary Channel.	<i>E. Coli</i> , Total-P, Ammonia-N, Nitrate-Nitrite-N, Turbidity, and Colour.	Weekly.
Bow River within 1m of shoreline at the location of Infiltration Wells for the Ayoungman Water Treatment Plant.	<i>E. Coli</i> , Total-P, Ammonia-N, Nitrate-Nitrite-N, Turbidity, and Colour.	Weekly.
Raw Water from the Infiltration Wells for the Ayoungman Water Treatment Plant.	<i>E. Coli</i> , Total-P, Ammonia-N, Nitrate-Nitrite-N, Turbidity, and Colour.	Weekly.
Treated Water after disinfection from the Infiltration Wells for the Ayoungman Water Treatment Plant.	<i>E. Coli</i> , Fecal Coliforms, Total Coliforms, Total-P, Ammonia-N, Nitrate-Nitrite-N, Total Dissolved Solids, Electrical Conductivity, Turbidity, Colour, and Chlorine Residual.	Daily.

Any monitoring on the Siksika Nations Lands is only required where the Town of Strathmore has written consent granting access to the lands. This monitoring is required to be done in addition to any other monitoring required in the approval. The Town of Strathmore shall conduct any additional monitoring required by the Director.

approval application. Therefore, the Town of Strathmore should be required to proceed with the continuous injection dye dispersion study requested in the Board's stay letter of February 16, 2007 (Revised), as soon as possible and the Board recommends the Amending Approval be varied to provide that:

The Town of Strathmore shall conduct a continuous injection dye dispersion study to determine the actual dilution of the continuous discharge from the treated wastewater pipeline outfall to the point in the Bow River adjacent to the infiltration wells of the Ayoungman Plant under river flow conditions that will allow for a meaningful study to be performed and worker safety is not placed in jeopardy. This requirement must address the concern raised about the lack of evidence on mixing characteristics of a discharge to the Bow River in this region under conditions of minimum transverse mixing behaviour. Any work required on Siksika Lands is only required upon having the written consent granting access to the land. The results, analysis, and full interpretation of the study shall be prepared by a professional engineer qualified to interpret river mixing studies and shall be provided to the Director, the Siksika Nation, and the Siksika Elders within one week of the study report being completed.

4. Operational Plan

[408] The Board recommends that the Amending Approval be varied to require the Town of Strathmore to develop and submit an Operational Plan, which does not include discharges of treated wastewater to the Bow River, for dealing with the treated wastewater until a new approval can be issued in March 2008. The Operational Plan shall be submitted to the Director for review by August 1, 2007, and once written authorization has been received from the Director, the Town of Strathmore will implement the Operational Plan. The Town of Strathmore shall be required to provide the Director with monthly updates during both the development and implementation of the plan. The Board strongly encourages the Town of Strathmore to approach development of the Operational Plan in a staged manner so that portions of the plan can be provided to the Director as soon as possible and implemented as soon as possible.

[409] The Board recommends that the Amending Approval be varied to require that the Operational Plan identify and evaluate:

- (1) ways to increase the use of irrigation, to the maximum possible, including finding and using potential irrigation users along the pipeline or

elsewhere, with monthly reports demonstrating to the Director that all reasonable means are being pursued to maximize irrigation disposal;

- (2) the feasibility of alternate storage options (including any lagoons in the vicinity of Strathmore) for treated wastewater that could be used to avoid having to discharge treated wastewater to the Bow River, other than the one time discharge during the 2007 peak spring flows, until a new approval is issued in March 2008;
- (3) the feasibility of discharge options to local waterways, including but not limited to existing water bodies, other than the Bow River, as well as constructed wetlands which could be implemented immediately after the irrigation season ends and into the winter of 2008;
- (4) water conservation strategies to reduce the daily wastewater production by the Town of Strathmore, including but not limited to: reducing sewer infiltration, stormwater dilution, commercial water use restrictions, and ways to reduce domestic water consumption; and
- (5) any other options to deal with the Town of Strathmore's treated wastewater that does not include discharging it to the Bow River.

