

THE *Sheyenne*: SACRIFICED FOR POLITICAL EXPEDIENCY



Erosion along the Sheyenne River is increased by outlets from Devils Lake below that flow into the Sheyenne River.



Since 1993 Devils Lake rose about 29 feet, from 1423 feet above mean sea level to a height of 1452 feet above msl in the spring of 2010. The lake will have to rise over six feet more before it overflows into the Sheyenne River through the Tolna Coulee at 1458 feet. One must remember that the Devils Lake rise is a mixed blessing, and that Devils Lake area residents only object to the top five or six feet of water on the lake, the first 23 feet of rise being beneficial and producing the fishing and recreation industry that drives much of the local economy. When the lake falls to a height of 1445 no further outlet pumping will be used or permitted.

In other words, over a billion dollars has been spent attempting to keep most of the water in the lake while dumping some of the worst quality water on to people downstream along the Sheyenne River. Poor water quality-

-which progressively deteriorates from West Bay to East Bay and Stump Lake--and quantity concerns fuel downstream objections. Threats of flooding along the Sheyenne River and damage to the river ecosystem grow. Those opposed to using the Sheyenne as a drainage ditch for Devils Lake water insist that outlets will only add to downstream damage and shift the water burden from the Devils Lake basin onto downstream communities and landowners.

After years of avoiding all demands for scientific data that would explain why Devils Lake rose--thereby influencing methods to reduce its rise--in November 2010 upper basin Devils Lake drainers apparently got a free pass to dump degraded water into the Sheyenne without any water quality restrictions at all.

PRODUCED BY

PEOPLE TO *Save* THE SHEYENNE

Box 252
Valley City, North Dakota 58072
Winter 2010
www.savethesheyenne.org

Below is the letter North Dakota Senators Byron Dorgan and Kent Conrad wrote to inform the Devils Lake mayor how they helped solve the water problem on Devils Lake. It is important to note their aim in trying to avoid the use of the Clean Water Act and any restrictions on the transfer of water from Devils Lake into the Sheyenne River.

United States Senate
Washington, DC 20510
November 22, 2010

Richard Johnson
Mayor
City of Devils Lake
423 6th Street NE
Devils Lake, ND 58301

Dear Mayor Johnson:

We write to you with important news regarding our efforts to advance solutions to Devils Lake flooding. As you well know, we have had numerous conversations with the state in the past several months about the need to reduce the risk of an uncontrolled overflow of Devils Lake by increasing controlled releases through the existing outlet and another one planned for the eastern end of the lake. The state has maintained that the primary constraint keeping it from moving forward was a need to get the Environmental Protection Agency (EPA) to approve of a permanent change or variance in water quality standards on the lower Sheyenne and Red rivers to avoid legal challenges under the Clean Water Act.

In response to this concern, we have had numerous conversations with the Vice President and the EPA to make sure the EPA does not stand in the way of appropriate state action to move more water off Devils Lake in a controlled manner. In recent days, we have had very good news. At our request, the Obama Administration conducted a review of this question and has concluded that the EPA's Water Transfer Rules means that the state can proceed, without EPA approval, to move more water off the lake without being constrained by the current water quality standards downstream. EPA has confirmed this interpretation in conversations with our staffs. As a result, a permanent change or variance in water quality standards is not necessary.

Adopted in June 2008, the Water Transfer Rule allows for the transfer of raw water within the state from one navigable body of water to another without a National Pollutant Discharge Elimination System (NPDES) if the water is not altered or put to an intervening use. In response to this rule, the previous state NPDES permit for the state outlet was subsequently withdrawn. Absent the need for a permit, the EPA has indicated it has no jurisdiction or authority to enforce water quality standards set by the state under the Clean Water Act. Further, EPA has noted that the State of Minnesota would have no recourse under the Act to block releases over concerns about water quality standards on the Red River.

As a result of this determination, it is our understanding that the state now has considerable and immediate flexibility to operate the outlet without being constrained by water quality standards. This news is a significant step forward in allowing for additional releases of the lake from the state outlet and through an east end outlet.

We appreciate your leadership and look forward to our continued cooperation as we advance solutions to this disaster.

Sincerely,

(Signed)
Kent Conrad
United States Senate

Byron L. Dorgan
United States Senate

The senators' letter appears to conclude that, based on the WTR, water quality standards on the Sheyenne River will not be taken into consideration when Devils Lake outlets are built. That is, the damaging effects of Devils Lake water on the ecosystem of the Sheyenne and the fact that some of the beneficial uses of the river will be lost will not prevent outlets from being built and used.

Those who wish to solve the Devils Lake water problem by taking as much water as possible from the lake are on one side. On the other, People to Save the Sheyenne and others downstream who oppose using the Sheyenne River as a drainage ditch.

Lower Sheyenne River residents believe that the high water problem on Devils Lake can only be addressed by doing a thorough, scientific study to determine the causes--many believe that wetland drainage is one of the main causes--of the high water problem. After that, state and federal agencies must conduct a detailed analysis of the most beneficial and least damaging methods of dealing with the water. Only then should a plan to deal with problem water be implemented, including retention.

This booklet summarizes the facts about this complex issue. Failure to recognize downstream impacts before undertaking effective action against the major underlying cause of the high water level on Devils Lake could result in the Sheyenne River being sacrificed for political expediency: A political solution to an environmental problem.



NORTH DAKOTANS, OTHERS BEING MISLED

DEVILS LAKE IS NOT THE EMERGENCY THEY MAKE IT OUT TO BE

Some people claim high water around Devils Lake is an emergency because, they say, the lake will soon rise and overflow into the Sheyenne River, causing a catastrophic flood, a wall of water downstream. The probability of an overflow is less than seven percent in the next twenty years with the present outlet in operation, State Engineer Todd Sando testified in Devils Lake, July 8, 2010. In the fall of 2010 the height of Devils Lake was about 1451.3 feet above mean sea level. The lake will not overflow until it reaches 1458 feet above msl. In other words, there is a ninety-three percent chance Devils Lake will not overflow soon. And this exaggerated prediction is based on a worst-case wet scenario, not a dry one.

About declaring an emergency.

At the request of the Devils Lake City Commission, in September 2010 the Water-related Topics Overview Committee of the North Dakota Legislature prepared the following draft for the 2011 legislative session:

A BILL for and ACT to authorize construction of a Devils Lake east end flood control structure; to provide an appropriation; and to declare an emergency.

BE IT ENACTED BY THE LEGISLATIVE ASSEMBLY OF NORTH DAKOTA:

SECTION 1. Devils Lake east end flood control project authorization. In order to protect the health, safety, and welfare of the people of the Devils Lake basin, Sheyenne River drainage basin, and Red River drainage basin, the state water commission shall design and construct a structure on the east end of Devils Lake to prevent a catastrophic, uncontrolled release of water from Devils Lake.

SECTION 2. APPROPRIATION. There is appropriated out of any moneys in the _____ fund in the state treasury, not otherwise appropriated, the sum of \$ _____ or so much of the sum as may be necessary, to the state water commission for the purpose of designing and constructing a Devils Lake east end flood control structure, for the biennium beginning July 1, 2011, and ending June 30, 2013.

SECTION 3. EMERGENCY. This Act is declared to be an emergency measure.

DEVILS LAKE OFTEN CALLED AN EMERGENCY

Devils Lake, rising since 1940, due in large part to upper basin wetland drainage, was declared an emergency on October 23, 1997, and the Devils Lake Emergency Management Committee was formed to deal with high water around Devils Lake. The group declared an “EMERGENCY TODAY” and, they proclaimed, “It started in 1993.”

In fact, the committee hired Devils Lake Temporary Emergency Downstream Acceptance Coordinator, Joe Belford--who has been paid \$45,000 annually by the North Dakota State Water Commission, Garrison Diversion, and Devils Lake Basin Advisory Committee--to promote outlets into the Sheyenne River.

- July 7, 2009, the Devils Lake City Commission declared an “emergency.”
- July 13, 2009, the ND State Water Commission requested the Department of Health to declare the Devils Lake situation an emergency.
- July 15, 2009, the Department of Health asked Governor Hoeven to approve an emergency.
- Governor Hoeven approved the emergency request the same day.
- The Devils Lake City Commission declared another “emergency” Sept. 23, 2010.
- Declaring an emergency does not make it one.

The question remains: What determines an emergency? Will Devils Lake rise and overflow through the Tolna Coulee, causing a downstream flood? Will it happen within the next two or three years? History and science say no, the Tolna Coulee will not erode. [See the Tolna Coulee section.] But to be on the safe side, if the Tolna Coulee is armored, that is, protected from erosion, then that will eliminate the emergency attached to this event.

