Manitoba

Conservation

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CANADA

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October 20, 2003

Mr. L. David Glatt, Chief
Environmental Health Section
North Dakota Department of Health
1200 Missouri Avenue
Room 203, P.O. Box 5520
Bismarck ND 58506 - 5520

Dear Mr. Glatt:

Request to Reconsider
North Dakota Pollutant Discharge Elimination System Permit No ND-0026247, August 22, 2003
North Dakota Department of Health

Thank you for your letter of October 3, 2003 in which you advise that the administrative record will be reopened to allow your Department to consider new information not presently identified in the public record relevant to NDPDES Permit No. ND-0026247.

In this regard, I am pleased to provide additional technical material to support the concerns identified in my letter of September 8, 2003 to Mr. Dennis Fewless in which Manitoba Conservation petitioned for reconsideration of NDPDES Permit No. ND-0026247. For ease of reference, I have attached a copy of this correspondence.

With respect to the increased rate of exceedances identified in my point #1, further information is not required since your agency agrees that increases will occur (please see "Response to Comments for the Devils Lake Outlet Project", dated June 2003)(Response to Comments). Manitoba continues to maintain that such increases are beyond the normal baseline and are therefore, not in compliance with the International Joint Commission's (IJC) water quality objective for total dissolved solids at the international boundary. Noteworthy is the fact that total dissolved solids in the West Bay region of Devils Lake in May, 2003 were 1360 mg/L, far in excess of the IJC's water quality objective at the international boundary of 500 mg/L. Although total dissolved solids concentrations in Devils Lake are presently lower than observed in 1993, data collected since 2001 suggest a trend towards increasing concentrations. Associated with this increase would be an expected concomitant increase in the frequency of exceedences of the IJC's water quality objective that has not been accounted for in the modelling undertaken to-date.

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Moreover, as mentioned in my September 8, 2003 correspondence, it is a misinterpretation of statistical theory to reference confidence intervals for only one input variable without considering uncertainties surrounding all input and output variables. I have attached a paper by Dr. Linfield Brown, Tufts University, Medford MA in which he describes the assessment of uncertainty in the U.S. EPA-supported QUAL2E-UNCAS water quality model. Dr. Brown states on p. 2 that:

> *"[i]n scenarios involving site-specific load allocations and resulting water quality, the traditional error propagation and sensitivity analysis techniques are particularly useful."*

I have also attached a copy of the QUAL2E interface users manual for Windows in which the three methods for modelling uncertainty in QUAL2E are described. As stated on p. 4:

> *"[u]ncertainty analysis for model simulations is assuming a growing importance in the field of water quality management"*

It is further stated on p. 4 that:

> *"[w]ith this capability, the user can assess the effect of model sensitivities and of uncertain input data on model forecasts"*

so that:

> *"[q]uantifications of the uncertainty in model forecasts will allow assessment of the risk (probability) of a water quality variable being above or below an acceptable level"*

There is a direct parallel between the application described by Dr. Brown and the QUAL2E manual with the attempt being made to estimate the risk of total dissolved solids in the Red River exceeding the IJC's water quality objective due to operation of the Devils Lake outlet. As can be seen in this literature and as I mentioned in my September 8, 2003 comments, it is entirely inappropriate to make reference to confidence intervals for only one input variable, as was done in the Response to Comments, without undertaking a comprehensive assessment of uncertainty in other model input and output variables. Completion of this more scientifically-appropriate water quality modelling approach would likely identify an even greater risk of exceedances of the IJC water quality objective at the international boundary than stated in the Response to Comments.

