

The Oxbow

FROM THE NORTH DAKOTA STATE WATER COMMISSION

Missouri River planning advances

The Garrison reach of the Missouri River has been in the spotlight for years due to disagreements among interested parties over how the land and water resources of that 87-mile stretch should be best managed. Discussions over land use and riparian development have been in the forefront of this debate. Although, issues such as aquatic habit, riverbank erosion, endangered species, floodplain management,

historic preservation, and a host of others have contributed to this complex management scenario.

In response, a Missouri River Vision Group was created in 1999 to seek consensus among all parties with an interest in the management of this stretch of the Missouri. Since 1999, much progress has been made.

In May, 2002, the BOMMM Joint

Water Resources Board, which consists of Burleigh, Oliver, Morton, Mercer, and McLean counties, announced that they will be moving ahead with the next phase of the coordinated resource management plan for the Garrison reach of the Missouri River. Beginning this summer, the BOMM Board intends to first develop a conceptual plan, which would address policy and framework issues; eventually to be used in the development of a full comprehensive plan.

At the conclusion of this effort, the Missouri River planning group is hopeful that they will have achieved their vision – “To recommend long-term strategies for the management and protection of the Garrison reach of the Missouri River so that its values and functions are sustained through the generations.” ■

SWC staff members participate in Walk for Life

Several members of the State Water Commission staff participated in the 10th annual American Cancer Society Walk for Life in Bismarck. The event was held at a local middle school track from 6 p.m. June 1 until 6 a.m. the following morning. The idea was to have at least one member of every team on the track walking or running at all times during the 12-hour event. Aside from a short 15 minute break to escape a lightening storm, members of the SWC team walked for the entire event—though a few got a bit wet from passing rain showers.

The event has become well known for its use of candle-lit luminary bags, which completely surround the walking track—lighting the way for walkers at night. The bags are typically adorned with the names of individuals who have either won or lost a battle with cancer, or are battling with it at the time of the event. The bags are sold as part of the fund-raising efforts for the event.



Front row: Dawn Feist, Michael Hove, Sarah Ripley, Rosemary Pedersen, Royce Cline, Paul Moen, Brenda Hove. Back row: Jim Lindseth, Tim Freije, Pat Fridgen, Dave Ripley, Jason Boyle.

The SWC Walk for Life Team was able to raise \$773 for the event, and in total, the 60 participating teams raised over \$45,000. Additional contributions were also taken in from local businesses, concessions, and a silent auction.

Funds raised at the event will enable the American Cancer Society to expand services in the area to cancer patients and their families, to offer more educational programs to help reduce the risk of getting cancer, and to expand cancer research. ■

Sweetbriar Creek Dam needs repairs

In April, 2002, a failure was discovered with the concrete inlet at Sweetbriar Creek Dam by a North Dakota Department of Transportation (NDDOT) worker. The Head of the Construction Section and Dam Safety Team from the North Dakota State Water Commission (NDSWC) inspected the structure on April 18, 2002, and May 2, 2002, and found that a large crack had formed across the entire face of the inlet over the winter. It was determined that the failure was likely caused by ice pressure on the 12-inch thick concrete. Water was shooting out of the crack as some shifting of the concrete had taken place due to ice pressure.

"It doesn't appear that an immediate repair is necessary, but we do want to get the repair work started as soon as possible to avoid further complications," said the NDSWC's

Construction Manager, Brad Benson.

The preliminary design of the repair was completed by the NDSWC in mid-May. The design included sawing off the bad sections of concrete and replacing it with 24-inch thick concrete where the most exposure to future ice pressure will occur. Another 12 inches of concrete were also figured in to the existing sides of the inlet. Thus, making all portions of the inlet more capable of withstanding pressure from ice in the future.

