

The Oxbow

FROM THE NORTH DAKOTA STATE WATER COMMISSION

NAWS project gets final approval

On December 4, 2001, the Commissioner of the U.S. Bureau of Reclamation, John Keys III, announced the final approval of the Northwest Area Water Supply (NAWS) project. In a statement to Maryanne Bach, Director, Great Plains Region, Keys indicated that diplomatic discussions with Canada had been completed. "As a result, I am informing you that you may proceed with construction of the project," wrote Keys.

NAWS project manager, Jim Lennington, of the State Water Commission expects the first stage of the NAWS pipeline to begin sometime in 2002. The first contract for the pipeline will be a segment that runs approximately 7.5 miles from

the Minot water treatment plant south towards the Missouri River. The estimated cost of this first phase is about \$8.2 million.

Eventually, a pretreated water pipeline with a design capacity of 26 million gallons per day will stretch from a Missouri River system intake on either Lake Sakakawea or Lake Audubon to Minot. The pipeline will also include a booster pump station and a three million gallon reservoir. The estimated cost of the pretreated water pipeline and associated facilities is \$66 million.

In addition to the basic features of the NAWS system, several *special design features* will be added:

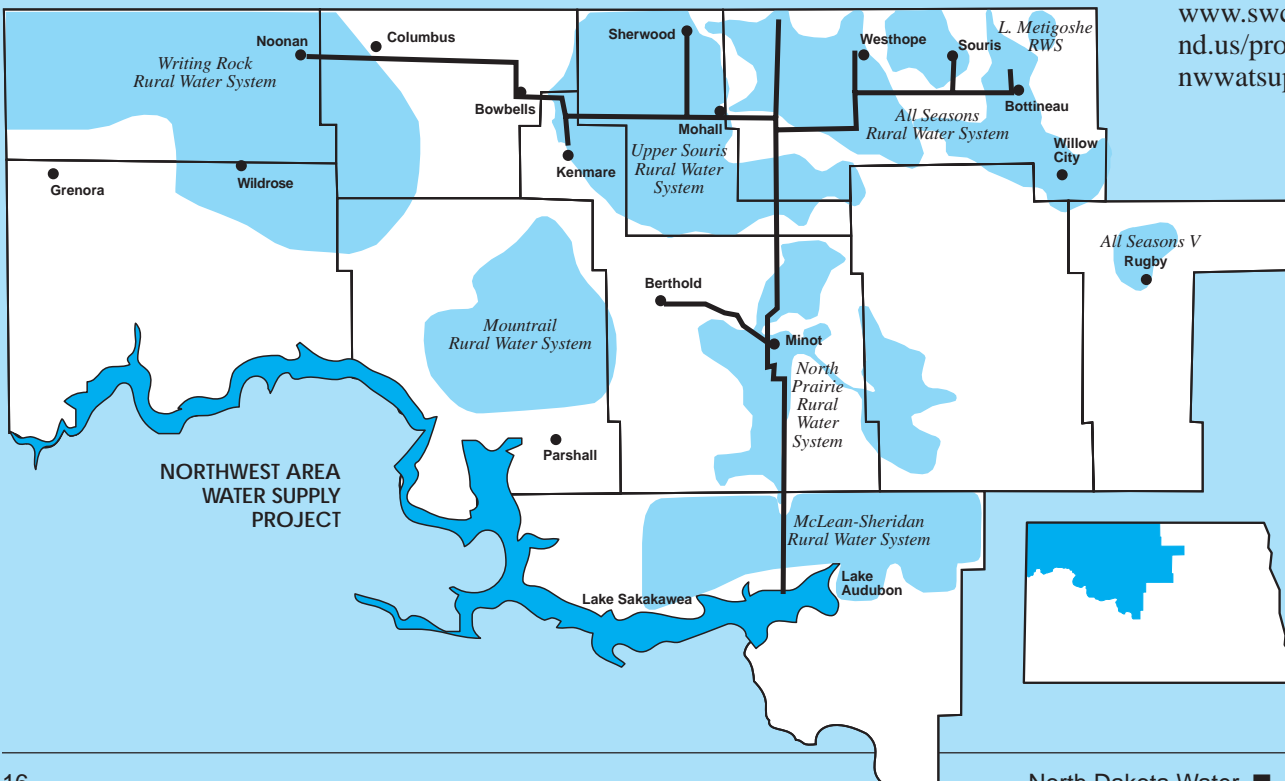
- Before leaving the Missouri River basin, NAWS water will be disinfected to a level that will provide removal of 99.9 percent of Giardia and 99.99 percent of virus.