Further to the information presented in my point #2 concerning the significance of the IJC's water quality objectives, I have attached a copy of the February 7, 2001 directive to the International Red River Board from the IJC. I would draw your attention to directive 5(1) in which it is stated that one of the Board's roles is to:

> *"[e]ncourage the appropriate regulatory and enforcement agencies to take steps to ensure that agreed* ***objectives*** *are met"* (emphasis added)

Nowhere in this directive can it be inferred, as stated in the Response to Comments, that the IJC's objectives were intended to be strictly empirical, with action only being initiated by North Dakota if exceedances:

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> *"…can be attributed to the Devils Lake discharge* ***at some time in the future****…"* (emphasis added)

Moreover, I would draw your attention to IJC directive 3 to the International Red River Board in which it is stated that:

> *"[t]he Board's mandate is to assist the Commission in preventing and resolving transboundary disputes regarding the waters and aquatic ecosystem of the Red River and its tributaries and aquifers. This will be accomplished through the application of best available science and knowledge of the aquatic ecosystem of the basin and an awareness of the needs, expectations and capabilities of residents of the Red River basin."*

Application of best available science and knowledge clearly infers utilizing state-of-the-science water quality modelling tools, then using this information to ensure that projects do not cause exceedences of established water quality objectives. These principles and approaches are commonly used to ensure that state water quality standards and provincial water quality objectives are not violated as a result of effluent discharges or other human activity that affect intra-state and intra-provincial waters, respectively. Nowhere in the IJC directive can it be inferred that something less rigorous is expected, as stated in the Response to Comments, to protect the quality of transboundary waters.

In support of my point #3 in which it is mentioned that the State of North Dakota has inappropriately judged the project to be in compliance with the Boundary Waters Treaty of 1909, it is my understanding that the U.S. Federal Government exercises primary responsibility under the U.S. Constitution for the interpretation and enforcement of treaties. Indeed, in the exercise of its Constitutional responsibility for the conduct of foreign affairs, the Executive Branch is authorized to take action to require state and local governments to comply with treaty obligations. *E.g.*, *United States v. City of Glen Cove*, 322 F. Supp. 149 (E.D.N.Y.), *aff'd per curiam*, 450 F.2d 884 (2d Cir. 1971); *United States v. County of Arlington*, 669 F.2d 925 (4th Cir. 1981).

Further support for point #4 is not necessary since this issue has been covered in the above discussion relative to points #1 and 2.

With reference to comment #5, I have attached the following documents:

(a). Information Bulletin dated April 20, 2000 titled "Development of a Nutrient Management Strategy for Surface Waters in Southern Manitoba". This document identifies Manitoba's intention to begin work towards a Nutrient Management Strategy to better manage artificial eutrophication and identifies the major elements that will be included.

(b). Technical report dated December 2001 titled "Long-term Trends in Total Nitrogen and Total Phosphorus Concentrations in Manitoba Streams". This is the first major technical report completed as part of the Nutrient Management Strategy and indicates that phosphorus has increased by 22.5% since the early 1970s in the Red River at the international boundary due to human activities.

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(c). Technical report dated November 2002 titled "A Preliminary Estimate of Total Nitrogen and Total Phosphorus Loading to Streams in Manitoba, Canada". This is the second major technical report completed as part of the Nutrient Management Strategy and indicates that the load of phosphorus entering Manitoba from the United States was about 204 tonnes/year more in 2001 than in the early 1970s.

(d). Manitoba Government news release dated February 18, 2003 announcing the Lake Winnipeg Action Plan. This news release identifies the commitment of the Manitoba government to reduce levels of nitrogen and phosphorus in Lake Winnipeg, the 10th largest lake in the world, to those that existed prior to the 1970s. Overall, this means a commitment to reduce nitrogen loading by 13% and phosphorus loading by 10%. Clearly, the additional load of phosphorus and nitrogen added through an artificial outlet from Devils Lake would continue the trend of increasing nutrient levels in Lake Winnipeg and would be contrary to efforts underway to remedy eutrophication of this great lake.

