

**COMMENTS ON
THE NORTH DAKOTA STATE WATER COMMISSION'S
APPLICATION NO. 3457 TO DRAIN WATER
FROM DEVILS LAKE TO THE SHEYENNE RIVER
BY
INCREASING THE CAPACITY OF
THE EXISTING DEVILS LAKE OUTLET
FROM 100 TO 250 CUBIC FEET PER SECOND**

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TABLE OF CONTENTS

Introduction 3

Absence of Investigations Affirmatively Demonstrating that the Quantity
of Water Drained by the Project Will Not Flood or Adversely Affect
Downstream Lands..... 6

The Volume of Water to be Drained and the Impact on the Sheyenne River..... 7

Adverse Effects that may Occur to the Lands of Downstream Proprietors 7

Faulty Engineering Design..... 10

The Project’s Impact on Flooding in the Project Watershed 10

The Project’s Impact on Streams or Lakes Having Recognized
Fish and Wildlife Values..... 14

Impact on Agricultural Lands 18

Requirement for Easements 19

Other Factors Unique to the Project..... 21

Conclusions 24

References 25

INTRODUCTION

On July 13, 2009, North Dakota State Engineer Dale Frink sent a letter to North Dakota Department of Health (NDDH, Department), Environmental Health Section Chief L. David Glatt stating:

“The continual flooding of Devils Lake and Stump Lake constitutes an emergency condition, and the increasing of outflows from the outlet is needed to assist in responding to the flooding. Operation of the outlet at its maximum capacity can provide an increase in water removed from Devils Lake reducing the risk of future flooding.” (Frink, 2009)

On July 15, 2009, NDDH Environmental Health Section Chief L. David Glatt sent a letter to North Dakota Governor John Hoeven requesting authority for the Department “to implement interim emergency rules to reclassify stream water quality standards for a portion of the Sheyenne River” in order to “allow an immediate increase of discharge from the east end of Devils Lake in an effort to stabilize or decrease lake levels, thus reducing the impact of flooding.” Mr. Glatt went on to explain that:

“As part of the authority provided under NDCC 28-32-03, we must declare that the proposed rule be an interim final rule. It must be filed with the Legislative Council to be valid and finalized within 6 months after the completion of an appropriate public participation process.” (Glatt, 2009a)

The Department’s July 15, 2009, NOTICE OF INTENT TO ADOPT ADMINISTRATIVE RULE—issued the same day as Mr. Glatt’s letter to the Governor—stated that:

“The purpose of the proposed rule is to change the maximum limit of sulfate in a segment of the Sheyenne River. The rule will change the maximum level of sulfate in the segment of the Sheyenne River that runs from its headwaters to 0.1 mile downstream from the Baldhill Dam, including Lake Ashtabula, from 450 mg/L to 750 mg/L. . .” (Glatt, 2009b)

On August 19, 2009, the Associated Press reported that:

The North Dakota Water Commission has approved a \$16.5 million project aimed at controlling the level of swollen Devils Lake.

Assistant Water Commission Engineer Todd Sando said the project involves installing additional pumps along the Devils Lake outlet that could remove more than 6 inches of water annually from the lake. The upgrade would boost the outlet’s pumping capacity from 100 cubic feet per second to 250 cubic feet per second.” (MacPherson, 2009)

Office of the State Engineer Water Development Division Application to Drain No. 3457 was signed by North Dakota Governor and State Water Commission Chairman John Hoeven and was received by the State Water Commission on October 26, 2009. The purpose of the project stated on the application is:

“Upgrade of existing drain to address continue [sic] lake rise.”

The Project Description, Devils Lake Outlet Upgrade, Drain Permit Application No. 3457, accompanying the application states, regarding the Proposed Upgrade,” that:

“In a July 7, 2009 letter, the Devils Lake City Commission requested that the NDDH and North Dakota State Water Commission (NDSWC) ‘work together to identify means of removing additional water from Devils Lake to reduce flood damages.’ Due to ongoing flooding and the potential for an uncontrolled overflow from the east end of the lake, the NDSWC responded by requesting the NDDH to implement emergency rules for the Sheyenne River to increase the amount of water discharged from the Devils Lake Outlet. The NDDH, on July 15, 2009, in accordance with North Dakota Century Code §28.32-02, implemented an emergency rule for a segment of the Sheyenne River. The NDDH amended the sulfate concentration level from 450 mg/L to 750 mg/L for the segment of the Sheyenne headwaters to a point just downstream of Baldhill Dam.

The proposed upgrade involves increasing the capacity of the outlet from 100 cfs to 250 cfs. Two additional pumps are planned for the Round Lake pump station. . .”

This is the only information provided by the applicant State Water Commission regarding the impacts of increasing the discharge of the Devils Lake outlet from 100 cfs to 250 cfs and the maximum concentration of sulfate in the Sheyenne River from 450 mg/l to 750 mg/l.

The Associated Press reported on January 2, 2010 that:

“Part of the Sheyenne River that has been used to drain floodwaters from Devils Lake would have too much sulfate to be used for municipal drinking water under rules of the state Health Department is proposing. . .

The proposed rule would allow sulfate levels in part of the Sheyenne River as high as 750 milligrams per liter of water. Until July, the limit was 450 milligrams per liter. . .

Glatt said the changes were being proposed to allow the Devils Lake outlet to move greater amounts of water into the Sheyenne.

The outlet diverts water from Devils Lake’s west end into the river. Last summer, it could move only 100 cubic feet of water per second, and its use was limited by sulfate standards until the ceiling was raised to 750 milligrams per liter.

North Dakota’s Water Commission is planning \$15 million worth of improvements, including larger pumps and water filtering equipment, to upgrade the outlet’s pumping capacity to 250 cubic feet per second.” (Wetzel, 2010)

It is clear, therefore, that the North Dakota Department of Health’s proposed emergency rule to amend the Standards of Quality for Waters of the State to increase the maximum concentration of sulfate in the Sheyenne River from 450 mg/l to 750 mg/l is tied directly to the State Water Commission’s application for a permit to increase the capacity of the Devils Lake outlet from 100 cfs to 250 cfs.

According to the NOTICE OF HEARING ON APPLICATION TO DRAIN WATER FROM DEVILS LAKE TO THE SHEYENNE RIVER issued on December 30, 2009, by the Ramsey County Water Resource District:

“ . . . the State Water Commission, 900 East Boulevard Avenue, Bismarck, ND 58505, has filed an application for a permit to drain water from Devils Lake to the Sheyenne River to address flooding impacts of the rising level of Devils Lake. The project involves

upgrading the capacity of the existing Devils Lake Outlet from 100 cfs to 250 cfs. . . The application has been determined by the State Engineer to be of statewide or interdistrict significance ”

Presumably, the application was submitted and is being considered under North Dakota Century Code § 61-32-03 and North Dakota Administrative Code Chapter 89-02-01. NDCC § 61-32-03 provides that:

“Any person, before draining a pond, slough, or lake, or sheetwater, or any series thereof, which has a watershed area comprising eighty acres [32.37 hectares] or more, shall first secure a permit to do so. The permit application must be submitted to the state engineer. The state engineer shall refer the application to the water resource districts within which is found a majority of the watershed or drainage area of the pond, slough, lake, or sheetwater for consideration and approval, but the state engineer may require that applications proposing drainage of statewide or interdistrict significance be returned to the state engineer for final approval. **A permit may not be granted until an investigation discloses that the quantity of water which will be drained from the pond, slough, lake, or sheetwater, or any series thereof, will not flood or adversely affect downstream lands.** If the investigation shows that the proposed drainage will flood or adversely affect lands of downstream landowners, **the water resource board may not issue a permit until flowage easements are obtained.** The flowage easements must be filed for record in the office of the recorder of the county or counties in which the lands are situated. **An owner of land proposing to drain shall undertake and agree to pay the expenses incurred in making the required investigation. . .**”

(Emphasis added)

It is important to note that, in the case of the application cited in the above notice, NDCC § 61-32-03 imposes an affirmative fiduciary duty on the State Water Commission to “undertake and agree to pay the expenses incurred in making the required investigation” to determine whether the quantify of water which will be drained from Devils Lake as a result of increasing the capacity of the State Water Commission’s Devils Lake outlet from 100 cubic feet per second (cfs) to 250 cfs will “flood or adversely affect downstream lands.”