- Automated isolation valves will be installed on the pretreated water pipeline in the Hudson Bay basin to stop the flow of water automatically in the event of a failure.

- Sludge generated at the Minot water treatment plant will either be treated to inactivate disinfectant resistant organisms or transported for disposal in a lined landfill near the Minot area. Another option is to dispose of the sludge in an appropriate location within the Missouri River basin.

The NAWS project has been in development since 1986, and has moved through a careful and complex design and environmental compliance process since 1993. Once completed, NAWS will supply water to over 63,000 people in northwest and north central North Dakota.

For more information, check out the State Water Commission's NAWS website at www.swc.state.nd.us/projects/nwwatsup.html. ■



SWC Construction Crew Season Summary

By Brad Benson

Indian Creek Dam

The Commission entered into an agreement with the Hettinger County Water Resource District and the Game and Fish Department to remove debris from, and place a trash rack over the spillway inlet at Indian Creek Dam. Rocks and other debris had accumulated at the inlet to the reinforced concrete spillway pipe, reducing the spillway's capacity, and thus required removal. The Commission's construction crew removed the debris and fabricated a trash rack, which was placed over the inlet in an effort to prevent debris from hindering future water flow. The construction was completed in the last week of May 2001.

Wakopa Dam

The Commission's construction crew was involved with emergency repairs at Wakopa Dam during the 2001 construction season. Heavy

spring runoff overtopped the embankment, resulting in severe erosion on the downstream face of the embankment. Aside from the heavy runoff, a contributing factor to the overtopping was the fact that the principal spillway was plugged because of beaver activity.

The repair work involved two phases: the first phase involved breaching the embankment to lower the reservoir to remove debris from the spillway inlet; the second phase involved repairs to the downstream face and the construction of an emergency spillway in the right abutment. The project was completed in September 2001.

North Lemmon Lake Dam

At North Lemmon Lake Dam, the construction crew installed a low-level drawdown system in July and August. Low-level drawdowns are used by the North Dakota Game and Fish Department to improve fisheries in reservoirs by ensuring there is

quality, oxygen-rich water. The drawdown improves the water quality by removing oxygen-depleted water from the lowest portion of the reservoir.

Smishek Lake

The Commission performed minor repairs to the spillway at Smishek Dam in Burke County. The work involved repairing an area of erosion in the spillway and reshaping the area of erosion. Geotextile fabric and rock rip-rap were installed to prevent further erosion.

Green Lake

The Green Lake project involved a modification to the dike at the south side of the lake. The dike was in very poor condition, requiring placement of fill on the downstream side. The work consisted of widening the top width of the dike to 12 feet and flattening the downstream side slope to 3:1 (horizontal to vertical). Rock rip-rap was placed on the upstream face of the embankment to provide protection from wave erosion. In addition, the McIntosh County Water Resource District hired a local contractor to construct a fence around the newly constructed dike to prevent cattle from gaining access to the embankment.

The completed Green Lake project in McIntosh County, southcentral North Dakota.