In fact, if East End Devils Lake water is dumped into the Sheyenne River, that will create an emergency downstream on the Sheyenne, both in terms of water quality and quantity. Those who cause such an action will be responsible for the disastrous consequences to the river’s ecology and to the people living along the river.

Thus the label “emergency” or “crisis” cannot be fairly used about Devils Lake.

PROPOSED DEVILS LAKE SOLUTION: THE THREE-LEGGED STOOL

The solution to high water on the lake that Devils Lake area residents and area promoters first suggested was the three-legged stool. One leg represented protecting infrastructure in and around the city of Devils Lake. Over a billion dollars has been spent on building dikes and levees, raising roads and moving structures. The second leg represented an outlet from the lake into the Sheyenne River. To get the job done without an Environmental Impact Statement and for less money than the Corps Pelican Bay project at the time, the North Dakota State Water Commission built its own outlet in 2005. The third leg of the stool has yet to be used in any measureable way. While there were several thousand acres in wetland storage in the 1990s, only about five hundred acres remain.

Instead of trying for more storage, what Devils Lake outlet advocates want is to move more water from Devils Lake into the Sheyenne River. As the claim of an emergency is false, so is the claim that upper basin drainage does not add significantly to the rise of Devils Lake false.

But in making their case for pumping additional Devils Lake water into the Sheyenne River, outlet advocates fail to mention the effect upper basin drainage has had on the addition of water to the lake. Neither North Dakotans nor the Federal Task Force and others have been given the facts. Neither drained wetlands nor downstream damage have been included in their proposals. As a result of water from the Devils Lake outlet, Valley City residents will suffer

additional property losses and increased water treatment costs. The West Bay Devils Lake Outlet already pumps 250 cubic feet per second (cfs) into the Sheyenne River. No further pumping should be allowed until upper basin storage has been implemented in an amount equal to outlet discharge.

East End Devils Lake water will add to Sheyenne River problems, increasing erosion and flooding damage and degrading water quality in the river. (Stump Lake water is 10-15 times as bad as that in the Sheyenne River.)

The answer that downstream Sheyenne River interests promote is to actually use the third leg of the three-legged stool. **Restore upper basin drained wetlands. Let water stay where it falls.**

Then foil the Fear. Armor the Tolna Coulee. There will be no wall of water. No poor quality Stump Lake or East End water should be allowed to drain into the Sheyenne River. The Sheyenne River is already being contaminated by Devils Lake water from West Bay through the outlet at 250 cfs.

[Both the Valley City Commission and the Barnes County Commission passed resolutions in September 2010 supporting armoring the Tolna Coulee.]

CLOSE THE TAP.

Finally, declare a moratorium of further drainage.

WHAT HAPPENED TO ALL OF THE DRAINED WETLANDS?



Outlet proponents claim, “All of the wetlands are full.”

However, drained wetlands no longer hold water. Instead, they are farmed and produce canola, barley, durum, corn, and other crops. The water they once held now covers someone else’s land in the lower part of the basin. Aerial photos of upper basin farmland taken July 4-8, 2010, reveal thousands of acres of former wetlands now being farmed.

These photographs show that most of the land in the upper basin of Devils Lake is free of water, not full of water as has often been said.

These pictures were taken in an area north of Devils Lake and between Highway 1 and Langdon on the east, to Highway 281 and Cando on the west. Of course, not all of the wetlands in this area have been drained, as an area north of

Lakota shows. But thousands of sloughs in hundreds of sections of land in the upper basin have been drained over the past fifty years and now are relatively free of standing water.

The photos illustrate that drained wetlands do not hold water. The water that falls on these acres is either absorbed or quickly flows down to Devils Lake through the channels, gullies, and coulees that can be seen in the pictures. Small channels can be seen leading into larger ones as the land slopes south. Water gathers in larger coulees such as the Edmore, Starkweather, Mauvais and Calio Coulees, rivers adding water to Devils Lake.

Pictures reveal how and why over 358,000 acres of drained wetlands--from a total of about 569,000 acres of wetlands at statehood--in the upper basin help contribute to the water that flows into Devils Lake each year.

CAN OUTLETS SOLVE THE DEVILS LAKE WATER PROBLEM?

The Devils Lake Temporary Emergency Outlet was completed by the NDSWC--without any impact studies to support it--in 2005 at a cost of about \$28 million. It was meant to pump 100 cubic feet per second (cfs) from West Bay with a sulfate maximum of 300 milligrams per liter. The outlet pumped about 40 acre-feet that year, none in 2006, and only about 298 acre-feet in 2007. The reason? Outlet operation was restricted to a sulfate limit of 300 milligrams per liter by the North Dakota Health Department permit to drain. Anyone who understood the levels of sulfate in both the Sheyenne and Devils Lake knew beforehand that very little water could be pumped if limited by those parameters.

By the time the outlet was built, the sulfate levels in the Sheyenne River above Flora had already risen to about 300 mg/L and the levels in West Bay were about 600 mg/L. Mixing West Bay water with that in the Sheyenne violated permit limits. Pumping increased slightly in 2008 when the sulfate limit was raised to 450 mg/L. Still, the sulfate limits allowed very little pumping.

As a result, in 2009, after Governor Hoeven declared an emergency, the North Dakota Department of Health raised

the sulfate limit to 750 mg/L (in 2010 the EPA approved of the permit change) and pumping from the West Bay outlet was increased to 250 cubic feet per second. The cost to add pumps and increase the flows amounted to another \$15 million or so. Still without an Environmental Impact Statement.

Pumping at 250 cfs could remove up to 100,000 acre-feet per year from Devils Lake, about 4-5 inches of water from the lake. Still, that is not enough for outlet promoters. They want to drain more water into the Sheyenne River, most of it from the East End where water quality is the worst. Outlet promoters want to “relax” water quality standards so East Bay and Stump Lake can be “freshened” by moving the poorest quality water from the lake into the Sheyenne River.

North Dakota State water quality standards for the Sheyenne River presently would prevent that from happening. Present limits of sulfate in the Sheyenne are 750 milligrams per liter (mg/L) from the river’s beginning to a tenth of a mile below Baldhill Dam. Below the dam, the sulfate limit remains at 450 mg/L.

The irony is that drainage promoters want to destroy the Sheyenne River to save it from an overflow, and they want downstream Sheyenne River users to agree to its destruction.

Outlets into the Sheyenne River cannot keep up with inflows from the drained sloughs in the upper basin of the lake into Devils Lake itself.

HOW MUCH IS 1000 CUBIC FEET PER SECOND?



The Devils Lake and West Bay outlet pumps water at 250 cubic feet per second into the Sheyenne. Some people want to increase that to 1000 cubic feet per second. How much is that?

Imagine a constant flow of grain trucks (or boxcars) fifty feet long, five feet wide and four feet deep (50' length x 5' wide x 4' deep = 1000 cubic feet) charging sideways down the Sheyenne River. That's 1000 cubic feet of water going by every second. [A cubic foot is 1' x 1' x 1' and if filled with water would hold about 7.5 gallons and would weigh about 60 pounds.]

One per second going by would be sixty boxcars every minute, 3600 every hour. In a day that amounts to 86,400 trucks (or boxcars). If they were 100-car unit trains, that would be 864 trains, or a train every two minutes.

If you want to do the math, multiply each cubic foot by 7.5 and you will see that 27,000,000

gallons go by per hour. How many per day? Year?

That's a lot of water. Then add regular river flows to that and you can see that the chances of adding to flooding increase significantly. And bank erosion is multiplied several times, as this amount is constant.

Going the other direction, into larger, rather than smaller units, 1000 cubic feet per second works out to 8,640,000 cubic feet per day, and that's about 200 acre-feet [one acre is 43,560 square feet]. So the West Bay outlet now pumps at about 50 acre-feet each day, 1500 each month, and about 100,000 acre-feet in a pumping season. About 6-7 inches off Devils Lake. Pumping at 1000 feet per second would quadruple that to 400,000 acre-feet per year.

Downstream, Lake Ashtabula holds about 70,000 acre-feet. Pumping at 1000 feet per second would mean Devils Lake water would fill the lake over six times per year.



TROUBLE WITH OUTLETS

Draining water from Devils Lake into the Sheyenne River increases downstream flooding and bank erosion as well as degrading the water quality in the river so much that the river ecosystem will never be the same.

VALLEY CITY AND ITS WATER TREATMENT PLANT IMPACTED

The City of Devils Lake does not use Devils Lake water for drinking. Valley City does use Sheyenne River water for drinking. Fargo uses Sheyenne River water for drinking when the Red River is low and when it contains high levels of sulfate and other contaminants.