It also is important to note that it is not sufficient under NDCC § 61-32-03 for the issuance of the permit to be based upon an absence of evidence that increasing the capacity of the outlet from 100 cfs to 250 cfs will flood or adversely affect downstream lands, or upon a finding that the flooding or adverse effects on downstream lands are not significant or that they are necessary or justified in order to address flooding at Devils Lake. Nor are there any provisions under the statute for issuing a permit based upon speculative and unsubstantiated claims that flooding or other adverse effects can be avoided. NDCC § 61-32-03 explicitly requires that, before the permit may be granted, an investigation must have been conducted and the results of that investigation must affirmatively demonstrate that increasing the capacity of the State Water Commission’s Devils Lake outlet from 100 cfs to 250 cfs “will not flood or adversely affect downstream lands.”

Under NDAC § 89-02-01-09.2, **Evaluation of applications – Factors considered:**

“The state engineer, for applications of statewide or interdistrict significance, and the board for all applications to drain, shall consider the following factors:

1. The volume of water proposed to be drained and the impact of the flow or quantity of this water upon the watercourse into which the water will be drained.
2. Adverse effects that may occur to the lands of lower proprietors. This factor is limited to the project's hydraulic effects such as erosion, duration of floods, impact of sustained flows, and impact on the operation of downstream control devices.
3. The engineering design and other physical aspects of the drain.
4. The project's impact on flooding problems in the project watershed.
5. The project's impact on ponds, sloughs, streams or lakes having recognized fish and wildlife values.
6. The project's impact on agricultural lands.
7. Whether easements are required.
8. Other factors unique to the project."

**ABSENCE OF INVESTIGATIONS AFFIRMATIVELY DEMONSTRATING
THAT THE QUANTITY OF WATER DRAINED BY THE PROJECT WILL NOT
FLOOD OR ADVERSELY AFFECT DOWNSTREAM LANDS**

As noted above, NDCC § 61-32-03, **Permit to drain waters required – Penalty**, specifies that:

“A permit may not be granted until an investigation discloses that the quantity of water which will be drained from the pond, slough, lake, or sheetwater, or any series thereof, will not flood or adversely affect downstream lands.”

The minutes of the December 8, 2009, meeting of the Devils Lake Outlet Monitoring Committee Modeling Subcommittee report that a simulation model is being developed by the U. S. Geological Survey to provide a “Stochastic Analysis of Devils Lake Outlet and Sheyenne River Sulfate Concentrations” and that plans are underway for linking the model with a deterministic model being developed by the U. S. Geological Survey and the North Dakota State Water Commission for “Monitoring and Modeling The Effects of Proposed Increase in Devils Lake Outlet Capacity on Future Flows and Sulfate Concentrations in Upper Sheyenne River and Lake Ashtabula” and for extending the model downstream of Lake Ashtabula.

The documented fact that the development of the stochastic simulation model for Devils Lake will not be completed until February 2010 and the deterministic Upper Sheyenne River and Lake Ashtabula model will not be completed until May 2010 constitutes unequivocal proof that the investigations required by NDCC 61-32-03 to demonstrate that “the quantity of water which will be drained from [Devils Lake by the expanded Devils Lake outlet] will not flood or adversely affect downstream lands” have not been done. Consequently, on this basis alone, the Ramsey County and Towner County Water Resource Boards are prohibited by statute from approving the State Water Commission's application for a permit to upgrade the capacity of the existing Devils Lake outlet from 100 cfs to 250 cfs.

**THE VOLUME OF WATER PROPOSED TO BE DRAINED
AND THE IMPACT ON THE SHEYENNE RIVER**

The first factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89-02-01-09.2 in evaluating the State Water Commission’s application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

“The volume of water proposed to be drained and the impact of the flow or quantity of this water upon the watercourse into which the water will be drained.”

Assistant North Dakota State Engineer Todd Sando claims that operation of the Devils Lake outlet at a capacity of 250 cfs “could remove more than 6 inches of water annually from the lake” (MacPherson, 2009).

Application to Drain No. 3457 submitted by the State Water Commission lists the water area of Devils Lake at 163,000 acres. In order to remove six inches of water from Devils Lake at an area of 163,000 acres, it would be necessary to remove 81,500 acre-feet of water. Operating at 250 cfs, the Devils Lake outlet would remove 14,875 acre-feet per month, so it would take 5.5 months for the outlet to remove 81,500 acre-feet of water from the lake.

Flows in the Sheyenne River averaged 36,000 acre-feet per year at Warwick from 1949-1971 (U. S. Bureau of Reclamation, 1974) and 87,380 acre-feet per year below Baldhill Dam from 1950-1992 (U. S. Bureau of Reclamation, 1997). Increasing the annual flows of the Sheyenne River by 81,500 acre-feet as a result of operation of the Devils Lake outlet would increase the average annual flow at Warwick by 226 percent, and it would increase the average annual flow at Baldhill Dam by 93 percent.

The capacity of Lake Ashtabula at the top of the conservation pool is approximately 69,000 acre-feet (U. S. Bureau of Reclamation, 1999). Therefore, operation of the Devils Lake outlet at 250 cfs would replace the target volume of Lake Ashtabula with lower quality Devils Lake water every 4.6 months, or 1.2 times every 5.5 months.

The applicant State Water Commission has cited no investigations of the impacts of an additional 81,500 acre-feet of water from the Devils Lake outlet on the Sheyenne River and Lake Ashtabula.

**ADVERSE EFFECTS THAT MAY OCCUR TO
THE LANDS OF LOWER PROPRIETORS**

The second factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC 89-02-01-09.2 in evaluating the State Water Commission’s application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

“Adverse effects that may occur to the lands of lower proprietors. This factor is limited to the project’s hydrologic effects such as erosion, duration of floods, impact of sustained flows, and impact on the operation of downstream water control devices.”

The applicant State Water Commission has cited no investigations demonstrating that adverse effects will not occur to the lands of lower proprietors as a result of increasing the capacity of the

Devils Lake outlet from 100 cfs to 250 cfs. However, other investigations indicate that the adverse effects to the lands of lower proprietors resulting from increasing the capacity of the outlet to 250 cfs will be severe.