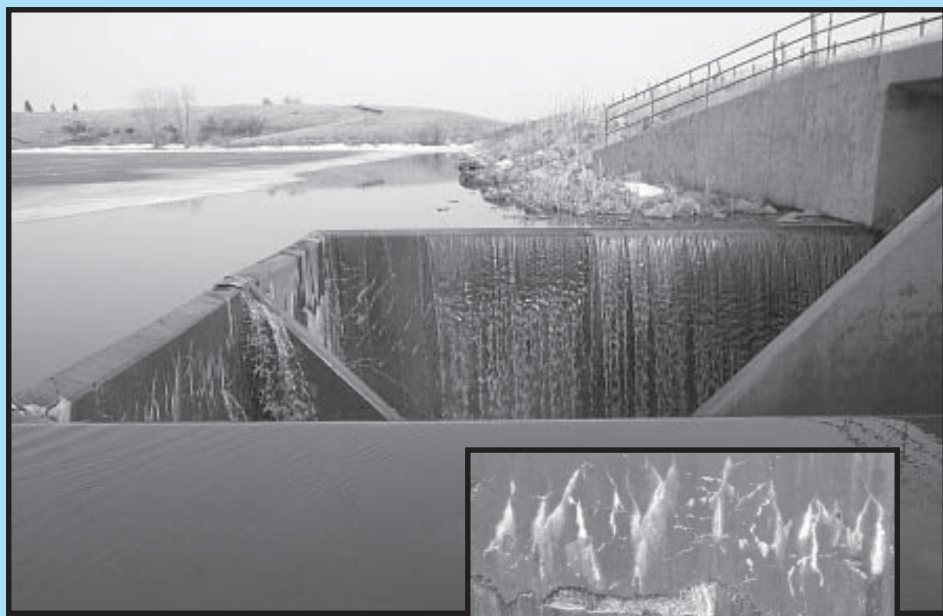
A meeting was held in the end of May to discuss the repair project. Agencies represented at the meeting included the NDSWC, the NDDOT, the North Dakota Game and Fish Department, the Morton County Water Resource District, and the Morton County Park Board. It was suggested by the NDDOT that the

inlet repair be included in the bid package for the interstate highway project scheduled for 2003 on the westbound lanes. The North Dakota Department of Transportation will already be working on the portion of Interstate #94 that functions as Sweetbriar Creek Dam in 2002 and 2003. The eastbound lanes are currently being reconstructed and the westbound lanes will be reconstructed in 2003.

"We were a bit concerned that two separate contractors working in the same area, one on the highway and the other on the dam repair, could cause difficulties with schedules. Therefore, it was determined that one contractor should perform both the highway and dam repairs," said Benson. We decided that the overall project should include the inlet repair in the highway bid package, but with a separate set of plans and separate line items for the inlet repair," Benson continued.

A new low level system involving coring the concrete in the inlet will also be installed as part of the bid package. The current riparian outlet has a valve on the downstream side of the dam which causes the pipe to be filled with water under pressure. Having a pressurized pipe running through a dam embankment is not a favorable situation, so a new low level system will be installed and the old system grouted shut.

The new low level system will involve the coring of two holes in the drop inlet and the installation of ductile iron fittings, a control valve, and a high density polyethylene pipe running out to the bottom of the reservoir. The new low level system will allow the less oxygenated water to be discharged downstream at appropriate times of the year, thus freshening the reservoir. It will also serve to honor downstream water rights, which was the function of the old riparian outlet. The inlet repair is estimated to cost about \$75,000 and the low level system about \$30,000. ■



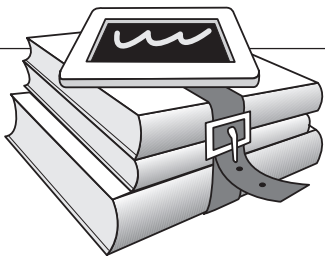
Sweetbriar Creek Dam's concrete inlet. Inset shows the cracking damage caused by ice pressure.