The proposed solution for Devils Lake--that is, more drainage from the lake into the Sheyenne--creates serious problems downstream. Costs published so far include adding reverse osmosis (some say the treatment method will actually be nanofiltration, rather than reverse osmosis) to the Valley City water treatment plant at a cost of \$14.6 million. A breakdown: From the North Dakota State Water Commission (SWC), \$9.2 million; \$800,000 in grants provided by Senator Byron Dorgan; a \$2.6 million forgivable loan; and a \$2 million loan payable over 20 years @ 1%. [Times-Record, 8-13-2010]

OTHER QUESTIONS ABOUT DOWNSTREAM EFFECTS

- How much will the cost of treating municipal water in Valley City increase after the new treatment plant is functional? Who will pay for it?
- What added costs will result from recycling waste water from the treatment process? Who will pay?
- How much more flooding will occur in Valley City and Lisbon, for example, as well as all along the river? Who is responsible for downstream impacts such as added erosion and increased flooding?
- How will higher river water flows affect the flood plain and, in turn, the cost of flood insurance?
- Were studies done to compare all of the water treatment options available to Valley City before the present plan was accepted?
- Were Valley City residents informed of the options available? Were residents involved in making decisions about how to deal with the addition of Devils Lake water to the Sheyenne River?
- Are contracts in place between Valley City and the state agencies for both construction costs and operation and maintenance costs for whatever water treatment plan is implemented?

THE SHEYENNE RIVER FISHERY AND THE U.S. FISH HATCHERY NORTH OF VALLEY CITY

- Increasing the amount of Devils Lake water between Baldhill Dam and Valley City could have serious impacts on the U.S. Fish Hatchery three miles north of town. The hatchery raises 2-4 million northern pike, walleye, muskie, bass and other species fingerlings yearly for stocking many North Dakota rivers, lakes and reservoirs. Devils Lake water quality could put the hatchery at risk.
- The Sheyenne has 39 fish species and 11 species of mussels, the most of any North Dakota river. Mussel species cannot reproduce in Devils Lake quality water, and fish cannot reproduce in Stump Lake water.
- **How much is a species worth? A fish hatchery?**
- Some people say that fish and mussels are like canaries in a coal mine: when they die, it means the environment is deadly. Fish and mussels actually live in the river, however, and when they die, there is no environment in which they can be replaced.

HEALTH ISSUES

- West Bay of Devils Lake contains over 600 mg/L of sulfate. Sulfates are higher in all of the other parts of Devils Lake.
- Sulfate can cause diarrhea and add to other health problems.
- The EPA suggested standard for sulfate in drinking water is 250 mg/L.
- Baby formula should not be made with water containing more than 450 mg/L sulfate. (Minnesota Department of Health)
- "The threshold level for sulfates was assumed to be 450 mg/L for all livestock."
- High levels of the other contaminants in Devils Lake water add to problems using the water: Chlorides, phosphorous, nitrates, total dissolved solids, arsenic, mercury and others.

Where are the studies showing what the effects of Devils Lake on humans will be?

Downstream impacts and economic issues have yet to be addressed. With added bank erosion and potential flooding frequency as well as magnitude, property values in Valley City, around Lake Ashtabula and all along the river may be affected. Who will be responsible for real property losses and other losses, the intangible ones?

Using the Water Transfer Rule implies that the downstream damages caused by drainage could be ignored, making the Sheyenne River the victim of upper basin drainage.

U.S. 2003 ARMY CORPS OF ENGINEERS FINAL ENVIRONMENTAL IMPACT STATEMENT on the Pelican Lake Outlet Plan listed some of the downstream impacts of that project, which, because of its cost--over \$200 million--was not built.

Significant downstream damages would occur, according to the U. S. Army Corps of Engineers' 2003 *Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement*. The Corps estimated these downstream costs to be over \$30 million. Listed below are some of the impacts of a 300 cfs outlet constrained by a 300 mg/L sulfate limit and 600 cfs flows in the Sheyenne River:

- Additional salt loading to the floodplain and reduced irrigated crop production
- Diminished property values along the river
- Changes in species composition and abundance
- Increased flooding, bank erosion and changes in channel morphology
- Increased nutrient loading and salinity in Lake Ashtabula affecting walleye production
- 112,000 acres along the river affected by groundwater changes
- Loss of larger overstory forest trees and shift from woods to open community type
- Increased annualized water treatment costs ranging from \$1,757,000 to \$3,304,000 per year.

Instead, North Dakota built its own outlet. One of the differences between the North Dakota State Water Commission outlet presently operating and the U.S. Army Corps of Engineers outlet is that the NDSWC outlet plan does not include any provisions for downstream damage. Another difference between the state and federal outlet plans is that the Corps outlet plan would have taken water from Pelican Lake, where water quality is similar to that in the Sheyenne River. The ND State Water Commission outlet takes poorer quality water from West Bay of Devils Lake.

Both the water quality and the water quantity impacts of the State's current West Bay outlet, operating at 250 cfs and a 750 mg/L sulfate limit on the Sheyenne River will be significantly greater than the impacts of the 300 cfs outlet constrained by a 300 mg/L sulfate limit that was evaluated by the Corps of Engineers. Still, downstream damage from the West Bay outlet has not been addressed.

CONSIDER STORAGE AND EVAPORATION

Most people who understand the details of the issue of high water on Devils Lake believe that trying to remove water from the lake as fast as it comes in is a losing proposition. The West Bay Devils Lake outlet currently pumps water into the Sheyenne River at 250 cubic feet per second. The outlet will remove about 100,000 acre-feet annually, lowering the lake about six inches. At the same time, inflows from drained wetlands average 240,000 acre-feet per year. **Evaporation will remove about thirty inches from Devils Lake each year**--six inches or so in July alone. More than the outlet will remove all year.

Evaporation would remove thirty inches annually from upper basin sloughs also, preventing water from flowing into Devils Lake and leaving the sloughs dry for the following year.

In fact, the more Devils Lake rises, the less good an outlet will do. Should the lake reach 240,000 acres in size, for example, an outlet would remove only three or four inches per year. At the same time, the larger the lake, the more evaporation. From a lake at 240,000 acres in size, evaporation will remove 600,000 acre feet each year. At its current size of 180,000 acres, evaporation is removing about 450,000 acre-feet per year.

Draining more water from the lake won't solve the water problem on Devils Lake. Turn off the taps.

DEVILS LAKE BACKGROUND

In the beginning, after the glaciers melted away, the Devils Lake Basin in North Dakota was one large tub. The size of the entire basin, actually a Red River of the North sub-basin, is 3810 square miles. [This area is about 5 1/2 percent of the area of North Dakota.] The basin itself used to contain hundreds of thousands of wetlands--or sloughs. Over time, Devils Lake rose and fell as the climate changed from wet to dry, dry to wet. Devils Lake is now in one of its filling cycles.

In the past whenever it reached a height of 1459 feet above mean sea level, the lake overflowed through the Tolna Coulee into the Sheyenne River. Devils Lake overflowed several times during the past ten thousand years, the last time over a thousand years ago. Since scientists don't have all of the data, we don't know how much precipitation it took to raise Devils Lake to the point of overflow in the past. Since thousands of acres of wetlands have now