USGS

The Water Commission's construction crew also repaired several United States Geological Survey gaging stations throughout North Dakota. The work involved the installation of staff gages, protecting structures containing instrumentation from flooding, and repairing sheet pile control sections. ■

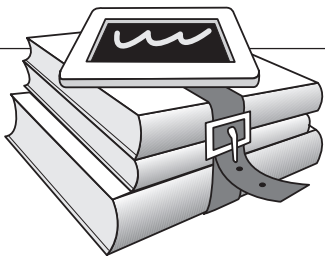
Oops! A correction is needed for the State Water Commission meeting minutes for August 16, 2001. The cost-share request from Carlisle Dairy Partnership was not approved by the Commission, but was recommended for consideration at a future meeting.



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THE WATER PRIMER

Looking to explore North Dakota's water resources?...

...Then maybe you should consider one or more the following one-credit Project WET workshop opportunities.

Project WET

This workshop is designed to give students a hands-on comprehensive water education, including water's chemical and physical characteristics, water's relationship to life and earth processes, water use and conservation, water quantity and quality issues, water management strategies, and water's connections to economic, social, and cultural systems. Participants receive the Watershed Manager's Guide for Educators (30+ activities) which teaches a vast array of watershed management topics and issues. An additional resource provided includes the Project WET K-12 Curriculum and Activity Guide (90+ activities) which has been correlated to the ND Content Standards in Mathematics, Science, Social Studies, and Language Arts.

Project WET/WOW! Wonders of Wetlands

WOW! Is designed to give students a hands-on wetland education, including an extensive wetland background featuring information on wetlands and people, delineation, formation and distribution, functions, benefits, habitat, management, and action. Participants are exposed to activities designed to help them understand wetland concepts, wetland plant and animal communities, roles of water and soil, the relationship of people to wetlands, and cultural issues surrounding wetlands. Resources provided include the Project WET K-12

Curriculum and Activity Guide, and the Project WET/Watercourse WOW! Wonders of Wetlands K-12 Educator's Guide (40+ activities).

Project WET/Water Festival

A water festival is an educational, fun, and interactive water celebration where students explore a diversity of water-related topics through structured learning stations, exhibits, investigations, activities, demonstrations, and contests. Resources provided include the Project WET K-12 Curriculum and Activity Guide, the Project WET Water Celebration Handbook, and other water festival helping aids, resources, and ideas to increase your ability to develop a local school or community water festival.

Project WET/Water Conservation

Through activities, case studies, and school and community celebrations, educators and students explore the concepts and issues of water conservation. The case studies are designed to give students real life decision-making and problem solving experience. Resources provided include the Project WET K-12 Curriculum and Activity Guide, and the Project WET/Watercourse Conserve Water Educator's Guide (15+ activities).

Project WET/Lewis and Clark Expedition

This workshop includes activities from the National Lewis and Clark's Educator's Guide and ND Lewis and Clark Curriculum and related resource and reference materials. Participants will acquire an understanding of the importance of the

Lewis and Clark Expedition to our state and national heritage. The Project WET K-12 Curriculum and Activity Guide, the ND Lewis and Clark Curriculum Guide (20+ activities) and Storybook, the Lewis and Clark Resource Guide, and a variety of hands-on activities and reference materials are provided.

Special Topics

This one graduate credit workshop is for those individuals who have already taken a regular Project WET one-credit or Project WET water resource topic combination workshop and desire to take a combination of special water resource education topics not previously taken.

AVAILABLE SEPTEMBER 2003...

Project WET/Missouri River Watershed:

The Missouri River Watershed workshop features topics such as the cultural and natural background of the Missouri River Basin, and provides hands-on activities on contemporary water uses, issues, and concerns. Hands-on activities introduce learners to the problems and prospects facing the "Big Muddy" of today. The Project WET K-12 Curriculum and Activity Guide and the Discover a Watershed: the Missouri River Guide (20+ activities) are provided as workshop resources.

In addition to the many one-credit workshop opportunities Project WET offers, there are also multi-credit workshops held during the summer months. Those opportunities will be addressed in the next Primer. ■