The North Dakota Department of Health stated in its 2003 “Statement of Basis, Devils Lake Outlet ND-0026247” for issuance of a North Dakota Pollution Discharge Elimination System Permit for the State Water Commission’s Devils Lake outlet that the U. S. Army Corps of Engineers’ April 2003 *Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement*:

“ . . . includes background information on hydrology, natural resources and other evaluations that are relevant to the consideration of this discharge permit.” (North Dakota Department of Health, 2003)

The Corps of Engineers’ April 2003 *Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement* (FEIS) (U. S. Army Corps of Engineers, 2003) did not evaluate the impacts of a 250 cfs West Bay outlet constrained only by a 750 mg/l sulfate limit in the Sheyenne River, but it did evaluate the impacts of a 300 cfs Pelican Lake outlet constrained by a 300 mg/l sulfate limit and 600 cfs total flows in the Sheyenne River. However, the water quantity impacts of the State Water Commission’s West Bay outlet operating at 250 cfs with a 750 mg/l sulfate limit in the Sheyenne River would be significantly greater than those of a 300 cfs Pelican Lake outlet because operation of the Pelican Lake outlet would be limited to discharges of 0 to 100 cfs for three months of its seven month operating season (U. S. Army Corps of Engineers, 2002). Nevertheless, it is instructive to consider the hydrologic effects identified by the Corps for a 300 cfs Pelican Lake outlet, recognizing that the effects of the State Water Commission’s West Bay outlet operated at 250 cfs would be even more severe:

- “An outlet to the Sheyenne River . . . could also reduce the aesthetics of the riparian zone by **accelerating erosion-deposition processes along the river**. . .” (Emphasis added) (FEIS p. 6-47)
- “. . . an outlet could **exacerbate flooding along the Sheyenne River** with consequent damage to transportation infrastructure, including roads and bridges.” (Emphasis added) (FEIS p. 6.49)
- “**Exacerbated flooding in the Sheyenne River** could damage agricultural property, including lands, equipment and structures.” (Emphasis added) (FEIS p. 6-49)
- “An outlet from Devils Lake could diminish property values along the Sheyenne River. The potential adverse impact to property values would be based on damage in the riparian zone, **exacerbated flood risks**, and reduced water quality for agriculture or recreation.” (Emphasis added) (FEIS p. 6-50)
- “**Extended high flows** from Baldhill Dam may result in problems related to the ability to drain the fish ponds at Baldhill Dam and Valley City National Fish Hatcheries. Flows around 700 to 800 cfs will prevent the ponds from being drained.” (Emphasis added) (FEIS p. 6-52)
- “Operation of the Pelican Lake outlet would result in **substantial change in the flow regime of the Sheyenne River**. Discharges of up to 300 cfs over a major portion of the summer would result in a **five- to tenfold increase in summer/fall flows** along the

Sheyenne River. Increased flows throughout the summer would result in **changes in river in river stage on the Sheyenne and Red Rivers.**” (Emphasis added) (FEIS p. 6-56)

- “With the increase in flow, some **change is expected in width and depth, and erosion would probably increase.**” (Emphasis added) (FEIS p. 6-59)
- “**Effects in Lake Ashtabula include reduced retention time,** increased nutrient loading, increased movement of fish out of the lake, and **increased storage of water. The outlet would reduce storage time in Lake Ashtabula and increase turnover rate.**” (Emphasis added) (FEIS p. 6-60)
- “**The operation of the outlet would affect river stages,** groundwater levels near the river, **erosion,** availability of aquatic habitat, river access, and river crossings.” (FEIS p. 6-60)
- In summary, **changes in hydrology would be significant with a Pelican Lake alternative because large amounts of water could be discharged during wet periods in the Devils Lake basin due to improved water quality.¹ Erosion will be greater . . .**” (Emphasis added) (FEIS p. 6-60)

It is important to note that the analysis of the hydrologic impacts of the Corps of Engineers’ 300 cfs Pelican Lake was based on the assumption that:

“The channel capacity [of the Sheyenne River] is estimated at about 600 cfs upstream of Lake Ashtabula.” (FEIS p. 5-10)

The State Water Commission’s Project Description, Devils Lake Outlet Upgrade, Drain Permit Application No. 3457 also cites “the 600-cfs channel capacity of the Sheyenne River,” so it is clear that any information from the State Water Commission regarding the hydrologic impacts of the outlet would be based on the assumption that the channel capacity of the Sheyenne River is 600 cfs.

However, the channel capacity of the Sheyenne River at Warwick, 30 miles downstream from the insertion point of the Devils Lake outlet, is only 300 cfs (U. S. Bureau of Reclamation, 2003) and the channel capacity upstream from Warwick is even less. Consequently, because the channel capacity of the Upper Sheyenne River downstream from the insertion point of the outlet is half or less than that assumed by the Corps, the hydrologic impacts of the Corps’ 300 cfs Pelican Lake outlet would be far greater than indicated in the FEIS, and the impacts of increasing the capacity of the State Water Commission’s Devils Lake outlet to 250 cfs would be significantly more severe than those for a 300 cfs Pelican Lake outlet.

Because the applicant has cited no investigations quantifying and qualifying the hydrologic effects such as erosion and flooding to the lands of lower proprietors resulting from increasing the capacity of the Devils Lake outlet to 250 cfs, and because the preponderance of the evidence unequivocally demonstrates that increasing the capacity of the State Water Commission’s Devils Lake outlet to 250 cfs will flood and adversely affect downstream lands, the Ramsey County and

¹ Even larger quantities of water could be discharged by the Devils Lake outlet during both wet and dry periods because the 250 cfs discharge of water from West Bay with 600 mg/l to 700 mg/l of sulfate would not be constrained under the proposed 750 mg/l sulfate limit in the Sheyenne River.

Towner County Water Resource Boards may not issue the permit until the required investigations have been conducted and flowage easements have been obtained from all of the affected downstream landowners.

FAULTY ENGINEERING DESIGN

The third factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89-02-01-09.2 in evaluating the State Water Commission’s application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

“The engineering design and other physical aspects of the drain.”

The North Dakota State Water Commission’s 2001 **Devils Lake (Peterson Coulee) Outlet Request for Proposal** stated explicitly that:

“. . . The state’s primary goal is to have an outlet operating **as quickly and at as low a cost as possible**. Also, it is quite possible that the current wet cycle may end within the next 10 to 15 years at which point the outlet may no longer be operated. Therefore, the cost and efficiency of the pumps and short delivery time are more important than the reliability and long life span of the pumps. . .” (Emphasis added)

Because the State Water Commission’s goal was to build an outlet at as low a cost as possible while compromising reliability, numerous problems have developed with operation of the outlet. For example, in a September 17, 2009, letter to the State Water Commission, the Benson County Water Resource Board outlined some of the problems resulting from the substandard engineering design and faulty construction of the outlet:

“Primarily what we speak of is what we have seen on how the water is leaching outside of the canal project and remaining on the adjacent farmland. Culverts have been installed to divert water, either directly into the pipeline project or under the pipeline project. However, the culverts remain plugged and water impounds on the farmers’ fields. In addition, we believe that the canal project itself is allowing waters to leach out and salinize adjacent farmland. As a water resource board, we would ask that you take care of the existing problems which this project has either created, uncontrollably caused, or compounded prior to increasing the outflow of water down this unique project.” (L. Olson, 2009)

The applicant State Water Commission has cited no investigations of the design and construction deficiencies of the current Devils Lake outlet or how the problems caused by those deficiencies will be exacerbated when the capacity of the outlet is increased from 100 cfs to 250 cfs.

THE PROJECT’S IMPACT ON FLOODING PROBLEMS IN THE PROJECT WATERSHED

The fourth factor that Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89-02-01-09.2 in evaluating the State Water Commission’s application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

“The project’s impact on flooding problems in the project watershed.”

The applicant State Water Commission has neither submitted nor cited substantive information regarding the impact of increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs on flooding problems in the project watershed, i.e., the 3,814 square mile Devils Lake Basin. The Application to Drain No. 3457 submitted by Governor and State Water Commission Chairman John Hoeven states, under Purpose, only:

“Upgrade of existing drain to address continue [sic] lake rise.”

and the only information regarding the impact on flooding problems in the project watershed contained in the State Water Commission’s Project Description, Devils Lake Upgrade, Drain Permit Application No. 3457 submitted with its application for the permit is the statement that:

“In a July 7, 2009, letter, the Devils Lake City Commission requested that the NDDH and North Dakota State Water Commission (NDSWC) ‘work together to identify means of removing additional water from Devils Lake to reduced flood damages.’”

The July 7, 2009, letter from the Devils Lake City Commission provided no information on the impact of the project on flooding in the project watershed. (Bott, 2009)

The July 13, 2009, letter from State Engineer Dale Frink to the North Dakota Department of Health did not mention increasing the capacity of the Devils Lake outlet to 250 cfs and stated only that:

“Operation of the outlet at its maximum capacity can provide an increase in water removed from Devils Lake reducing the risk of future flooding.” (Frink, 2009)

The letter provides no information on how much water could be removed from Devils Lake by operating the outlet at its maximum capacity, which at the time was 100 cfs, or how much it would reduce the risk of future flooding.