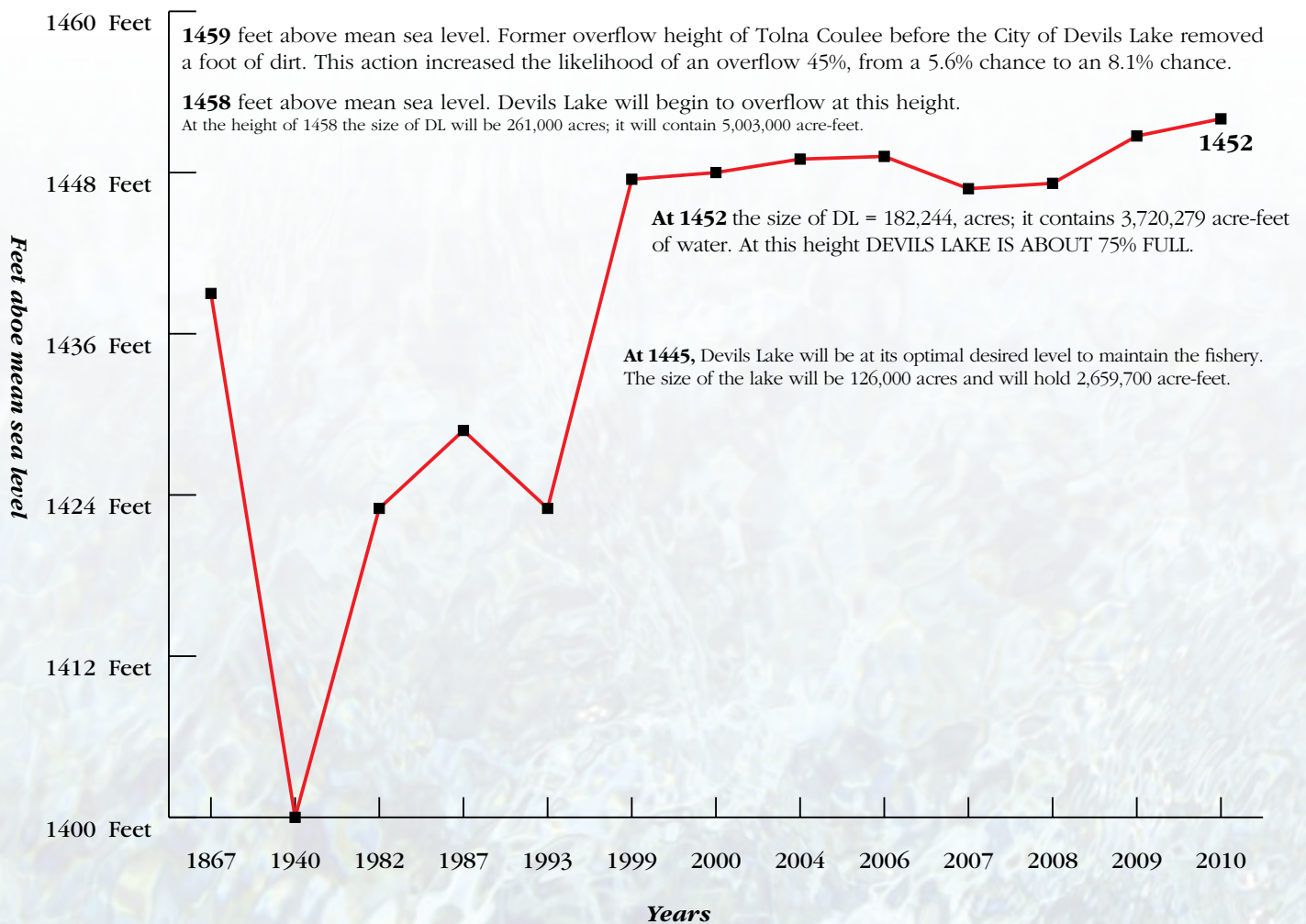
been drained, and the Devils Lake Basin is no longer in its natural condition, we don't know how much precipitation will be needed to raise the level of the lake to the point of overflowing. But with over 350,000 wetland acres having been drained, Devils Lake will certainly fill sooner than it would have in the past. And since the City of Devils Lake removed a foot of dirt from the Tolna Coulee in 2009, the lake will overflow sooner than it otherwise would have.

Devils Lake rose from a height of 1410 feet msl in 1970 to 1425 feet msl in 1975, then from 1423 in 1980 to about 1452 in the spring of 2010. Indeed, the lake would not have risen so dramatically without the addition of runoff water from drained wetlands in the Upper Basin. Intact wetlands hold water, every year, allowing over thirty inches to evaporate or leech into the ground.

Note: Devils Lake has risen only three feet in the last six years. [See below.]

DEVILS LAKE FLUCTUATIONS OVER TIME

[Not to scale.]



WHERE DOES DEVILS LAKE WATER COME FROM?

PRECIPITATION

Some of the water flowing into Devils Lake from the upper basin comes from higher levels of precipitation since 1993. Annual rainfall amounts have gone up from about 17 inches per year on average to about 21 inches. Prior to 1989, precipitation in the Devils Lake Basin area averaged 16.98 inches per year, and from 1989 through 2009 precipitation averaged 20.55. From 1992 through 1999 it averaged slightly more than 21.1 inches per year. (West Consultants Study 2001)

WETLAND DRAINAGE

But four extra inches per year would not add two or three feet to the level of the lake in a year without the extra water draining into the lake from over 350,000 acres of drained wetlands in the upper basin.

A few people go so far as to claim that water from drained wetlands “Would have gotten there [into Devils Lake] anyway.” **Nonsense. Water doesn't drain from a tub until someone pulls the plug. Thousands of plugs have been pulled and their water drains directly into Devils Lake.**

INFLOWS INTO DEVILS LAKE FROM THE UPPER BASIN

WHATEVER the total number of drained acres, from 189,000 to 358,000 acres that once were wetlands, now they no longer hold water. Of the precipitation that falls on those acres, what does not evaporate or sink in, runs off. The results can be seen in the amount of inflows from the upper basin into Devils Lake each year.

| | |
|---|---------------|
| 1979 inflow into Devils Lake | 248,000 ac/ft |
| 1987 inflow into Devils Lake | 174,000 ac/ft |
| 1988 inflow into Devils Lake | 19,700 ac/ft |
| 1993-1999 average annual inflows into Devils Lake | 317,000 ac/ft |
| 1997 previous record inflow | 522,000 ac/ft |
| 2009 (record) inflow into Devils Lake | 587,000 ac/ft |
| Average inflow for the last 17 years | 240,000 ac/ft |

FIFTY YEARS OF DRAINING WETLANDS

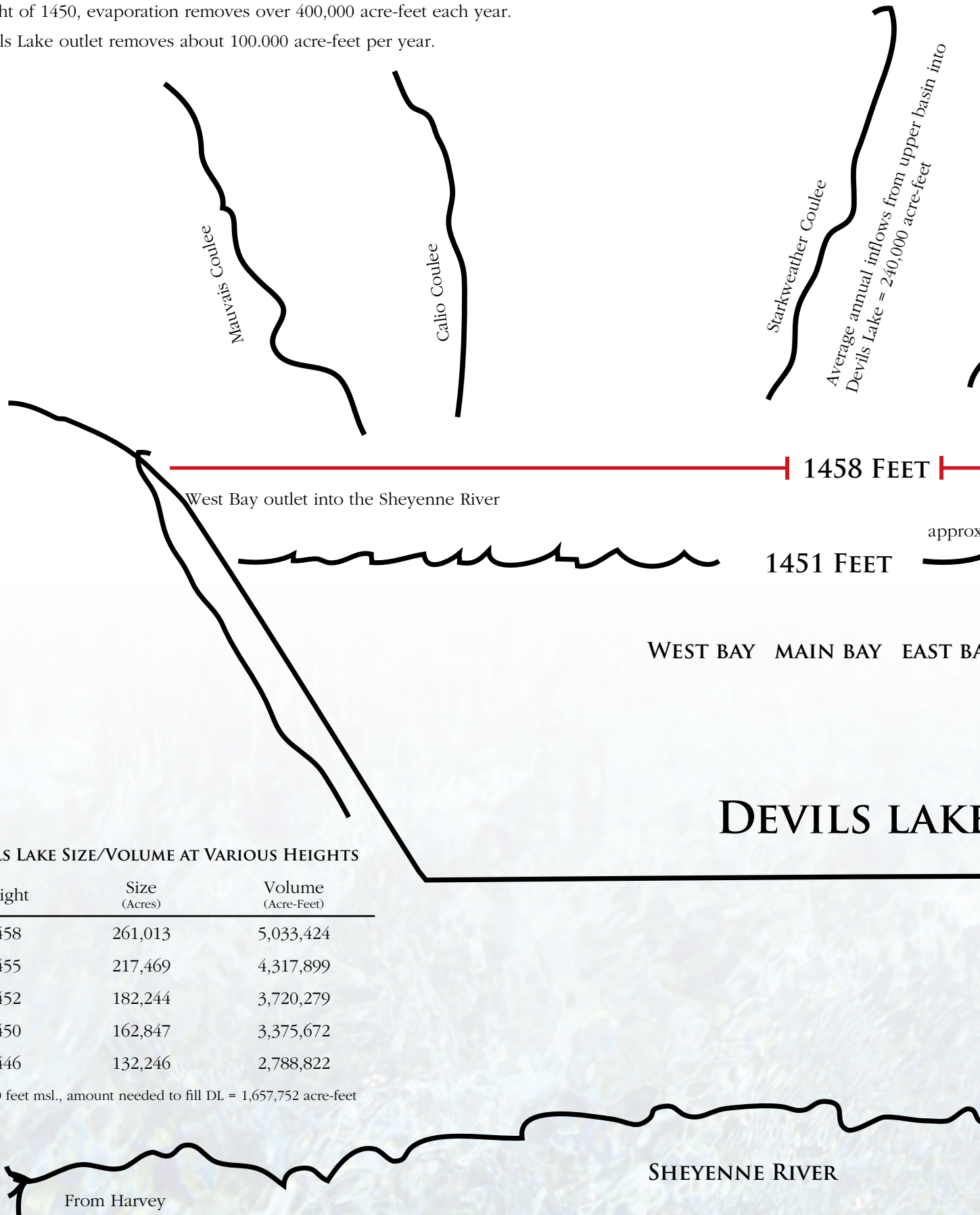


As upper basin wetlands were drained, the water they once held flowed into gullies and coulees on their way to the lake below. Wetlands became faucets helping to fill the larger Devils Lake tub. Individually, drained wetlands became small faucets, and when combined by the thousands, their flow became small rivers, churning from the upper basin to the lower through the Edmore Coulees, Starkweather, Mauvais, Little Coulee and others. Late spring and summer flows through these coulees can be measured in the thousands of cubic feet per second.