(e). Letter from myself to Mr. Richard Kellow and Dr. Maryanne Bach, dated March 5, 2003, requesting that the International Red River Board begin the process of developing water quality objectives for nitrogen and phosphorus at the international boundary to meet the commitments in the Lake Winnipeg Action Plan. This represents the clear intention to work collaboratively with Minnesota and North Dakota to develop water quality objectives for nutrients at the international boundary to assist in reducing contributions to Lake Winnipeg. In the meantime, further contributions of nutrients from an artificial outlet from Devils Lake would be contrary to these efforts.

(f). Manitoba Government news release dated July 18, 2003 announcing membership on the Lake Winnipeg Stewardship Board. This news release identifies a further initiative by the Manitoba government to achieve the commitments of the Lake Winnipeg Action Plan.

My point #6 needs no further support. It is not appropriate that an artificial outlet from Devils Lake would be constructed for a capacity of 300 cfs but only be assessed on the basis of an initial discharge of 100 cfs. It must be assumed that the proponent fully intends to use the entire hydraulic capacity of the outlet some time in the future. It is on the basis of the full capacity of 300 cfs that impacts should be assessed at the international boundary.

In support of my point #7, Lieutenant General Robert Flowers, Chief of the U.S. Army Corps of Engineers, signed the Record of Decision for the federally-sponsored Devils Lake outlet project on October 14, 2003 and confirmed there is significant risk of biota transfer with a Devils Lake outlet project. As indicated in the Record of Decision, construction and operation of the federally-sponsored Devils Lake outlet project is contingent on the inclusion of a sand filter to decrease the risk of biota transfer. It is inconceivable that the state-sponsored project does not include, at a minimum, the same biota treatment facility since the risk of biota transfer is similar for both projects.

As mentioned in my point #7, considerable work is underway across North America to decrease all risks associated with the spread of aquatic nuisance species. It is not logical to ignore the increased risks of biota transfer arising from the creation of a new mechanism that would hydraulically connect previously isolated bodies of water on the premise that other vectors are already present, so one more - construction and operation of an outlet from Devils Lake - makes little difference. As evidence of the collaborative work underway in North America to prevent the further spread of aquatic nuisance species and to diminish the existing level of biota transfer risk, I have attached the following materials:

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(a). A report prepared by the U.S. Fish and Wildlife Service titled "The 100th Meridian Initiative: A Strategic Approach to Prevent the Westward Spread of Zebra Mussels and Other Aquatic Nuisance Species". You will note that representatives from Manitoba Conservation and North Dakota Game and Fish participate in this initiative along with representatives from other jurisdictions along the 100th longitude.

(b). The 2000-2001 annual report of the Western Regional Panel on Aquatic Nuisance Species. Again, please note that both Manitoba Conservation and North Dakota Game and Fish participate along with representatives from numerous other western states and provinces.

(c). Information on the newly formed Mississippi River Basin Panel on Aquatic Nuisance Species. Similar to the Western Regional Panel, both Manitoba Conservation and North Dakota Game and Fish have representatives on this panel. Work is described that has begun with numerous other jurisdictions and agencies with interest in preventing the spread of aquatic nuisance species in the Mississippi River basin and adjacent watersheds.

(d). A paper prepared by Jerry Rasmussen, Coordinator, Mississippi Interstate Cooperative Resource Association, titled "The Cal-Sag and Chicago Sanitary and Ship Canal: A Perspective on the Spread and Control of Selected Aquatic Nuisance Fish Species". Dr. Rasmussen is a representative on the newly formed Mississippi River Basin Panel on Aquatic Nuisance Species. As an example, this paper highlights the interconnectivity between the Laurentian Great Lakes, the Mississippi River Basin, and other adjacent basins and identifies the risks of numerous further nuisance aquatic species transfers from the Great Lakes as well as the risks of transfers from the Mississippi River Basin to the Great Lakes and specifically, the Asian carp. There are important and germane parallels between the interconnectivity of the Great Lakes with the Mississippi River systems and the Devils Lake outlet project that would create a similar and new hydraulic connection between Devils Lake and the remainder of the Hudson Bay basin. Dr. Rasmussen writes on p. 19 that:

> *"Less than 20 years ago, few people could have foreseen the far reaching impacts that we now know and accept as the result of the zebra mussel invasion. Had we known then what we know now it might have been easy for us as a society to make the appropriate economic trade-offs and attempt to contain the zebra mussel within the Great Lakes, preventing its escape to the Mississippi River Basin."*

In describing the important role that the Cal-Sag and Chicago Sanitary and Ship Canal played in joining two otherwise separate environments Dr. Rasmussen states on p. 20 that:

> *"…the Cal-Sag and Chicago Sanitary and Ship Canal serves as a primary conduit facilitating mass transfer of organisms between the two ecosystems. None of those involved (i.e., shipping, canal, or aquaculture) intentionally infected either ecosystem with invasive species, but each played a significant role in making the organism transfer possible through the course and pursuit of their own special business interests".*

Understanding the goal (or "special business interests") of the construction of an artificial outlet from Devils Lake is elusive given the fact that water levels in Devils Lake have dropped 1foot 8 inches since its peak in April 2001 (from 1448.01 to 1446.33) and nearly 1 foot since April 2003 (from 1447.29 to 1446.33) while the aim of the state-sponsored outlet is to reduce water levels by another foot to 1445.

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Dr. Rasmussen states on p. 20 that:

"The key to stopping these and other such invasions is, of course, to prevent them in the first place."

At the present time, drastic measures are being contemplated to prevent the further costly exchanges of aquatic nuisance species between the Great Lakes and the Mississippi River Basin through significant modification or closure of the Cal-Sag and Chicago Sanitary and Ship Canal. In the meantime, construction and operation of an artificial outlet from Devils Lake is being planned to hydraulically link two otherwise separate systems with little regard to aquatic nuisance species. Linking Devils Lake to the Sheyenne River, Red River, and Lake Winnipeg through construction and operation of an artificial outlet will be contrary to all that has been learned about invasive species in North America in recent decades.

Because of the potential harm to Manitoba's ecosystem due to the transfer of harmful aquatic biota through the state-sponsored artificial outlet from Devils Lake and because of predicted water quality impacts, NDPDES Permit No. ND-0026247 should be withdrawn. Certainly, at a minimum, no permit should be issued unless and until the governments of Canada and the United States jointly judge whether or not the proposed project complies with the Boundary Waters Treaty of 1909.

Should you have any questions, please feel free to contact me at the above address, by calling (204) 945-7030, or e-mail at dwilliamso@gov.mb.ca.

Sincerely,

Dwight Williamson, Manager
Water Quality Management Section

c: Richard Kellow, Environment Canada
Peter Fawcett, Foreign Affairs and International Trade
Dennis Wright, Fisheries and Oceans Canada
Robert E. Roberts, Administrator, U.S. EPA Region VIII
Thomas Skinner, Administrator, U.S. EPA Region V
G. Tracy Mehan, Assistant Administrator, U.S. EPA Office of Water

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September 8, 2003

Mr. Dennis Fewless, Director
Division of Water Quality
North Dakota Department of Health
1200 Missouri Avenue
Room 203, P.O. Box 5520
Bismarck ND 58506 - 5520

Dear Mr. Fewless:

Petition for Reconsideration
North Dakota Pollutant Discharge Elimination System Permit No ND-0026247
North Dakota Department of Health

August 22, 2003

In accordance with Section 28-32-40 (1) of the North Dakota Century Code, Manitoba Conservation respectfully petitions the Department of Health to reconsider its decision to issue NDPDES Permit Number ND-0026247 (the Permit). The reasons for this petition for reconsideration are described more fully below but include errors of fact, errors of interpretation and judgement, and incompleteness. Joint comments from Canada and Manitoba provided on May 21, 2003 to you from Mr. Richard Kellow and additional comments from Manitoba provided on May 28, 2003 to you from myself have not been satisfactorily addressed in the document "Response to Comments for the Devils Lake Outlet Project", dated June 2003 (Response to Comments), and have not been reflected in the Permit. The concerns therefore, remain outstanding. Principal among these are the following:

(1). The Permit allows exceedances of the water quality objective established by the International Joint Commission (the IJC) for total dissolved solids (TDS) to occur at the international boundary at a greater frequency than in the past. Contrary to the justification provided in the Response to Comments, these increases in exceedances will be beyond the normal baseline since modelling conducted for North Dakota by the U.S. Army Corps of Engineers (the Corps) predicts that exceedance of the TDS objective would increase from 9 % of the time to 11 % for the 1450-foot elevation, from 11 % to 12 % for the 1455-foot elevation, and from 8 % to 10 % for the wet future. Moreover, it is a misinterpretation of statistical theory to cite only the confidence interval for one of a number of inputs and not to make similar reference to uncertainties of the combined predicted output. An appropriate statistical model would generate uncertainty figures for all outputs. It is therefore, common in environmental management applications to design projects and to develop

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permits or licenses to ensure, with a high degree of confidence, that exceedances will not occur. Application of this principle to development of the Permit would mean using the upper 95th percent confidence of the predicted modelling outputs to assess compliance with the IJC's water quality objectives. If this more appropriate approach were used, exceedances would be predicted to occur at an even higher rate than predicted by modelling conducted for the State.

(2). The Department of Health has incorrectly interpreted the significance of the IJC's water quality objectives and their intended application. The stated application in the Response to Comments is more appropriate for use with the IJC's alert levels rather than for use with the IJC's water quality objectives. Alert levels are intended to be used as tools to assist in interpreting monitoring data. When exceedances are identified, appropriate agencies may then take necessary actions to investigate and mitigate future recurrences. Conversely, the IJC's water quality objectives are intended to be used in the same manner as state water quality standards and as Manitoba provincial water quality objectives. That is, the IJC objectives are intended to be used to ensure that projects are designed appropriately to avoid exceedances.

(3). The Department of Health has inappropriately judged the project to be in compliance with the Boundary Waters Treaty of 1909 (the BWT). Compliance with the BWT can only be determined by the federal governments of the United States and Canada. We understand that the U.S. State Department, in collaboration with U.S. technical agencies, is currently reviewing BWT compliance issues related to the federal civil works project. Much of this analysis may be applicable to the State-financed project. In any event, federal review of the State project is plainly warranted. We believe that no permit should be issued for this project until all BWT-compliance issues are resolved at the federal level.

(4). It is stated that, because Minnesota and North Dakota have determined that the outlet will not violate state standards, compliance should also be achieved in other downstream jurisdictions. This is incorrect. Manitoba and Canada have stated that, as modelling done by the Corps for the federal and State-financed outlets indicate, IJC water quality objectives will be violated at a greater frequency with both a 100 cfs and 300 cfs outlet relative to the baseline condition.

(5). The Devils Lake outlet will provide an additional source of nutrients to the Lake Winnipeg system, contrary to the commitments in Manitoba's Lake Winnipeg Action Plan. While it is stated in the Response to Comments that a reasonable approach would be to quantify all sources of nutrients to Lake Winnipeg to put the contribution from Devils Lake into perspective, this approach appears to simply justify further pollution. In fact, all major sources of nutrients to Lake Winnipeg have been quantified as part of the on-going work in Manitoba's Nutrient Management Strategy. Importantly, these studies have shown that phosphorus concentrations in the Red River at the international boundary have increased by about 204 tonnes/year relative to the early 1970s. Construction and operation of an artificial outlet from Devils Lake will continue this trend by adding additional phosphorus (and nitrogen) to the injury of Manitoba. Manitoba has asked the IJC's International Red River Board to develop water quality objectives for nutrients at the international boundary to reflect the commitments in the Lake Winnipeg Action Plan (March 5, 2003 letter from myself to Mr. Kellow and Dr. Bach).