The only information regarding flooding in the watershed contained in NDDH Environmental Health Section Chief L. David Glatt’s July 15, 2009, letter to Governor Hoeven was the statement that:

“In an effort to address the widespread flood impacts in the Devils Lake region, the department finds that emergency rulemaking is necessary and is requesting the authority to implement interim emergency rules to reclassify stream water quality standards for a portion of the Sheyenne River. This action would allow an immediate increase of discharge from the west end of Devils Lake in an effort to stabilize or decrease levels, thus reducing the impact of flooding.” (Glatt, 2009a)

The letter does not mention increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs nor does it provide any information regarding the actual effects of the proposed emergency rulemaking to reclassify stream water quality standards for a portion of the Sheyenne River in stabilizing or decreasing the levels of the lake or reducing the impact of flooding.

The Finding and Statement of Reason of the North Dakota Department of Health Regarding Proposed Rule Relating to Water Quality Standards signed by NDDH Environmental Health

Section Chief L. David Glatt on July 15, 2009, states only that emergency rulemaking “was necessary because imminent peril threatened public health or safety, or welfare, which could be abated by emergency effectiveness,” but it does not mention increasing the capacity of the Devils Lake outlet to 250 cfs, nor does it provide any information regarding the impact of the proposed emergency rule on flooding in the Devils Lake Basin, on the alleged imminent peril or on public health, safety or welfare (Glatt, 2009c).

Indeed, the only information on the impact of increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs on flooding in the Devils Lake Basin appears to the unsubstantiated statement by Assistant State Engineer Todd Sando that it:

“... could remove more than 6 inches of water annually from the lake.” (MacPherson, 2009)

It is instructive to recall in this context that State Water Commission Water Resource Engineer Julie Prescott stated in her June 26, 2003, memorandum on Application to Drain No. 2986 – Devils Lake Outlet for a permit to construct the original outlet that:

“It has been estimated that a 100-cfs discharge could lower the current water surface of Devils Lake between 2 and 4 inches per year.”

State Water Commission Devils Lake Outlet Project Engineer Bruce Engelhardt also was quoted on July 21, 2005, as stating that:

“If we could run at 100 cfs it would take 7 months to take 4 inches off the lake.” (Johnson, 2005)

However, instead of lowering the lake between 8 to 16 inches (2-4 inches per year) in the four years of operation from 2005 through 2008, the Devils Lake outlet removed the equivalent of just over 1/10th of an inch of water from the lake, and in 2009 the lake was 10 inches higher than it was before the outlet began operation.

In fact, on September 24, 2002, Devils Lake Project Engineer Bruce Englehardt had submitted a request to the U. S. Army Corps of Engineers for the “actual numbers” used by the Corps in generating Devils Lake elevations with operation of the State Water Commission’s Devils Lake outlet under three different (Moderate 1450, Moderate 1455 and Wet) lake level scenarios (Engelhardt, 2002). The next day, September 25, 2002—15 months before SWC Water Resource Engineer Julie Prescott prepared her June 26, 2003, memorandum on the SWC’s Application to Drain No. 2986 and 25 months before Mr. Englehardt told *The Grand Forks Herald* that the outlet would take four inches off the lake per year—Mr. Daniel Reinarts of the U. S. Army Corps of Engineers sent Mr. Engelhardt an email stating, “Attached are the lake level plots that you requested” (Reinartz, 2002). The lake level plots provided to Mr. Engelhardt by the U. S. Army Corps of Engineers on September 25, 2002, show that after **10 years of operation** under a Moderate1450 feet lake level scenario, the State Water Commission’s Devils Lake outlet would lower the level of the lake by **2.4 inches**, under a Moderate 1455 feet lake level scenario, the outlet would lower the lake by **3.6 inches**, and under a Wet scenario, the outlet would lower the level of the lake by **6 inches**. Of course, we now know that even the Corps of Engineers’ projections grossly over-estimated the efficacy of the outlet.

On August 27, 2007, *The Grand Forks Herald* reported the evidence confirming that North Dakota State Engineer Dale Frink and his staff knew before their Application to Drain No. 2986 –

Devils Lake Outlet was submitted to the Ramsey County and Towner County Water Resource Districts on April 11, 2003, that the State Water Commission's Devils Lake outlet would not remove four inches of water per year from the lake and that it would not have a significant impact on the level of the lake (Lee, 2007a, 2007b).

Consequently, because of the marked disparity between the hypothetical and the actual operation of the outlet, and, indeed, between what the State Engineer and his staff knew about the lack of efficacy of the outlet and what they stated on their Application to Drain NO. 2986 – Devils Lake Outlet and what they told the public, it is appropriate to examine the Assistant State Engineer's current claim that increasing the capacity of the outlet to 250 cfs “could remove more than six inches of water annually from the lake.”

If the outlet were to operate at 250 cfs continuously for 5.5 months, it would remove 81,500 acre-feet of water from Devils Lake, which would be equivalent to 6 inches at a lake area of 163,000 acres. However, removing the equivalent of 6 inches of water from the lake is not the same as lowering the level of the lake by six inches. For example, inflows to Devils Lake averaged 317,000 acre-feet per year from 1993 to 2000 (U. S. Army Corps of Engineers, 2002) and were 418,000 acre-feet in 1997. In the spring of 2009 the inflows were a record 587,000 acre-feet (Frink, 2009). At 81,500 acre-feet per year, it would take 7.2 years for the outlet operating at 250 cfs to remove just last spring's inflows. In the meantime, additional inflows would be occurring every year, so after 7 years of operation of the outlet at 250 cfs the lake still would not necessarily be any lower, just as the lake was 10 inches higher in 2009 than it was before the outlet began operating in 2005. On the other hand evaporation in the Devils Lake area averages 30 inches per year, which is equivalent to the removal of 407,000 acre-feet of water per year at a lake area of 163,000 acres—five times the volume that would be removed by the outlet operating at 250 cfs, and at no cost.

It is important to recognize, however, that, just as with the previous claims about the outlet operating at 100 cfs being able to remove 4 inches of water annually from the lake, it is highly unlikely that the outlet would be able to operate continuously at 250 cfs for 8 months from April through November or even for 5.5 months as Assistant State Engineer Todd Sando implies without violating the 450 mg/l sulfate limit on the Lower Sheyenne River .

The North Dakota Department of Health's proposed emergency rule would:

“ . . . change the maximum level of sulfate in the segment of the Sheyenne River that runs from its headwaters to 0.1 mile downstream from the Baldhill Dam from 450 mg/L to 750 mg/L.” (Glatt, 2009b)

Sulfate levels in West Bay of Devils Lake range between 600 mg/l and 700 mg/l. Operation of the outlet at 250 cfs would replace the 69,000 acre-feet volume at the top of Lake Ashtabula's conservation pool with 600-700 mg/l sulfate Devils Lake water in just 4.2 months, at which time operation of the outlet would have to be suspended because releases of water with 600-700 mg/l of sulfate could not be made from Lake Ashtabula without violating the 450 mg/l sulfate limit in the Lower Sheyenne River beginning 0.1 mile downstream from Baldhill Dam. Consequently, once sulfate levels in Lake Ashtabula reached 450 mg/l, subsequent discharges from the outlet would be limited by dilution of sulfate levels in Lake Ashtabula by natural flows in the Sheyenne River, as well as by management of the reservoir for flood control, downstream municipal water supply and recreation.

With discharges from the outlet running at 600-700 mg/l of sulfate and natural flows in the Sheyenne River at Warwick exceeding 300 mg/l of sulfate 25 percent of the time since 2000 (Schuh and Hove, 2006), it is apparent that Lake Ashtabula would reach 450 mg/l of sulfate long before 69,000 acre-feet of Devils Lake water were discharged from the outlet.