Evaporation removes an average of 30 inches per year from the lake and from all of the wetlands (sloughs) in the upper basin.

At a height of 1450, evaporation removes over 400,000 acre-feet each year.

The Devils Lake outlet removes about 100,000 acre-feet per year.



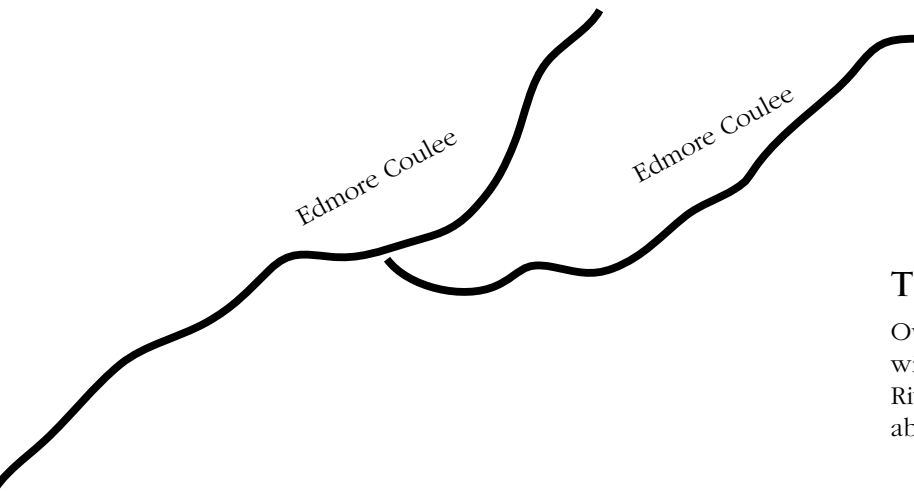
DEVILS LAKE SIZE/VOLUME AT VARIOUS HEIGHTS

| Height | Size (Acres) | Volume (Acre-Feet) |
|--------|--------------|--------------------|
| 1458 | 261,013 | 5,033,424 |
| 1455 | 217,469 | 4,317,899 |
| 1452 | 182,244 | 3,720,279 |
| 1450 | 162,847 | 3,375,672 |
| 1446 | 132,246 | 2,788,822 |

At 1450 feet msl., amount needed to fill DL = 1,657,752 acre-feet

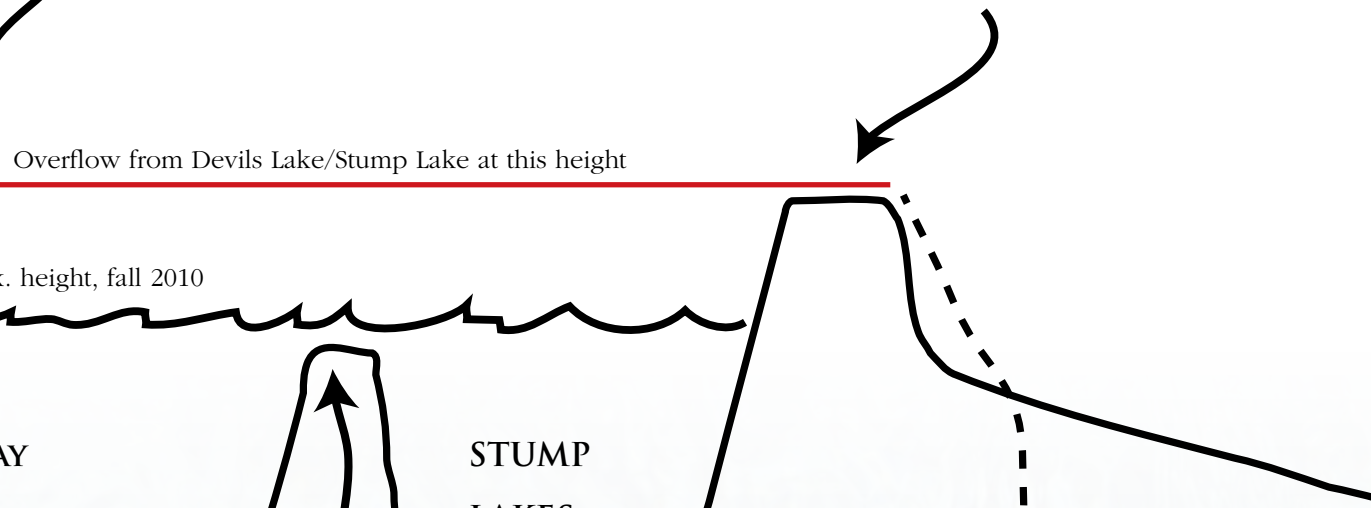
UPPER BASIN DEVILS LAKE

Overflow from Devils Lake/Stump Lake will start to flow into the Sheyenne River when the lake rises to 1458 feet above mean sea level.



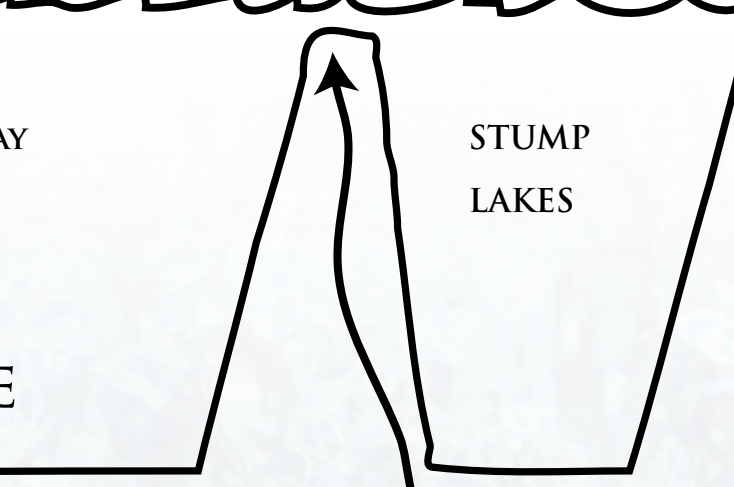
TOLNA COULEE

Overflow from Devils Lake/Stump Lake will start to flow into the Sheyenne River when the lake rises to 1458 feet above mean sea level.



Overflow from Devils Lake/Stump Lake at this height

... height, fall 2010



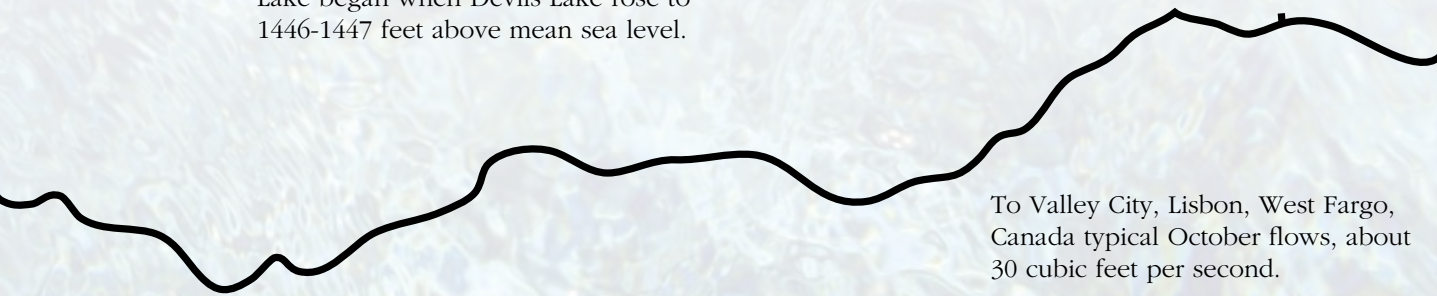
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STUMP
LAKES