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(6). The State's outlet must be assessed on the basis of actual constructed capacity. North Dakota Health must assume that ultimately, the outlet will be operated to convey 300 cfs since this is the specification for construction. On the basis of the constructed capacity, water quality impacts will be even greater at the international boundary than predicted for a 100 cfs outlet.

(7). The issue of biota transfer has not been addressed in the Permit. While it is stated in the Response to Comments that there is no provision in the NDPDES rules to include non-native species, there is also no provision to exclude such considerations. Moreover, most NDPDES permits issued for other wastewater effluents include limits on biological materials such as bacteria. Inclusion of limits for biological materials in such permits is common practice in North Dakota and in similar Clean Water Act Section 402 permits issued elsewhere throughout the United States and therefore, should be included in the Permit. In this regard, the Corps of Engineers in its Final Environmental Impact Statement, dated April 2003 (the Corps' EIS), concluded that the Devils Lake outlet project does entail a risk of transfer of non-native species from Devils Lake to the Red River basin and that biota control facilities need to be included in the outlet design.

It is also important to underscore that the Department of Health overstates the degree of existing connectivity between Devils Lake and the Red River basin. Existing connectivity is simply not comparable to a new and direct hydraulic connection moving up to 300 cfs that would be provided by the State's outlet. Devils Lake and the Red River basin have not been hydraulically connected since European settlement. Most anthropogenic introductions to Devils Lake have occurred since European settlement, especially since the 1940s when the lake was essentially dry. While some other mechanisms exist for movement of non-native biota from Devils Lake to the Red River basin, joint programs are in place between Canada and the United States to diminish or eliminate the human-mediated mechanisms since these are deemed to be unacceptable. Examples of such cooperative programs are the 100th Meridian Project, work of the Western Regional Panel on Invasive Species, and work of the newly formed Mississippi River Basin Panel on Invasive Species. Manitoba participates in these programs along with many U.S. state and federal agencies. Justifying creation of a new and much larger connection on the basis of existing unacceptable mechanisms is entirely inappropriate.

The Response to Comments contains some information on striped bass which warrants challenge. It is inferred that, because striped bass are present in some parts of eastern Canada, they could therefore, inhabit all other parts. This inference is biologically inappropriate given the facts that Canada's land mass is larger than that of the continental United States, that Canadian waters drain into three oceans, that Canada is diverse in terms of aquatic habitat, and that Canada's major watersheds are less inter-connected than watersheds in the United States. Moreover, lack of existing information to suggest that striped bass are not reproducing in Devils Lake may simply be an artifact of the poor quality of the present knowledge of biota in Devils Lake. It is important to note that North Dakota State officials claimed that European zander stocked in the nearby Spiritwood Lake did not survive and likely no longer existed in the State[1] but a specimen was recovered from the lake in June 2000 by an angler. In addition, grass carp (white Amur) stocked in Spiritwood Lake in 1972 were expected to live no more than 15 years. During the last couple of

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[1] Power, Greg, J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div., Report 27, Jamestown ND.

weeks, grass carp have been identified from Spiritwood Lake that may either be more than 30 years old or progeny of the original stocked specimens. These two recent examples underscore Manitoba's concern with striped bass and other unknown stocked fish in Devils Lake and lead us to conclude that little confidence can be placed in the State's existing biological knowledge of Devils Lake.

On the basis of the above, we respectfully request that the Department reconsider its issuance of the Permit. We also request a hearing on this matter.

Should you have any questions, please feel free to contact me at the above address, by calling (204) 945-7030, or e-mail at dwilliamso@gov.mb.ca.

Sincerely,

Dwight Williamson, Manager
Water Quality Management Section

c: Richard Kellow, Environment Canada
Mark Fisher, Foreign Affairs and International Trade
Dennis Wright, Fisheries and Oceans Canada
Robert E. Roberts, Administrator, U.S. EPA Region VIII
Thomas Skinner, Administrator, U.S. EPA Region V
G. Tracy Mehan, Assistant Administrator, U.S. EPA Office of Water