Of course, flows and sulfate concentrations in the Sheyenne River, inflows to Lake Ashtabula and evaporation and releases from the reservoir occur in a dynamic state, so it is very difficult to balance all of the constantly changing variables in a simple calculation to show the impact of operating the outlet at 250 cfs on the level of Devils Lake. Nevertheless, it appears unlikely that the outlet would be able to remove the equivalent of more than an inch or two of water from Devils Lake in most years even with its capacity increased to 250 cfs.

It is precisely because of the complexity of balancing natural flows in the Sheyenne River with discharges from the outlet and releases from Lake Ashtabula to maintain acceptable levels of sulfate in the Sheyenne River downstream from Baldhill Dam that the computer simulation models discussed at the December 8, 2009, Devils Lake Outlet Monitoring Committee Modeling Subcommittee meeting need to be developed before the amount of water that the outlet actually would be able to remove from Devils Lake can be determined.

What is abundantly clear, however, is that the investigations required to evaluate objectively the impact of the proposed increase in the capacity of the Devils Lake outlet to 250 cfs on flooding in the Devils Lake Basin have not yet been done. Consequently, no objective evidence is available to demonstrate that increasing the capacity of the Devils Lake outlet to 250 cfs will have a significant impact on the level of Devils Lake, that it will stabilize the lake, that it will decrease lake levels, or that it will reduce the impact of flooding.

For the State Water Commission to submit an application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs without having factual information available on the efficacy of the project is irresponsible. To do so after making deliberately misleading statements regarding the efficacy of its original 100 cfs outlet is inexcusable.

THE PROJECT'S IMPACT ON STREAMS OR LAKES HAVING RECOGNIZED FISH AND WILDLIFE VALUES

The fifth factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89-02-01-09.2 in evaluating the State Water Commission's application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

“The project's impact on ponds, sloughs, streams, or lakes having recognized fish and wildlife values.”

The U. S. Army Corps of Engineers' *Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement* describes the fish and wildlife values of the Sheyenne River as follows:

“The Sheyenne River provides spawning habitat and nursery areas for forage fish, as well as a migrational avenue for sport fish, including channel catfish, northern pike, walleye, bass, and crappie especially during high water conditions. The Sheyenne River contains more species of fish than any other North Dakota tributary, with over 50 identified. The

river itself and a number of small reservoirs created by low-head dams provide fishing opportunities for nearby residents. About 3 percent of the angler-days of fishing in North Dakota are spent on the Sheyenne River. Commonly harvested fish include northern pike, walleye, channel catfish, black bullhead, yellow perch, and bluegill. Baldhill Creek, a tributary to the Sheyenne River, contains the only known population of trout perch in North Dakota. There are nine species of freshwater mussels inhabiting the Sheyenne River.

The riparian areas along the Sheyenne River provide valuable habitat for a variety of wildlife species. Game species found along the river's riparian corridor and adjacent uplands include white-tailed deer, moose, wood duck, dabbling duck, pheasant, greater prairie chicken, turkey, squirrels and rabbits. Furbearing species and migratory non-game birds use the river corridor for breeding, feeding and migration.

In summary, the Sheyenne River provides significant and unique aquatic and terrestrial resources. It is one of the most heavily wooded areas of the State and contains one of the largest and most diverse fisheries." (U. S. Army Corps of Engineers, 2003).

The Corps of Engineers' FEIS did not evaluate the impacts on fish and wildlife of a 250 cfs West Bay outlet constrained only by a 750 mg/l sulfate limit in the Sheyenne River, but it did evaluate the impacts of a 300 cfs Pelican Lake outlet constrained by a 300 mg/l sulfate limit and 600 cfs total flows in the Sheyenne River. As discussed above, the water quality and water quantity impacts of a 250 cfs West Bay outlet constrained only by a 750 mg/l sulfate limit in the Sheyenne River would potentially be significantly more severe than those of a 300 cfs Pelican Lake outlet constrained by a 300 mg/l sulfate limit and 600 cfs total flows in the Sheyenne River. The Corps identified the following impacts on fish and wildlife resources in the Sheyenne River resulting from the operation of a 300 cfs Pelican Lake outlet:

- "Operation of the Pelican Lake outlet would result in substantial change in the flow regime of the Sheyenne River. Discharges up to 300 cfs over a major portion of the summer would result in a five- to tenfold increase in summer/fall flows along the Sheyenne River. Increased flows throughout the summer would result in changes in river stage on the Sheyenne and Red Rivers." (FEIS p. 6-56)
- "... the outlet could result in up and down flows with sudden and extreme fluctuations in flow for much of the 50-year period of operation. These are the types of situations that make it difficult for species to adapt to habitat conditions." (FEIS p. 6-56)
- "Operation of a Pelican Lake outlet would affect both the water quality aspects and the physical characteristics of aquatic habitat on the Sheyenne River. While water quality constituents would not exceed tolerance levels for aquatic fauna in the Sheyenne River, many constituent levels would be dramatically increased over baseline conditions. Water quality modeling indicates that the level of these constituents would increase as much as 100 percent during pumping." (FEIS p. 6-57)
- "Changes in habitat composition and availability would result in changes in species composition and abundance. There may be some lost year classes of fish and declines in invertebrate populations." (FEIS p.6-59)
- "The changes on the Sheyenne River in water quality, hydrology, geomorphology, and habitat could result in substantial changes in or stress to aquatic biota. . . The outlet

operation would also cause loss of spawning and nursery habitat, increased erosion, and changes in channel morphology. Increases in channel width may result in less available habitat once outlet operation ceases.” (FEIS p. 6-59)

- The loss of habitat due to increased flows, changes in channel geometry, loss of overbank cover and sedimentation, coupled with changes in water quality and algal growth, would all contribute to substantial changes in the aquatic community present in the Sheyenne River. Projected water quality and quantity changes associated with outlet operation may adversely influence fish reproduction and result in lost-year classes. The threshold chloride levels for some aquatic species, such as mussels, would be approached with operation of an outlet; however, no direct effects due to increased chloride levels are anticipated. The cumulative result of all of these changes would be a decrease in diversity of aquatic species in the Sheyenne River.” (FEIS p. 6.59)
- “With the increase in flow, some change is expected in width and depth, and erosion would probably increase. Expected habitat changes include a decline of shallow pool, shallow riffle, and medium pool habitats, and an increase in fast riffle, raceway, and deep pool habitats in spring, summer and fall. Increases in summer and fall discharges reduce the slower flowing fish nursery habitat (slow riffle, shallow and medium pool guilds.)” (FEIS p. 6-59)
- “Monthly discharge would be highly altered during summer and fall, and then decline dramatically in winter. . . Fish would be affected by the change to deep/fast less usable habitat in all seasons, and the loss of summer and fall habitat for shallow, medium and deep pool guilds. Unionids and other invertebrates would be affected by the decrease in moderately flowing habitat. The increase in raceway and fast riffle habitat may benefit the tricopteran guild, but overall invertebrate diversity (low gradient guild) would be negatively affected. Macrophytes, although not common in this reach of the river, probably would be scoured by high flows. Unionids would most likely be affected by the dramatic decline between fall and winter flows. Many unioids would not survive these changes during outlet operation.” (FEIS p. 6-60)
- “Effects in Lake Ashtabula include reduced retention time, increased nutrient loading, increased movement of fish out of the lake, increased salinity, and increased storage of water. The outlet would reduce the storage time in Lake Ashtabula and increase turnover rate. This could affect walleye production and increased movement of some fish out of Lake Ashtabula and into downstream habitats. . .” (FEIS p. 6-60)
- “The operation of the outlet would affect river stages, groundwater levels near the river, erosion, availability of aquatic habitat, river access, and river crossings.” (FEIS p. 6-60)
- In summary, changes in hydrology would be significant with a Pelican Lake alternative because large amounts of water could be discharged during wet periods in the Devils Lake basin due to improved water quality². Erosion will be greater, summer nursery habitat will be less, unproductive habitat will increase in summer and fall, and change in flow magnitude between fall and winter will be greater. Therefore aquatic communities

