



FROM THE NORTH DAKOTA STATE WATER COMMISSION

Outlet Management Advisory Committee meets; update on projects heard

The Devils Lake Outlet Management Advisory Committee met on April 4, 2000 to hear progress reports on flood control efforts for Devils Lake and to continue discussions of future outlet management. One goal of the committee is to recommend the lake level at which outlet operation should stop. An elevation of 1440 feet above mean sea level, about six feet lower than today's lake level, was the focus of the discussion. The committee felt that the lake should be held as high as possible, yet maintaining a sufficient capacity to handle future wet years without incurring new flood damages. There was also a concern about the private property owners at elevations below 1440 ft msl. This discussion will be continued at the next meeting.

State Engineer and committee chairman David Sprynczynatyk provided the following updates on the issues surrounding the flood control efforts.

Additionally, Sprynczynatyk reported that the state still intends to burn the cattails between Devils Lake and Stump Lake and to remove about 6 inches of sediments from the high spot in the channel separating the two lakes.

The Outlet Management Advisory Committee was organized by the 1997 North Dakota Legislature to develop an annual operating plan for a Devils Lake outlet. The nine member committee is comprised of three members appointed by the Governor representing interests affected by downstream impacts, the State Engineer, one member appointed the Red River Joint Water Resource Board, one member appointed by the Devils Lake Joint Water Resource Board, one county commissioner from Ramsey County, one county commissioner from Benson County and one representative of the Spirit Lake Nation.

East Devils Lake to Stump Lake Emergency Channel

Today, Stump Lake could hold 400,000 acre-feet of Devils Lake water. A state plan to increase the outlet capacity to Stump Lake to use its storage is being pursued. Such a project, following a prescribed operating plan, would move more water faster than existing conditions permit. This temporary reprieve would provide precious time to implement the state's Twin Lake Temporary Emergency Outlet and the U.S. Army Corps of Engineers Peterson Coulee Permanent Emergency Outlet.

The channel to Stump Lake project is designed. Federal permits are in the final stages of review. The largest remaining issue is compatibility with the Stump Lake National Wildlife Refuge. Pending permit approvals,

construction on the \$7 million project will begin this year and will be operational in spring of 2001.

Twin Lakes Temporary Emergency Outlet

Plans call for the project to use temporary pump sites to move up to 300 cubic feet per second of water from the West Bay of Devils Lake through a series of pipes and canals to the Sheyenne River, when downstream conditions allow. Survey and design work is nearly complete. The project proposal has several additional advantages:

- shortest route for an outlet to the Sheyenne River
- relative short construction time with few permits required
- water taken from the West Bay of Devils Lake is the best quality in the lake system
- no road raises or closures are required
- no homes or other buildings are affected
- no wetlands are impacted

The state intends to meet all downstream water quality standards and objectives and to be in full compliance with the Boundary Waters Treaty of 1909.

Peterson Coulee Permanent Emergency Outlet

The U.S. Army Corps of Engineers (COE) was directed to use its emergency authority and funding under Public Law 84-99 to immediately begin planning, engineering, and design of a permanent emergency west-end outlet for Devils Lake along the Peterson Coulee route. Planning, engineering, and design work will take place concurrently with an expedited review under the National Environmental Policy Act and consultation with Canada. Construction requires a minimum of two years. When completed, the project will pump water to the Sheyenne River at varying rates for seven months each year in accord with an operating plan that will be recommended by the Outlet Manage-



NEXT MONTH:

The Oxbow will feature an in-depth look at the issues driving the Missouri River management revision process.

ment Advisory Committee.

The Office of Management and Budget and the COE will work with the State Department, which will consult with the Government of Canada, to ensure that the actions are consistent with the requirements of the Boundary Waters Treaty of 1909.

President Clinton has directed the COE to proceed with the studies required so construction can begin in 2001. The President did include \$24 million in his budget proposal for 2001. Debate over funding has sprung up in the Appropriations Committee of Congress and has delayed the original October 2000 start date to February 2001.

Upper Basin Flood Storage

Since its beginning in 1996, Available Storage Acreage Program (ASAP) payments to private land-owners have prevented thousands of acre-feet of runoff water from reaching Devils Lake. U.S. Fish and Wildlife Service storage sites now hold water on public land with plans in place for additional sites. The North Dakota Wetlands Trust has financed wetland restorations on land under the Conservation Reserve Program, and the State Water Bank has reduced runoff to Devils Lake by enrolling land in its program. More than \$5 million has been expended for upper basin storage thus far. Unfortunately, the amount of storage gained by wetland restoration is relatively small compared to the 201,000 acre-foot average annual gain in Devils Lake over the past six years. The State Water Commission has approved year 2000 funding for an long-term ASAP program. The revision will provide storage for 10 years or more as opposed to the annual contracts used in recent years.

Actions to Safeguard Downstream Neighbors

The state is fully aware of water quality and flood concerns of people living downstream and is taking every precaution to minimize any potential damage. North Dakota has concluded that building a managed west-end outlet to the Sheyenne River presents far less risk downstream than allowing Devils Lake to continue to flood and eventually spill uncontrolled over its natural east-end outlet.

All outlet options include an operating plan that limits when and how much water can be moved to the Sheyenne River. The Outlet Management Advisory Committee will review the outlet plan and provide input to the decision-making process. Downstream concerns including erosion hazards and increased flood risks due to Sheyenne and Red River channel capacity will be factored into allowable discharges. Water quality guidelines established to protect downstream water users, particularly the Boundary Waters Treaty guidelines, are a priority objective.