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THE WATER PRIMER



The Red River: A Profile in Time

PART I: LAKE AGASSIZ TO THE FIRST NORTH DAKOTANS

The Red River is the heart and soul of the Red River Basin, physically, culturally, and economically, and has been for thousands of years. Understanding the forces behind the formation of the Red River as we know it today, are integral in allowing the people of the Red River Valley to live with its chaotic nature. This series of articles will break down the history of the Red River basin into four distinct phases; each important in helping us gain a better understanding of how the natural, social, and economic environment that exists today came into being.

The Red River basin is a relatively recent geological feature, having been formed at the conclusion of the last ice age. Glacial Lake Agassiz was formed as glacial ice retreated northward, and water pooled at the glaciers edge approximately 13,000 years ago. Lake Agassiz was a large freshwater lake, covering approximately 80,000 square miles at its greatest extent, over what is now eastern North Dakota, northeastern South Dakota, western Minnesota, and southern Manitoba. The lake stretched for as much as 700 miles in length, and was approximately 700 feet deep at the site of present day Winnipeg.

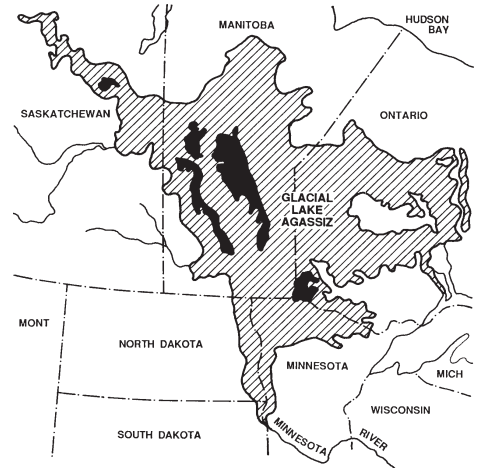
The lake had a profound affect on soil development in the region. As a result of massive deposits of organic matter from the lake, clays and silts up to 95 feet deep are found in the Red River Valley today, representing some of the richest soils in the world. Lake Agassiz existed for approximately 4,500 years, before gradually draining into the Tyrrel Sea, or

present day Hudson Bay.

The Red River makes its way through the bottom of former Lake Agassiz. The Red River officially starts at the confluence of the Ottetail and Bois de Sioux Rivers in Wahpeton-Breckenridge, and travels 545 miles before emptying into Lake Winnipeg. The Red River is part of the Hudson Bay drainage, and is one of the largest rivers in the United States to flow north. Interestingly, extreme precipitation events have periodically caused Lake Traverse, part of the Bois de Sioux River system, to connect to the Little Minnesota River for a period of several weeks, hydrologically connecting Hudson Bay and the Mississippi River drainage basins.

As Lake Agassiz retreated, and the Red River began to take shape, a climate shift occurred in the Red River Valley. Out of the fertile soil of the old lake bottom, forests began to develop and spread. As the climate changed again, the forest made a transition to a prairie forest mix.

Approximately 10,000 years ago, Native Americans began to move into the Red River Valley from the forests of Minnesota and Wisconsin. It is thought that they were predominantly following the movement of migratory game such as bison. These early hunter-gatherers seemed to prefer the protection and readily available water that the Red River provided. The Red River Valley of that period was a formidable place. The tall grass prairie could stand over 10 feet



The extent of Glacial Lake Agassiz.

high, and the periodic grass fires that afflicted the region were deadly to both man and beast.

By about 1300 AD, Native Americans began to settle in the region more permanently. Evidence has been found, indicating early agriculture, with gardens of squash and gourds. Life in this period was far from stable however, tribes were in a constant state of flux, as rival groups contested over, and won the choicest places to live. In addition to human conflict, the Red River was as difficult to live near then as it is today. Periodic floods, far greater in magnitude than those experienced more recently ravaged the area. The many different forces at work combined to make the Red River Valley a place with great potential; both for prosperity and peril.

In the upcoming articles, the continuing influence that the unpredictable nature of the Red River has had upon the people of the Red River Valley will be further explored. ■