² Or, in the case of the State Water Commission’s West Bay outlet, as a result of lowering the water quality standard by raising the sulfate limit in the Sheyenne River from the 300 mg/l constraint for the Corps’ Pelican Lake outlet to 750 mg/l under the North Dakota Department of Health’s proposed emergency rule.

may survive the water quality changes of the alternative, only to be affected by the change in habitat and hydrology. The changes in the aquatic community would persist for many years after outlet operation has ceased.” (FEIS pp. 6-61, 6-62)

- “After outlet operation ceases, slower flowing, shallow habitats would return and the upper reach would return to less hydrologically stable condition. In addition, after a number of years of outlet operation the channel would have changed, becoming wider and deeper, such that the reduced water levels would result in less available wetted habitat (and higher temperatures) during low flow conditions. The increased flow associated with the operation of the outlet would also alter habitat distribution and probably result in some erosion and deposition. These changes would affect habitat conditions and availability when the outlet ceases operation. Only a few small permanent tributaries drain into the upper Sheyenne River, and their suitability as unionid refugia is not known. Fish hosts are prevented from carrying glochidia upstream past Baldhill Dam. Unless unionid refugia occur in the small tributaries, fauna is unlikely to recolonize to pre-project conditions. Fish species that benefited from increased spawning and nursery habitat associated with higher flow would be negatively affected by the lack of those habitats with lower flows. Invertebrate fauna may recover over time. However, species composition would probably differ from pre-pumping conditions.” (FEIS p. 6-62)
- Vegetation in the riparian corridor may be affected by changes in groundwater elevation and quality, changes in frequency and duration of flooding and induced erosion associated with increased flows. Based on the assumption of a ¼-mile area of influence, groundwater changes could potentially affect about 112,000 acres of riparian lands along the Sheyenne River. . . In rare instances, there could be overbank flooding due to unforeseen rainstorms and the inability to turn the outlet off in time.” ((FEIS p. 6-63)
- “. . . it is likely that a large portion of the riparian vegetation would shift from woods to a more open community type, resulting in a concurrent change in animal species composition along the river. Changes in water quality to a more saline condition could also influence the amount and type of vegetation along the river. Some of the larger overstory forest trees may survive a year or longer, but with reduced vigor. Once the outlet operation is completed, recovery of these areas through succession would occur, which could take decades in some areas.” (FEIS p. 6-65)

The U. S. Army Corps of Engineers’ *Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement* determined that, with a 300 cfs Pelican Lake outlet operating under a 300 mg/l sulfate constraint and total flows of 600 cfs in the Sheyenne River:

“The annual phosphorus load to Lake Ashtabula would increase by 40 metric tons [88,000 pounds] per year during the first 10 years of operation, which is variably a 60 to 100-percent increase over base conditions.” (FEIS, p. 5-83)

The State Water Commission has provided no information on phosphorous loading of the Sheyenne River and Lake Ashtabula from its Devils Lake outlet discharging 250 cfs of West Bay water containing 600 mg/l to 700 mg/l of sulfate and constrained only by a 750 mg/l sulfate limit on the Sheyenne River. However, it appears reasonable to assume that the phosphorous loading would be at least as great as, and probably greater than, from a 300 cfs Pelican Lake outlet constrained by a 300 mg/l sulfate limit and 600 cfs total flows in the Sheyenne River.

In its June 2003 **Response to Comments for the Devils Lake Outlet Project**, the North Dakota Department of Health dismissed the contribution of a 100 cfs Devils Lake outlet constrained by a 300 mg/l limit and 600 cfs total flows in the Sheyenne River to eutrophication and algal blooms in Lake Ashtabula with the statement that:

“. . . the annual phosphorous load will increase; however, its impact on the Sheyenne River and Lake Ashtabula will likely be minimal. Primary productivity is largely controlled by a limiting substance which, in this situation, is likely to be nitrogen.”
(North Dakota Department of Health, 2003)

The Department’s assumption that nitrogen will be the limiting substance for primary productivity in Lake Ashtabula erroneously fails to recognize that, as the Devils Lake Biota Transfer Study pointed out:

“Cyanobacteria often comprise a large and important group of **primary producers** in aquatic ecosystems, but usually are viewed negatively because algal blooms are linked to eutrophication of water bodies, and cyanobacter account for more **than 98% of algal blooms** in some waters [citations omitted]. Eutrophication results from the enrichment of water bodies with limiting nutrients, usually nitrogen and phosphorous. Cyanobacter blooms are often a response to nutrient loading, but some species are **especially responsive to excess phosphorous**. This is because, unlike the vast majority of organisms, many cyanobacter exploit (‘fix’) atmospheric nitrogen as a nutrient. When phosphorus becomes over-abundant, most species increase growth and reproduction until the next most-limiting nutrient, usually nitrogen, becomes scarce. In such an environment, **nitrogen-fixers have an advantage so they soon outcompete other species and dominate the community**. Human activity tends to increase the availability of nitrogen and phosphorus in ecosystems, thus increasing the frequency of cyanobacterial blooms.” (Emphasis added) (Peterson Environmental Consulting, Inc., 2002)

The State Water Commission has neither provided nor cited results of investigations of the impacts on the fish and wildlife values of the Sheyenne River of operation of the Devils Lake outlet at 250 cfs constrained only by a 750 mg/l sulfate limit in the river. Nor has the State Water Commission provided any evidence that those adverse impacts will not be even more severe than those identified by the U. S. Army Corps of Engineers for a 300 cfs Pelican Lake outlet constrained by a 300 mg/l sulfate limit and 600 cfs total flows in the Sheyenne River. Indeed, the only way for the impacts of the State Water Commission’s 250 cfs outlet to be less severe would be if its operations were limited to the point where its effect on the level of Devils Lake would be virtually nil.

IMPACT ON AGRICULTURAL LANDS

The sixth factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89-02-01-09.2 when evaluating the State Water Commission’s application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

“The project’s impact on agricultural lands.”

Because the State Water Commission has neither provided nor cited results of investigations demonstrating that increasing the capacity of the Devils Lake outlet from 100 cfs to 250s cfs would have a significant effect in lowering the level of the lake, there is no evidence that it would have a positive impact on agricultural lands in the Devils Lake Basin. On the other hand, the U. S. Army Corps of Engineers' *Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement* has identified the following impacts to agricultural lands along the Sheyenne River resulting from operation of a 300 cfs Pelican Lake outlet constrained by a 300 mg/l sulfate limit and 600 cfs total flows in the Sheyenne River:

- “As in the case of an overflow, farms that withdraw water from the Sheyenne River or the Red River for irrigation could suffer reduced crop yields from the lower river water quality associated with an outlet. Exacerbated flooding in the Sheyenne River could damage agricultural property, including lands, equipment and structures. . .” (FEIS p. 6-49)
- “An outlet from Devils Lake could diminish property values along the Sheyenne River. The potential adverse impacts to property values would be based on damage in the riparian zone, exacerbated flooding risks, and reduced water quality for agriculture or recreation.” (FEIS p. 6-49)
- “Induced flood plain salinization resulting from the rising water tables of floodplain and adjacent soils in the Sheyenne River above a ‘critical depth.’” (FEIS p. 6-67)
- “Additional salt loading to the floodplain could result from both overbank flooding with mixed Devils Lake/Sheyenne River water and intrusion of this water into adjacent floodplain soils as infiltrated floodwater and groundwater flow. Seepage outflow of mixed Devils Lake/Sheyenne River water could produce additional salt loading to adjacent floodplain soils during periods when the river is contained within the channel.” (FEIS p. 6-67)
- “The outlet would result in increased salinity hazards associated with use of the water for irrigation purposes.” (FEIS p. 6-72)

The impacts on agricultural lands along the Sheyenne River resulting from the operation of a 250 cfs Devils Lake outlet constrained only by a 750 mg/l limit in the Sheyenne River obviously would be much more severe than those of a 300 cfs Pelican Lake outlet constrained by a 300 mg/l sulfate limit and 600 cfs total flows in the Sheyenne River, but the State Water Commission has neither provided nor cited results of investigations qualifying and quantifying those impacts.