Uncontrolled Outlet

Another concern is whether or not Devils Lake will overflow to the Sheyenne River naturally. Dr. John Bluemle, North Dakota State Geologist, has documented that Devils Lake has overflowed to the Sheyenne River about eight times in the last 9,000 years. In all probability, it will happen again. No one knows for sure when the last overflow occurred, nor when it will happen again. However, we do know there is nothing preventing it from happening again. Hydrologic modeling to help predict when Devils Lake will overflow has been re-examined. Findings show that

previous modeling results were too conservative, when the climatic shift experienced in the last twenty years is considered.

When Devils Lake reaches its natural outlet elevation, the worst quality water in the lake system at its east end would begin to flow down the Sheyenne River. At that point, much of the basin's annual runoff would flow down the Sheyenne River. An additional 260,000 acre-feet or so more water could flow down the Sheyenne River each year almost doubling the amount of water that flowed past West Fargo in the 1998 water year. This would be very detrimental to people living along the Sheyenne River and the Red River.

Biota Transfer Risks

In December 1995, the United States - Canada Joint Technical Committee (JTC), composed of federal, North Dakota, and Manitoba agency officials, convened a bilateral working group to evaluate implications of an outlet from Devils Lake relative to the United States-Canada border. The Devils Lake working group report was published in March 1997. Conclusions regarding biological implications state that the working group found no impacts, potential threats, or significant areas of concern for the following existing biota: fish, macrophytes, algae, pathogens, and invertebrates. A slight potential for increased phosphorus loading could possibly change the algal community, affecting the remainder of the biotic community of Lake Winnipeg. The report finds it is unlikely, but not impossible, that unique pathogens for pike, walleye, and perch could be introduced through fish escapement in the outlet water. However, the working group believed the risk at the border is minimal for all biology issues examined.

The State of North Dakota continues to monitor the fishery at Devils Lake and investigate any evidence of biota concern. ■



North Dakota State Water Commission
David A. Sprynczynatyk, State Engineer
900 East Boulevard • Bismarck, ND 58505 • (701)328-2750
<http://www.swc.state.nd.us/>

Brett Hovde, Editor

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THE WATER PRIMER

Managing North Dakota's Water Resources (Part 3)

The North Dakota Geological Survey (NDGS) is the focus of this third in a series of articles dealing with water resource management in North Dakota.

The NDGS has been serving as the state's primary source of geological information for over a century, and thus, has played an important role in helping to manage North Dakota's water resources in an advisory capacity.

In 1895, the position of State Geologist, and the NDGS were both established by an act of the North Dakota State Legislature. At that time, the NDGS was directed to primarily, among other things, inventory the state's geological resources.

Today however, the mission of the NDGS has evolved into a broad three-pronged approach, which is:

"to investigate the geology of North Dakota; to administer regulatory programs and act in an advisory capacity to other state agencies; and to provide public service and information to the people of North Dakota."

Specific activities conducted by the NDGS include investigations of geologically hazardous areas within the state, particularly flood prone areas, to support other agencies regulatory and emergency services. In addition to publishing technical reports on these investigations, the NDGS produces educational publications designed to help the general public better understand the nature

of flooding—including flooding history, causes, impacts, and the terminology, as well as statistics used to describe it.

Most recently, the NDGS published a revised report on flooding in the Grand Forks area, which is titled "Flooding in the Grand Forks-East Grand Forks North Dakota and Minnesota Area" (LeFever, J.A., J.P. Bluemle, and R.P. Waldkirch, 1999). The report was developed as a revised version of the original 1968 NDGS publication, and includes data and interpretations from the 1997 flood event.

Other recent activities of the NDGS include large and intermediate-scale surficial mapping. The large-scale (1:24,000) mapping of urban areas has been completed for the Dickinson, Jamestown, Bismarck, and Mandan areas. Also, the northern portion of the Red River Valley has been mapped at an intermediate-scale of (1:100,000), while the Valley south of Grand Forks has been mapped at a 1:250,000 scale. The primary focus of the maps representing the northern portion of the Valley has been to identify various hazards, particularly those related to flooding, and to better understand economic resources for more accurate land use planning.

The NDGS has also been involved in a cooperative effort with the Natural Resource Conservation Service to develop digital maps of North Dakota's soil resources. This effort began in 1997 and is still in full swing. As of April 2000, approximately one-half of the state's

soils have been successfully digitized. The availability of digital soil maps can be beneficial to managers of North Dakota's water resources in a variety of ways, including, identifying suitable areas for irrigation development, and identifying areas having a potential for surface or ground-water contamination resulting from chemical applications or accidental spills. Though some of these activities can be accomplished using traditional paper soil maps, the digital versions enable land, water, pollution, and commodity relationships to be more easily manipulated and unveiled.

One of the more high profile water management-related activities of the NDGS includes their assistance in planning the Devils Lake outlets and other flood control initiatives. Since 1902, the NDGS has been looking at the history of Devils Lake water level fluctuations and paleoclimate. In addition, the NDGS has provided information regarding the lake's surrounding soil types and locations, as well as elevation information for key areas around Devils Lake. This information has been invaluable in assessing and interpreting the current Devils Lake rise and the conditions of the natural outlets.

The NDGS's regulatory responsibilities related to the management of the state's water resources are fairly limited. However, the Survey's advisory role in providing geological information to local, state, and federal agencies directly involved in regulating the state's water resources is irreplaceable. ■