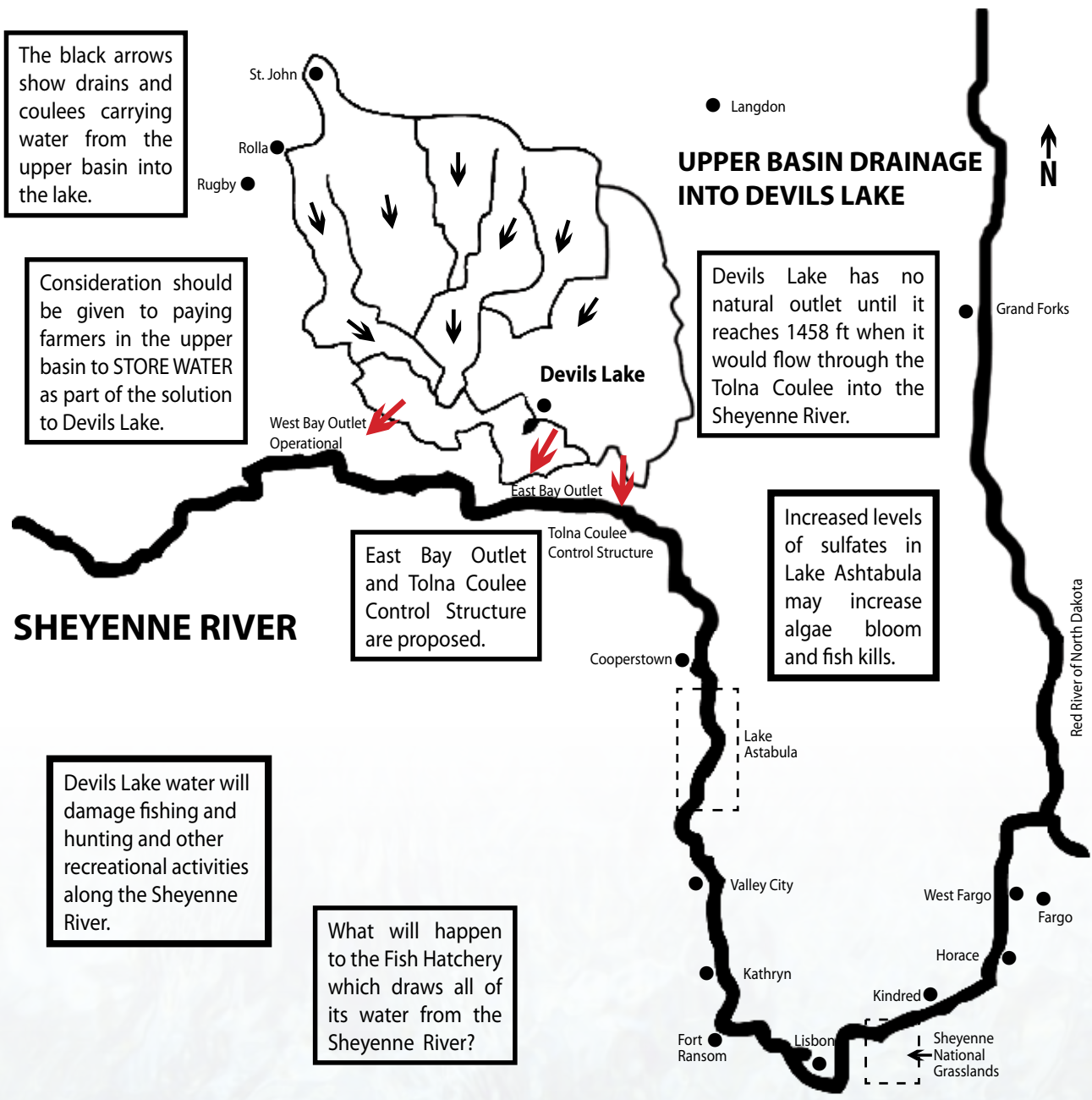
JERUSALEM COULEE

Overflow from East Bay into Stump Lake began when Devils Lake rose to 1446-1447 feet above mean sea level.



TOLNA

To Valley City, Lisbon, West Fargo, Canada typical October flows, about 30 cubic feet per second.



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NUMBER AND ACREAGE OF DRAINED SLOUGHS IN THE DEVILS LAKE BASIN

A study done for the North Dakota legislature--the **1976 Devils Lake Basin Advisory Committee Report**--showed that 569,000 acres of wetlands existed in the basin at statehood. A 1983 US Fish and Wildlife-SWC study--**Wetland Storage Capacity of Natural Depressions in the Devils Lake Basin of North Dakota**-- arrived at a total of about 400,000 acres. And in January 1999 the US Fish and Wildlife Service (W. Pearson email "Rationale") also estimated that about 400,000 acres of sloughs (wetlands) existed originally.

ORIGINAL WETLAND ACRES IN THE UPPER BASIN OF DEVILS LAKE:

| | |
|---|---------------|
| DEVILS LAKE BASIN ADVISORY COMMITTEE (1976) | 569,000 acres |
| LUDDEN, FRINK and JOHNSON (1983) | 412,000 acres |
| U.S. FISH and WILDLIFE SERVICE (1999) | 400,000 acres |

REMAINING (NOT DRAINED) WETLAND ACRES IN THE UPPER BASIN:

| | |
|--|---------------|
| U.S. FISH and WILDLIFE SERVICE & ND STATE ENGINEER (January 1997) | 211,000 acres |
|--|---------------|

THUS, TOTAL DRAINED WETLAND ACRES IN THE UPPER BASIN:

SUBTRACT REMAINING ACRES FROM ORIGINAL WETLAND ACRES & THE RANGE OF ESTIMATES IS **from 189,000 to 358,000 acres in the upper basin that have been drained**

WEST CONSULTANTS' ESTIMATE OF DRAINED WETLANDS IN THE UPPER BASIN

As part of their Final Environmental Impact Statement on the Pelican Lake Emergency Outlet Plan, the U.S. Army Corps of Engineers had West Consultants, Inc., of San Diego, California study potential storage capacity of the upper basin of Devils Lake. The West Report is one of the most extensive studies done so far. West Consultants "Final Report: Devils Lake Upper Basin Storage Evaluation" (April 2001) estimates the "possibly drained" acres in the upper basin at 92,429 with a volume of 132,729 acre-feet. The West Report estimated **total number of wetlands at 115,668, with 52,210** as "possibly drained." However, the West Report adds this: "Since the net total evaporation from the depressions was probably underpredicted, the annual runoff reduction with depression restoration could be underestimated." (vii)

In fact, West Consultants makes several comments about the limits of their studies:

- A. "(F)urther studies should be conducted to more accurately quantify the runoff reduction resulting from depression restoration."
- B. "(F)ield verification was not performed during this study."
- C. "Therefore, any completely drained depressions not captured by the DEM [digital elevation model] nor by the NWI [National Wetland Inventory] data are not incorporated into the data set."
- D. "Partial drainage was not accounted for."
- E. "The resolution of the aerial photos was not fine enough to identify the location of fully drained depressions . . ."

Therefore, if the number of drained wetlands West uses conservatively is 52,210 and the number of possible acres they find is 92,429, then actual and more realistic findings would be higher than these.

DRAINAGE ADDS TO FLOODING

Starting in the 1950s, landowners in the upper basin began draining wetlands on a large scale without adequate state regulation. This drainage resulted in major flooding problems for landowners located downstream, immediately surrounding the chain of lakes north of Devils Lake. Rather than attempting to control drainage that was causing flooding, in 1976 the State Water Commission made the fateful decision to expedite drainage of waters off flooded lands by building Channel "A," a massive new ditch, sending water immediately to Devils Lake instead of going through the sequence of lakes. The NDSWC and the Ramsey County

Water Management District constructed Channel "A," knowing the results of drainage could add to flooding. The SWC in their "Agreement: Cost Participation by the North Dakota State Water Commission for the Construction of Channel 'A'" in Ramsey County wrote: "It is the determination of the Commission that additional drainage of presently **noncontributing areas will significantly contribute to increased lake levels** in the Devils Lake chain, thereby increasing the flood hazard potential to the City of Devils Lake and to thousands of acres of littoral land."

GET THE FACTS FIRST

How much potential storage is there? Use LIDAR (Light Imaging Data And Radar) to find out. The process results in topographic elevation mapping within a two-foot elevation contour, with people on the ground checking photo accuracy. This process could determine--for the first

time--just how many wetlands in the upper basin of Devils Lake have been drained, how many acre-feet of water they once held, and how much of that water reaches Devils Lake. Therefore, the process could help answer the question of how much water could be retained in the upper basin.