[410] The Board recommends that the Amending Approval be varied to require that if the Operational Plan concludes that there are no other viable alternatives, in whole or in part, to deal with the Town of Strathmore's treated wastewater other than discharging it to the Bow River, then no less than two months prior to any request to the Director to undertake such a discharge to the Bow River, the Town of Strathmore shall conduct a full risk assessment of all impacts on water uses by the residents of the Siksika Nation and other downstream users, including but not limited to considering all the monitoring data collected during the stay or otherwise and the evaluation of the physical ice characteristics conducted under the stay. The Town of Strathmore shall be required to offer a reasonable opportunity to the Siksika Nation and the Siksika Elders to provide comments on the scope of the risk assessment. An adequate risk assessment will require the results from the dye study. If such a discharge is required it shall comply with the requirement for "Discharges to the Bow River" detailed below.

5. Discharges to the Bow River

[411] Discharging treated wastewater to the Bow River, at any time other than during the one time discharge during the 2007 peak spring flow, should be a last resort. During such discharges, the Town of Strathmore should be required to comply with conditions similar to

those prescribed in the Board's stay letter, dated February 16, 2007. Therefore, subject to the provisions regarding the one time discharge during the 2007 peak spring flow, the Board recommends that the Amending Approval be varied to require that:

- (1) any discharge of treated wastewater from the pipeline to the Bow River shall be limited to a maximum of 4500 m³/d and any need to dispose of treated wastewater above this discharge rate shall be dealt with by trucking the excess treated wastewater to another disposal facility subject to the authorization of the Director;
- (2) during any discharge of treated wastewater from the pipeline to the Bow River, the Town of Strathmore shall (a) measure the total volume of wastewater being discharged, and (b) provide this information to the Director, the Siksika Nation, and the Siksika Elders on a weekly basis;
- (3) during any discharge of treated wastewater from the pipeline to the Bow River, the Town of Strathmore shall (a) conduct the monitoring as described in the table entitled "Recommendations - Table 1", (b) provide this monitoring information to the Director, the Siksika Nation, and the Siksika Elders on a monthly basis, and (c) continue the monitoring for a minimum of three days after the last discharge of treated wastewater from the pipeline;
- (4) during any discharge of treated wastewater from the pipeline to the Bow River, the Town of Strathmore shall (a) conduct the monitoring as described in the table entitled "Recommendations - Table 2",²¹⁶ (b) provide this monitoring information to the Director, the Siksika Nation, and the Siksika Elders on a monthly basis, and (c) continue the monitoring for a minimum of one month after the last discharge of treated wastewater from the pipeline;

²¹⁶ Recommendations – Table 2
Monitoring Program for Individual Wells

Location (Sampling locations to be approved by the Director.)	Parameters (Additional parameters may be specified by the Director.)	Frequency
Individual Wells identified by the Siksika Nation.	<i>E. Coli</i> , Fecal Coliforms, Total Coliforms, Nitrate-Nitrite-N, Total Dissolved Solids, Electrical Conductivity, Turbidity, and Colour.	Monthly

Any work required on the Siksika Nations Lands is only required where the approval holder has written consent granting access to the lands and the verbal consent of the individual controlling access to each individual well. The Director has the discretion to increase or decrease the number of individual wells that must be monitored, including adding or deleting wells for a particular round of monitoring. This monitoring is required to be done in addition to any other monitoring required in the approval. The approval holder shall conduct any additional monitoring that is required by the Director upon receiving written directions from the Director.