REQUIREMENT FOR EASEMENTS

The seventh factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89-02-01-09.2 when evaluating the State Water Commission’s application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

“Whether easements are required.”

Because the evidence is unequivocal and unrefuted that operation of the Devils Lake outlet at 250 cfs will flood and adversely affect downstream lands, it is instructive to note what the U. S. Army

Corps of Engineers' *Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement* stated about the need for easements for a 300 cfs Pelican Lake outlet constrained by a 300 mg/l sulfate limit and 600 cfs total flows in the Sheyenne River:

“Exacerbated flooding along the Sheyenne River could damage agricultural property, including lands, equipment and structures; however, the purchase of flowage easements has been included in the project first cost to address these impacts.” (FEIS p. 6-49)

“The outlet alternative identified may cause some induced flooding along the Sheyenne River. The selected plan involves a 300-cfs constrained flow. The channel capacity of the Sheyenne River between the outflow pipeline and Lake Ashtabula is generally 600 cfs. Below Lake Ashtabula, the channel capacity is approximately 2,000 cfs. Flows from the proposed outlet are not expected to induce flooding below Lake Ashtabula. At some areas on the upper Sheyenne River, 600 cfs would be out-of-bank. The NDSWC completed a channel capacity study in June 1997. This study identified some areas, through cross-sections, that were low. Most of the areas are old ox-bows and meander areas of the river. One area would be able to handle the 600-cfs flow if a set of culverts were removed or replaced with larger culverts. The report concluded: ‘Aerial photos of the channel from Maddock to the Warwick (sic) showed that 600 cfs to 700 cfs could be contained within the channel. Downstream of Warwick, the river meanders significantly, resulting in oxbow flooding at lower flows. In this reach, there is the potential for small, isolated over-bank flow at 600 cfs, mainly in the areas of marshy low lands that are not farmland.’ Areas of over-bank flow at 600 cfs have been identified, and flowage easements are proposed for those areas.

The cost of easements along the upper Sheyenne River, sufficient to cover projected out-of-bank induced flooding between the outlet of the pipeline at Peterson Coulee and Lake Ashtabula, is estimated to be \$3,810,000. Approximately 191 owners may be involved. These owners would include the Fort Totten Reservation and the State of North Dakota. Administrative costs appear high because of the large number of owners (191), and anticipated large number of condemnations, and a higher contingency because of the uncertainties in this project. Current data and projections indicate minimal to no appreciable impacts downstream of Lake Ashtabula; thus there is little to no discernable need for flowage easements in that section.” (FEIS pp. 7-10, 7-11)

The Corps' estimate of the need and costs for flowage easements is based on erroneous information from the State Water Commission in 1997 indicating that the channel capacity of the Sheyenne River from Maddock to Warwick is 600 cfs to 700 cfs. However, the capacity of the channel was subsequently determined by the U. S. Bureau of Reclamation to be 300 cfs at Warwick (U. S. Bureau of Reclamation, 2003) and the channel capacity of the 30 miles of the Sheyenne River upstream from Warwick is even less. Consequently, the \$3,810,000 estimated by the U. S. Army Corps of Engineers in 2003 to be needed to acquire flowage easements from 191 landowners along the Upper Sheyenne River for its 300 cfs Pelican Lake outlet undoubtedly substantially underestimates both the number and the cost of flowage easements for a 250 cfs Devils Lake outlet.

It is important to note again that under NDCC 61-32-03:

“ . . . the water board **may not issue a permit until flowage easements are obtained.**”
(Emphasis added)

However, the State Water Commission not only has not obtained flowage easements from the 191 landowners identified by the Corps of Engineers as being required for the operation of a 300 cfs Pelican Lake outlet constrained by a 300 mg/l sulfate limit and total flows of 600 cfs in the Sheyenne River, but it has provided no information what-so-ever on the number, extent or cost of flowage easements required for its 250 cfs Devils Lake outlet constrained only by a 750 mg/l sulfate on the Sheyenne River.

OTHER FACTORS UNIQUE TO THE PROJECT

Finally, in evaluating the State Water Commission's application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs, NDAC § 89-02-01-09.2 requires the Ramsey County and Towner County Water Resource Boards to consider:

“Other factors unique to the project.”

Certainly, one of the greatest concerns about increasing the capacity of the Devils Lake outlet to 250 cfs expressed by communities along the Sheyenne River downstream from the project has been the adverse impacts on water quality and the increased cost of water treatment for those utilizing the Sheyenne River for their municipal supplies (MacPherson, 2009; Oleson, 2009; Bonham, 2009; Associated Press, 2009a, 2009b, 2009c; D. Olson, 2009; Schmidt, 2009a, 2009b; Browne, 2009; Wetzel, 2010).

It is both relevant and instructive, therefore, to consider what the U. S. Army Corps of Engineers concluded in its *Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement* regarding the impacts of a 300 cfs Pelican Lake outlet constrained by a 300 mg/l sulfate limit and 600 cfs total flows in the Sheyenne River on downstream municipal and industrial water supplies:

“Based on analysis of available data regarding the operations of the **eight affected municipal water treatment facilities**, a computer spreadsheet model was developed to estimate the annual increase in cost that can be expected at each facility due to the change in water quality. Hardness was identified as the major water user concern associated with an outlet. Ion exchange would be needed to treat sulfates but, due to the limited water quality effects resulting from a 300 mg/l sulfate constrained outlet, it was determined that softening was adequate treatment for water users. Cost increases would result from increased softening costs (due to increased chemical feed rates and increases in sludge handling and disposal), and increased capital and operations costs if treatment or an alternative water supply is required to restore the treatment facility finished water quality to without-outlet conditions.

Modeling showed the total annualized costs for increased softening would range from \$25,000 per year to \$56,000 per year, depending on the modeled water quality future. The total annualized cost for capital improvements or alternate source water development required to bring the with-outlet project water to the water quality of without-outlet product water ranged from **\$1,757,000 per year to \$3,304,000 per year**. Sulfate concentration is not a major concern along the Sheyenne or Red Rivers with the Pelican

Lake outlet³. In most cases, treatment by ion exchange was found to be the least-cost alternative if without-outlet water is required.” (Emphasis added) (FEIS p. 6-51)

However, it is just not municipal water supplies that are affected by operation of the Devils Lake outlet:

“Interviews were conducted with all of the industrial river water users along the Sheyenne River and Red River of the North. Two were expected to incur increased costs as a result of the Devils Lake outlet operations. The sugar beet processing facility is expected to have increased lime softening costs as a result of the outlet. The coal-fired power plant’s increased costs relate to additional need for ion exchange water purification for boiler water. On the basis of one of the sample water quality data sets, annualized costs would be expected to be \$1,200 per year for the sugar beet processing facility and \$30,700 per year for the power plant⁴. (FEIS p. 6-52)

On January 2, 2010, the Associated Press reported that:

“David Glatt, environmental health chief for the Department of Health, said no community along the **affected stretch** of the Sheyenne River currently uses it for drinking.

‘You could go to (750 milligrams per liter), but only if it’s not designated as a municipal water supply,’ Glatt said. ‘That stretch, there is no municipality pulling water out of the Sheyenne.’