WETLAND RESTORATION ALWAYS PART OF THE SOLUTION

"Solving the Devils Lake Dilemma," an article in the May 1998 **North Dakota Water**, states, "In 1995, the Available Storage and Acreage Program (ASAP) was initiated by the State Water Commission (SWC) with **the goal of storing 75,000 acre feet of water in the Upper Basin**, which at the time would have taken nearly a foot off of Devils Lake. Presently, 167 sights [sic] store 22,000 acre feet through this voluntary program. SWC approved an additional \$1.5 million for 1998 storage." (p. 27)

About water storage, a 1986 study by G. J. Wiche and S. M. Hoetzer concluded, "In general, the water level of Devils Lake fluctuates in response to climate variability, but the hydrologic characteristics of the Devils Lake basin distort the hydrologic response. Potholes and lakes that eventually drain into Devils Lake have the ability to retain a significant proportion of the runoff, especially in the drier years. The upstream chain of lakes has enough storage capacity that they significantly decrease the discharge that reaches Devils Lake. For example, 112,000 acre-feet of water was stored in

the upstream lakes during 1965-67." [Cited by S.W. Pusc, 1993.]

In conclusion, the only practical, long-term method of dealing with a rising Devils Lake is to prevent water from drained wetlands from reaching the lake in the first place. Once in the lake, water management is no longer possible. People in the Devils Lake Basin say that their water is everybody's problem. If that's the case, downstream Sheyenne River water users insist on using restoration of drained wetlands as the next approach. It is a testament to how far politicians will go in throwing money at a problem rather than make the politically unpopular decisions needed to find an effective, equitable and permanent solution.

Since nothing else has worked so far, why not try preventing water from reaching Devils Lake in the first place?

"What's lacking is not room for storage, but political will," an August 27-29, 2010, Valley City Times-Record editorial aptly concluded.

WHAT HAPPENED TO ALL OF THE DRAINED WETLANDS?

Outlet proponents claim, "All of the wetlands are full."

However, drained wetlands no longer hold water. Instead, they are farmed and produce canola, barley, durum, corn, and other crops. The water they once held now covers someone else's land in the lower part of the basin. Aerial photos of upper basin farmland taken July 4-8, 2010, reveal thousands of acres of former wetlands now being farmed.



These photographs show that most of the land in the upper basin of Devils Lake is free of water, not full of water as has often been said.

These pictures were taken in an area north of Devils Lake and between Highway 1 and Langdon on the east, to Highway 281 and Cando on the west. Of course, not all of the wetlands in this area have been drained, as an area north of Lakota shows. But thousands of sloughs in hundreds of sections of land in the upper basin have been drained over the past fifty years and now are relatively free of standing water.

The photos illustrate that drained wetlands do not hold water. The water that falls on these acres is either absorbed or quickly flows down to Devils Lake through the channels, gullies, and coulees that can be seen in the pictures. Small channels can be seen leading into

larger ones as the land slopes south. Water gathers in larger coulees such as the Edmore, Starkweather, Mauvais and Calio Coulees, rivers adding water to Devils Lake.



Pictures reveal how and why over 358,000 acres of drained wetlands--from a total of about 569,000 acres of wetlands at statehood--in the upper basin help contribute to the water that flows into Devils Lake each year.

HOW BAD IS EAST END WATER?

In a letter to the ND State Water Commission, Aug. 13, 1999, Francis Schwindt, Chief, Environmental Section, **North Dakota Dept of Health, concluded** that the Tolna Coulee drain being planned at the time would be harmful to the Sheyenne River. Schwindt wrote, "This project is extremely complex from a water quality perspective. The water quality parameters that are of concern include **total dissolved solids, sulfates, chlorides, copper, lead, arsenic, selenium, boron, ammonia, and nutrients. . . . Furthermore, designated beneficial uses of the Sheyenne River would not be maintained; these include municipal water supplies, aquatic life, irrigation, industrial water supplies, and recreation.**"

Water quality in the Sheyenne River is much better than in Devils Lake. That is why Devils Lake water must be "blended" with river water. Sulfate levels in West Bay are about 600-700 mg/L while the sulfate level in the Sheyenne is usually about 200-250 mg/L below Baldhill Dam.

As West Bay Outlet pumping continues--at 250 cfs--West Bay water will replace Sheyenne River water. Devils Lake water will overwhelm the river, which flows at less than 25 cubic feet per second typically during late summer and fall.

Ten times as much Devils Lake water as normal Sheyenne River water will turn the river into a West Bay ditch.

Filled with Devils Lake water, Lake Ashtabula will become a sink, trapping nutrients and other contaminants. Other pollutants are much higher in Devils Lake water than in the Sheyenne River.

REMEMBER: RESIDENTS OF DEVILS LAKE DO NOT DRINK DEVILS LAKE WATER.

[Readings below from USGS site: nd.water.usgs.gov/devilslake/science/hydrology/]

| | Sheyenne River | | West Bay | | East Bay | | Stump Lake |
|---|----------------|----|-----------|--------------------------------|----------|------|------------|
| | | | | x=times levels in the Sheyenne | | | |
| Sulfate | 200-300 mg/L | 3x | 600-700 | 5x | 1150 | 10x | 2870 |
| Total Dissolved Solids | 600-700 mg/L | 3x | 1200-2000 | 4x | 2300 | 6x | 4000 |
| Calcium | 50-60 mg/L | | 60-75 | | N/A | | N/A |
| Magnesium | 30-35 mg/L | | 80-85 | | 500 | | N/A |
| Sodium | 75-85 mg/L | | 150-250 | | 500 | | N/A |
| Arsenic | 4-9 mcg/L | 3x | 12-15 | 3x | 18-20 | 4x | 20-30 |
| Phosphorous | 175-250 mg/L | 2x | 400 | | N/A | | 900 |
| Chloride | 10-20 mg/L | 9x | 100-150 | 15x | 225 | 30x | 450 |
| Hardness | 250-300 mg/L | 2x | 400-550 | 3x | 750 | 4.5x | 1250 |
| Mercury, Strontium, Cadium, Aluminum, and others? | | | | | | | |

EAST END DEVILS LAKE WATER WILL VIOLATE THE NORTH DAKOTA CENTURY CODE.

North Dakota **Century Code** antidegradation rules state: **“Proposed activities that would lower the ambient quality in a water body of any parameter by more than 15 percent . . . or increase permitted pollutant loadings to a water body by more than 15 percent will be deemed to have significant effects.”** [Appendix IV]

From the 2008 “Statement of Basis” from the North Dakota Health Department: “North Dakota’s water quality standard for sulfate is 450 mg/L in the Sheyenne River.” (p. 2)

STUMP LAKE WATER QUALITY STATEMENT:

About Stump Lake water, Andre DeLorme, Professor of Biology and Director of the Prairie Waters Education and Research Center, Valley City State University, Valley City, ND 58072, concluded:

“1. The Sheyenne River is one of the most biologically diverse rivers in the state of North Dakota. The Sheyenne River is the longest river that occurs completely within the boundaries of North Dakota. Eleven species of mussels have been found in the Sheyenne River, this is by far the highest diversity of any river in the state. It should also be noted that five of those species have been identified by the North Dakota Game and Fish as “Level II Species of Conservation Priority. . . . Not only are there a diverse group of mussels in the Sheyenne, they are found in large quantities as well. We sampled a mussel bed in the Sheyenne that in one 100 meter stretch had an average of 56 mussels per square meter. . . . While my lab does not deal directly with fish, I have seen documents that show 39 different species of fish that have been found in the Sheyenne River.

2. Water from the east end outlet will destroy the biological integrity of the Sheyenne River. It is well documented that fish can’t reproduce in Stump Lake. The high salinity of east end Devils Lake water can not only inhibit reproduction but also may be toxic to larval fish, mussels, and other aquatic macroinvertebrates. Any long term release of water from an east end outlet will lead to a chronic toxicity effect that would have devastating effects on the native species. Mussel species in particular would be susceptible to the toxicity of this water. As stated earlier, mussels play a major role in nutrient cycling within the Sheyenne and their destruction will contribute to a collapse in this aquatic ecosystem.

3. A biological monitoring program should be put in place for the Sheyenne River. Yearly surveys of macroinvertebrates (especially mussels), fish, and periphyton should be done to document the effect of an outlet on the Sheyenne.

4. A mitigation plan should be put in place to try and restore the Sheyenne River after an outlet is shut down. This should include a strategy for returning species to the river and **set aside funds** to accomplish this.”

REGIONAL CONCERNS

Fargo has rights to almost half of the water stored in Lake Ashtabula, as a hedge against times of drought. Both Fargo and West Fargo said (August 2010) that they plan to ask the North Dakota Water Commission for future financial help when Devils Lake water reaches them and they have to spend more to treat it. Fargo estimates that the added cost to be \$75 million while West Fargo’s cost could rise \$15 million.