- (5) during any discharge of treated wastewater from the pipeline to the Bow River, the Town of Strathmore shall (a) deliver bottled water for consumption at the rate of 2 L/d per person for a population of 3,000 to the Siksika Nation's administration offices; (b) carry out the delivery of the bottled water in accordance with the same conditions prescribed in the Board's stay letter of February 16, 2007; and (c) continue to deliver the bottled water for a minimum of three days after the last discharge of treated wastewater from the pipeline; and
- (6) where a full risk assessment has been done, taking into account the findings of the risk assessment, the Director may waive the precautionary requirement to provide bottled water.

6. Emergency Circumstances

[412] The Board recommends that the Amending Approval be varied such that, if the Town of Strathmore needs to apply to the Director for an emergency discharge of treated wastewater through the pipeline to the Bow River, the Director is authorized to grant the emergency release. As indicated above, if a discharge, including an emergency discharge, is required it shall comply with the requirements for "Discharges to the Bow River" detailed above.

7. Monitoring Data

[413] The Board recommends that the Amending Approval be varied to require the Town of Strathmore to provide all monitoring data collected during the stay or under the approval, including the Amending Approval, to Health Canada and Indian and Northern Affairs Canada to allow these agencies to advise the Siksika Nation about any potential health risk to their potable water supply.

8. Extensions to the Approval

[414] The Board recommends that the Amending Approval be varied to provide that if any extensions are granted to the Approval, the Operational Plan must include or be amended within two months of the request for the extension to include a plan to deal with the Town of Strathmore's treated wastewater until a new approval is issued, regardless of when the new approval is issued.

9. In Preparation for the Application for the New Approval

[415] In the Director's submission, a request was made to vary the Amending Approval to include a requirement to file a completed renewal application by September 1, 2007. The Board agrees with this submission by the Director and therefore recommends that the Amending Approval be varied to include the following provision:

- (1) By September 1, 2007, the Town of Strathmore shall submit to the Director a complete renewal application (the "Renewal Application") for the Town of Strathmore wastewater system.
- (2) The Renewal Application shall include, at a minimum:
 - (i) a summary of all consultation the Town of Strathmore has undertaken with the Siksika Nation and Siksika Nation Elders with respect to what is being applied for in the Renewal Application;
 - (ii) an implementation plan for upgrading the wastewater treatment plant to meet a phosphorus limit of 0.5 mg/L in the treated wastewater;
 - (iii) an implementation plan for other proposed upgrades of the wastewater treatment plant, including rationale and implementation plans/schedules;
 - (iv) a meaningful assessment of all the alternatives for the disposal of treated wastewater, except discharge of the treated wastewater through the pipeline to the Bow River as currently configured, to satisfy all relevant Alberta Environment policies and guidelines, including but not limited to those discussed in the Environmental Appeals Board Report and Recommendations dated April 18, 2007, and to fairly balance the valid interests of regional stakeholders;
 - (v) the treated wastewater disposal options shall include a description of:
 - (a) where the treated wastewater will enter the environment,
 - (b) the expected quality and quantity of the treated wastewater that will enter the environment,
 - (c) an assessment of the potential effects the treated wastewater discharge will have on the receiving environment, and
 - (d) an assessment of any adverse impacts on downstream water users within 20 km of the discharge;

- (vi) an evaluation of the monitoring data collected to date including, but not limited to:
 - (a) an assessment of the location of the treated wastewater outfall,
 - (b) an assessment of the aquatic environment in the secondary channel, and
 - (c) an assessment of the potential impacts to the Siksika Nation's Ayoungman Water Treatment Plant;
- (vii) status and next steps with respect to the Siksika Nation Traditional Uses Study; and
- (viii) any other information specified in writing by the Director.

B. General Recommendations

[416] The Board believes that the Town of Strathmore has found itself on the frontline of the environmental challenges that must be confronted in order to successfully implement Alberta's Water for Life Strategy. Recognizing the full scope of the nutrient management problems which are facing the Bow River ecosystem requires that regional solutions must be pursued and that creative wastewater management options be implemented to preserve and protect the water quality in the Bow River, notwithstanding the major population growth and development pressures which are likely to continue.