Glatt said that the higher sulfate levels should be safe for fish, livestock and riverbank vegetation. In any case, the upper Sheyenne River has **naturally high sulfate levels that go above 450 milligrams per liter in spots**, he said.” (Emphasis added) (Weixel, 2010)

At best, Mr. Glatt’s statements constitute a deliberate misrepresentation of the facts in an attempt to obfuscate and evade addressing the impacts of a 250 cfs Devils Lake outlet on downstream municipal water users.

First, as a fundamental consideration, it is important to note that North Dakota Administrative Code § 33-16-02.1-02 dealing with **Standards of Quality of Waters of the State** states explicitly, in part, that:

“The state and public policy is to maintain or improve, or both, the quality of waters of the state and to maintain and protect existing uses. . . **Waters not being put to use shall be protected for all reasonable uses for which these waters are suitable.**” (Emphasis added)

Prior to operation of the Devils Lake outlet, the waters of the Sheyenne River downstream from the outlet were suitable for use as domestic or municipal water supplies, and they are being used

³ Sulfate concentration is a major concern with a 250 cfs Devils Lake outlet constrained only by a 750 mg/l sulfate limit in the Sheyenne River (Browne, 2009; MacPherson, 2009; Wetzel, 2010), and the increased sulfate concentrations would be accompanied by higher levels other constituents, including TDS and hardness, thus increasing the water treatment costs estimated by the Corps for those constituents as well.

⁴ These costs also would be increased as a result of further degradation of water quality caused by increased discharges from the outlet.

as a municipal water supply by eight communities downstream from Baldhill Dam. By Mr. Glatt's own admission, increasing the level of sulfate in the Upper Sheyenne River as a result of operation of the outlet will cause those waters no longer to be suitable for domestic or municipal water supplies—a clear violation of State policy.

Second, Mr. Glatt's statement that no community along the "affected stretch" of the Sheyenne River currently uses it for drinking not only is demonstrably false, but also is deliberately misleading. In an attempt to evade the issue, Mr. Glatt apparently defines the "affected stretch" of the Sheyenne River as only the portion upstream from Baldhill Dam where the Department of Health is proposing permanently to increase the sulfate limit from 450 mg/l to 750 mg/l. Although that may be the portion included in the Department of Health's proposed emergency rule, the entire length of the Sheyenne River, as well as the Red River, downstream from Baldhill Dam also will be "affected" by the increased load of sulfate and other pollutants resulting from the increasing the discharges of the Devils Lake outlet from 100 cfs to 250 cfs.

Indeed, the fallacy of Mr. Glatt's claim that no community along the "affected stretch" of the Sheyenne River uses it for drinking is clearly demonstrated by the fact that his own agency has committed \$2 million—and the State Water Commission has committed another \$9.2 million—to install a reverse osmosis water treatment system in Valley City's new \$15.6 million water treatment plant to reduce the high levels of sulfate in the Sheyenne River resulting from operation of the Devils Lake outlet (MacPherson, 2009). In addition, West Fargo estimates that installing a system to treat sulfates could add \$14 million to the cost of a new water treatment plant (Schmidt, 2009b) and Fargo will receive \$9 million from the State to enhance treatment of sulfates in its new water treatment plant (Schmidt, 2009a). All of these additional water treatment expenditures are made necessary by the increased levels of sulfate in the Sheyenne River caused by operation of the Devils Lake outlet.

Mr. Glatt's statement that the Upper Sheyenne River has naturally high sulfate levels that go above 450 mg/l "in spots" also is deliberately misleading and designed to obscure and misrepresent the facts. It is true that sulfate levels have occasionally exceeded 450 mg/l in some "spots" in the Upper Sheyenne River, but most of those have been in the extreme Upper Sheyenne River above the Devils Lake outlet. For example, Schuh and Hove reported that:

“. . . sulfate samples at Warwick [30 miles downstream from the Devils Lake outlet] never exceeded 300 mg/L before 2,000 and did so only about 25% of the time after 2000. Harvey samples [approximately 30 miles upstream from the Devils Lake outlet], however, exceeded 300 mg/L about 40% of the time during the 1990s, and were below 300 mg/L only three times following the year 2000. . .” (Schuh and Hove, 2006)

Data presented in their report show that the maximum levels of sulfate reached in the Sheyenne River at two Harvey sites were 480 mg/l and 610 mg/l, but the maximum levels reached at two Warwick sites were 230 mg/l and 307 mg/l (Schuh and Rove, 2006). Of course, what Mr. Glatt did not say was that sulfate levels in the Sheyenne River downstream of the Devils Lake outlet never reached 450 mg/l before July 2009 when the North Dakota Department of Health vacated the North Dakota Pollution Discharge Elimination System permit it had issued for the outlet and implemented an emergency rule increasing the sulfate limit in the Upper Sheyenne River from 450 mg/l in order to allow the outlet to discharge 100 cfs of water from West Bay containing 600-700 mg/l of sulfate. What Mr. Glatt also did say is that, by increasing the sulfate limit in the Upper Sheyenne River from 450 mg/l to 750 mg/l, the Department of Health is ensuring that sulfate levels, not just "in spots," but in throughout entire length of the Upper Sheyenne River

from the outlet to Lake Ashtabula will exceed 450 mg/l when the outlet is operating, and they will increase from 300 mg/l or less to nearly 450 mg/l in the Lower Sheyenne River.

CONCLUSIONS

North Dakota Governor and State Water Chairman John Hoeven has submitted Application to Drain No. 3457 to the Ramsey County and Towner County Water Resource Boards for a permit to increase the capacity of the State Water Commission's Devils Lake outlet from 100 cfs to 250cfs. However, the State Water Commission has failed to provide or to cite the results of the investigations required by North Dakota Century Code § 61-32-03 to disclose whether the quantity of water which will be drained from Devils Lake will flood or adversely affect lands of downstream landowners. The State Water Commission also has failed to obtain flowage easements from the downstream landowners whose lands will be adversely affected, as required by NDCC § 61-32-03.

The State Water Commission also has failed to provide any substantive information regarding the volume of water proposed to be drained as a result of increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs, and the resulting impact on the Sheyenne River, regarding adverse impacts that may occur to the lands of lower proprietors, regarding the project's impact on flooding in the project watershed, regarding the project's impact on waters having recognized fish and wildlife values, regarding the project's impact on agricultural lands, regarding easements that will be required, and regarding other factors unique to the project that would permit the Ramsey County and Towner County Water Resource Boards to evaluate the application objectively under the provisions of North Dakota Administrative Code § 89-02-01-09.2.

Although the State Water Commission has failed to provide substantive information to enable the Ramsey County and Towner County Water Resource Boards to discharge their responsibilities in evaluating the application under NDCC § 61-32-03 and NDAC § 89-02-01-09.2, the preponderance of the evidence available from investigations conducted by other agencies, notably the U. S. Army Corps of Engineers, unequivocally demonstrates that increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs will adversely impact the Sheyenne River, flood and adversely affect the lands of lower proprietors, adversely impact fish and wildlife, adversely impact agricultural lands, require at least 191 flowage easements costing in excess of \$3.8 million, increase downstream municipal water treatment costs by at least \$1.7 to \$3.3 million per year, and will not have a significant effect in reducing flooding problems in the Devils Lake Basin.

Because the State Water Commission has failed to conduct the investigations and to provide the information required under NDAC § 61-32-03 and NDAC § 89-02-01-09.2 and because the available evidence overwhelmingly and unequivocally confirms that the State Water Commission's proposal to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is devoid of merit or justification, the Ramsey County and Towner County Water Resource Boards have no alternative under the applicable statutes and regulations except to deny the State Water Commission's Application to Drain No. 3457 for a permit to increase the capacity of its Devils Lake outlet to 250 cfs.

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