Adding poor quality Devils Lake water reduces the beneficial uses of Sheyenne River water all the way from Devils Lake into Canada, meaning this act could result in an illegal taking, from municipalities and from individual users. In other words, many of the present beneficial uses of the Sheyenne River will no long be available after Devils Lake water has destroyed them.

CANADIAN AND MINNESOTA CONCERNS

The Boundary Waters Treaty between the United States and Canada will be put in jeopardy if Stump Lake water enters the Sheyenne River through an outlet. Canadians have long objected to the transfer of water from the Devils Lake basin on the basis of water quality and potential biota transfers. The International Joint Committee should hold appropriate hearings on the issue before any decisions are made about further outlets from Devils Lake into the Sheyenne River. Sulfate levels at the U.S./Canada border are 250 mg/L.

From June 29, 2010, Winnipeg Free Press: “The fear is that without a filtration system in place, algae, pathogenic bacteria, fish parasites and fish diseases could enter Manitoba’s waterways.

“Dwight Williamson, director of the water science and management branch of Manitoba Water Stewardship, said the draft results of an International Joint Commission study found seven fish pathogens in Devils Lake that were not found in Lake Winnipeg.”

The Minnesota Department of Natural Resources has also objected to the potential degradation of the Red River of the North from Devils Lake water.

THE SHEYENNE RIVER AND LAKE ASHTABULA

After rising in Sheridan County, The Sheyenne River meanders for 581 miles through eastern North Dakota before joining the Red River of the North on its way to Canada. Throughout much of its length, the river is bordered by a gallery forest of cottonwood, elm, and box elder, and the nearby valley escarpment is partly forested with ash, burr oak, and with aspen which occur where numerous seepages, or freshwater springs empty into the numerous ravines along the valley slopes. The 63 miles of river road between Lisbon and Baldhill Dam have been designated the Sheyenne River Valley National Scenic Byway. Fishing, hunting, canoeing, picnicking, bird watching and sightseeing serve as major recreational activities in the valley. People come from throughout eastern North Dakota to attend festivals held in the Valley, taking advantage of its unique beauty.

The Sheyenne River, despite all its natural beauty and being a vibrant part of eastern North Dakota, is now endangered by the political leaders of the state who having made irresponsible decisions over the past several decades concerning water management in the nearby Devils Lake Basin, now are willing to severely degrade one of the most unique rivers in the northern plains. West Bay Devils Lake water already degrades the Sheyenne and East End water would entirely alter the river’s ecosystem.

Lake Ashtabula, created by the construction of Baldhill Dam, lies twelve miles north of Valley City. The dam was built by U.S. Army Corps of Engineers to provide flood protection, recreation and water supply. The lake, situated in one of the most scenic valleys of the Sheyenne River, is known for its recreational opportunities, including its productive fishery, including walleye, northern pike, white bass and perch. The Corps operates Baldhill Dam, seven recreational areas on the lake, as well as 14 separate wildlife areas around the lake.

The drainage area of Lake Ashtabula is 4,138 square miles and its capacity is about 71,000 acre-feet at normal pool height. With its five-foot modification in 2004, lake capacity was increased by half. By cost-sharing in its construction, both Valley City and Fargo have rights to much of the water in the lake. Channel capacity in the Sheyenne

River from Devils Lake to Baldhill Dam is estimated to be 600 cfs.

NDSU associate professor Wei Lin, Department of Civil Engineering, testified at Senator Byron Dorgan’s Fargo field hearing (February 2009) that high levels of nitrogen and phosphorous in East End Devils Lake water could seriously affect Lake Ashtabula. He said, “The impact of increased eutrophication on the aquatic ecosystem could be significant. Algae blooms will not only cause unpleasant conditions for recreation on the lake, but **blue-green algae may release toxins that make water unsafe for humans and animal consumption.**”

Commenting on what the effects of East End water on the Sheyenne River and Lake Ashtabula could be, the **U.S. Fish and Wildlife Service** concluded that “the combination of high total dissolved solids (TDS), sulfates, and chlorides (plus unknown levels of other toxic or harmful constituents), would likely devastate the freshwater aquatic life in the Sheyenne River. . . . little if any natural reproduction of fish species would occur, and survival rates for juvenile fish would be in jeopardy. . . . **will significantly degrade water quality, increase erosion and sedimentation, and result in conditions detrimental to aquatic mollusks, such as freshwater mussels, pill clams, and snails.**” [Letter to the U.S. Army Corps of Engineers, St Paul District, May 24, 1999. Emphasis added.]

Concerning the U.S. Fish Hatchery north of Valley City, the U.S. Fish and Wildlife Service went on to say, “**The hatchery’s water source from the Sheyenne River will likely be unusable.** Therefore the hatchery would need to obtain a source of fresh water in order to operate. Furthermore, it is unlikely that the hatchery will be able to maintain its ability to provide fish to the State of North Dakota.” [Emphasis added.]

The Fish Hatchery is an industrial site that relies on Sheyenne River water for its production and its existence. No state or federal agency has estimated the effects of higher levels of Devils Lake water on its continued function.

THE TOLNA COULEE



The Tolna Coulee (about 12 miles long) is the overflow point from Devils Lake/Stump Lake into the Sheyenne River.

When the lowest part of the Devils Lake basin fills, the lake rises, as it did several times in the distant past. With enough runoff, Devils Lake fills to a height of 1446 feet above msl. and begins to flow into Stump Lake. Then both lakes rise as one. If Devils Lake rises to 1458 feet above msl., it could overflow from Stump Lake through the Tolna Coulee into the Sheyenne River. With the lake at about 1451.3 in the fall of 2010, the lake would have to rise over six more feet in order to overflow.

Devils Lake overflow level used to occur when the lake reached 1459 feet msl. but since the city of Devils Lake took a foot off the Tolna Coulee in 2009 [at a cost of

about \$200,000 for the land and \$40,000 for moving dirt], overflow will now begin at 1458 feet msl. In other words, the city increased the chances of an overflow from Devils Lake into the Sheyenne River.

Some people worry that the Tolna Coulee would quickly erode if water should begin to flow through it. Others even claim that a “blowout” of the Coulee could occur before water levels reach a point of overflowing.

NO BLOWOUT. NO WASHOUT.

Evidence supporting “No Blowout, No Washout” was provided when the North Dakota Geological Survey (“Report of Investigation No. 100,” John P. Bluemle, 1997) dug test holes in the Tolna Coulee. Results revealed the presence of snail and clam remnants at four feet and oxidized soil at six, both having been in place for at least 7,000 years. In other words, the Tolna Coulee did not erode when Devils Lake overflowed in the past. Nor did it blow out. The coulee probably won’t erode next time the lake rises and overflows.

A recent study by the North Dakota State Water Commission (W.M. Schuh, “Update: Stump Lake Impact on Tolna Coulee Ground Water,” July 19, 2010) states that deep erosion would not occur. Schuh concludes, “**This possibility is considered unlikely.** [Emphasis added.] First, at the current Stump Lake elevation . . . there are approximately 6,000 linear feet of impeding materials acting as a berm between the lake and the lake elevation west of the divide in the coulee. Even approaching the flow elevation (1458.5 feet) the impeding materials would be about 3,000 feet thick. This provides a very substantial berm.”

Even so, armoring the coulee would ensure that it would not erode with an overflow and armoring would alleviate downstream fears.

Some people don’t want the Tolna Coulee armored because then the coulee could not be ditched and Stump Lake water allowed to flow into the Sheyenne River. If the WTR applies, will Stump Lake water be allowed to flow into the river, in spite of the downstream damage that that would cause?

WHAT DITCHING THE EAST END OR EAST BAY OF DEVILS LAKE MEANS.

If the East End is ditched anywhere at the present height of Devils Lake--about 1451.3--and water flows immediately into the Sheyenne River, it will effectively lower the overflow height of the lake.

1. The chances of an overflow increase proportionate to the depth of the ditch through the coulee. In other words, if a ditch is dug through the coulee at 1454 feet above mean sea level, Devils Lake water would only have to rise two more feet from where it was in the spring of 2010, rather than the six feet it had rise in order to overflow at that time. A ditch dug at 1451 or lower means that water will flow immediately into the Sheyenne.
2. Once Devils Lake reaches overflow, there is nothing that can be done to prevent all the water that enters Devils Lake after it is full from flowing through either an East End ditch or the Tolna Coulee and flooding downstream citizens. A control structure the size of Baldhill Dam would be necessary to hold water back. Flooding would be inflicted on all downstream Sheyenne River users whenever Devils Lake rises to that level, which, once it happened, would occur more often because the real cause of rising water Devils Lake would still not have been addressed.

The only logical conclusion for downstream protection: Armor the Tolna Coulee at its present height or where it was at statehood. And retain water in the upper basin of Devils Lake.

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