[417] The Board encourages the Town of Strathmore to work with the Siksika Nation in addressing potable water and wastewater issues. The Board acknowledges the efforts made by the Town of Strathmore to include the Siksika Nation in the plans for a potable water pipeline from the City of Calgary, and the Board encourages the Siksika Nation to participate in programs that will assist in ensuring safe and secure water supplies for their communities.

[418] The Board is pleased to hear of the water management planning initiatives being undertaken for the Bow and Elbow Rivers that will look at water quality. The Board encourages the approach of river basin studies to achieve an understanding of the effects of population and industrial growth on the water resources and the cumulative effects of such growth on a limited resource. The Water for Life Strategy recognizes the need to deal with cumulative effects on the rivers and other water sources in Alberta. It is important that steps are taken now to prevent

further deterioration of our river systems, as it is difficult and requires time to reverse the adverse impacts of the excessive nutrient loading.

C. Final Matters

[419] Attached for the Minister's consideration is a draft Ministerial Order implementing the specific recommendations.

[420] With respect to the stay, in the Board's letter dated February 16, 2007, it stated that the conditions of the stay were "...to remain in effect until the Ministerial Order arising from the hearing of the appeals was issued...." Therefore, subject to any direction by the Minister in his Ministerial Order, the stay is removed as of the date of the Ministerial Order.

[421] Further, with respect to section 100(2) and 103 of EPEA, the Board recommends that copies of this Report and Recommendations, and of any decision by the Minister, be sent to the following:

1. Chief Adrian Stimson, on behalf of the Siksika Nation Chief and Council, and the Siksika Nation;
2. Siksika Nation Elders Committee, c/o Ms. Donna Breaker;
3. Elder Roy Little Chief, Siksika Nation Elders Committee;
4. Ms. Lillian Crow-Chief, Siksika Nation Elders Committee;
5. Ms. Anne McMaster, Siksika Nation Elders Committee;
6. Mr. Kelly Breaker, Siksika Nation Elders Committee;
7. Ms. Hester Breaker, Chair, Water Advisory Panel, Siksika Nation;
8. Mr. Rangi Jeerakathil, MacPherson Leslie & Tyerman, on behalf of the Siksika Nation;
9. Mr. Dwight Stanford, Town Manager, Town of Strathmore;
10. Dr. Steve Stanley, on behalf of EPCOR Water Services Inc.;
11. Mr. Sabri Shawa, May Jensen Shawa Soloman, on behalf of the Town of Strathmore;
12. Ms. May Mah-Paulson, Director, Southern Region, Regional Services, Alberta Environment;
13. Ms. Charlene Graham, Alberta Justice, on behalf of the Director, Southern Region, Regional Services, Alberta Environment;
14. Mr. Jim Webber, on behalf of the Western Irrigation District;

15. Wheatland County;
16. Communities in Bloom Strathmore Chapter;
17. Rich-Lee Custom Homes;
18. Royop Development Corporation (Pine Centre Development Ltd.);
19. Aztec Real Estate;
20. Strathmore Homes Ltd.;
21. Happy Gang Society;
22. Wild Rose Economic Development Corporation;
23. United Communities L.P.; and
24. Ms. Joanne Threesun.

VIII. COSTS

[422] The Approval Holder, the Siksika Nation, and the Siksika Elders reserved their rights to apply for costs. The Board requests that any application for costs be provided to the Board within two weeks of the date of the Minister's Order with respect to this Report and Recommendations. The Board will then provide the Parties with an opportunity to respond to any such applications before making its decision.

Dated on April 18, 2007, at Edmonton, Alberta.

"original signed by"

Dr. Steve E. Hruday, FRSC, PEng
Chair

"original signed by"

Mr. Ron V. Peiluck
Vice-Chair

"original signed by"

Mr. Al Schulz
Board Member