The Oxbow

FROM THE NORTH DAKOTA STATE WATER COMMISSION

Spring and summer mean busy times for construction crew

By Brad Benson

Wakopa Dam

The State Water Commission (Commission) construction crew started the 2001 construction season responding to an emergency situation at Wakopa Dam in Rolette County. The dam is an earthen embankment, approximately 16 feet high and 550 feet long.

The emergency resulted when water began overtopping the dam during an early spring runoff event. The cause for the overtopping was two fold. First, heavy snow cover throughout the watershed resulted in above average run-off and stream flows into the reservoir. And second, the principal spillway, which is a 24-inch diameter corrugated metal pipe, was plugged with debris. As a result of water flowing over the top of the dam, approximately 600 cubic yards of fill eroded from the downstream face of the dam (see photo). Fortunately, there are no homes or communities immediately downstream of the embankment.

Damage caused by the overtopping of Wakopa Dam in Rolette County this past spring.

In response to the overflow, the Rolette County road crew excavated a temporary emergency spillway in the west abutment of the dam in order to lower the water level behind the dam. This action very likely prevented a complete loss of the embankment. The work by the Commission involved deepening and widening the emergency channel. In addition, once the reservoir was drawn down approximately nine feet, the construction crew was able to gain access to the inlet of the principal spillway and clean debris that was preventing normal flow.

Rolette County is one of the counties listed under the current disaster declaration. Therefore, repairs to the dam qualify for federal financial assistance from the Federal Emergency Management Agency (FEMA). As such, the North Dakota Game and Fish Department, whom is the owner of the dam, has submitted the work at the dam to FEMA. The submittal to FEMA included the repairs to bring the dam to pre-flood conditions and a request under the mitigation phase to construct a permanent emergency spillway in the right abutment of the dam. The additional spillway will increase hydraulic capacity at the dam. This will virtually eliminate damages to the embankment under similar runoff conditions.

Additional work performed at the dam included the replacement of the trash rack that had become damaged, and backfilling the emergency channel excavated in the left abutment. The total cost of the work performed to date is approximately $20,000. The Commission is estimating it will cost approximately $34,000 to construct the new emergency spillway in the right abutment.

North Dakota State Water Commission
Dale L. Frink, State Engineer
900 East Boulevard • Bismarck, ND 58505 • (701)328-2750
http: //www.swc.state.nd.us/

Patrick Fridgen, Editor

Houseboat removal from the Missouri River

One of the more interesting projects the Commission's construction crew completed recently involved the removal of a 50-foot, multi-ton houseboat from the Missouri River. The houseboat was abandoned on a Missouri River sandbar approximately five miles south of Bismarck.

The boat was located on sovereign land, and as such, the Commission directed the owner to remove the boat. Unfortunately, the owner of the boat was in poor health and did not have the necessary financial resources to hire a contractor to remove the boat in a timely manner. Therefore, it was decided by the Commission to either have the boat removed by a private contractor or have the Commission's construction crew perform the removal. After receiving bids from two contractors, it was determined that it would be less costly for the Commission's construction crew to do the work. The construction crew was able to perform the removal successfully – at nearly half the cost of the private contractors' estimates.

North Lemmon Lake Project

The Commission has entered into a contract with the North Dakota Game and Fish Department and the Adams County Water Resource District to install a low-level drawdown system at North Lemmon Lake Dam. Stagnant, oxygen depleted water will be discharged from the bottom of the reservoir through the low-level drawdown to the downstream channel, thus improving water quality in the reservoir and enhancing the fishery.

The low-level drawdown consists of approximately 400 feet of 12-inch diameter pipe extending into the reservoir. Construction costs of the drawdown system are estimated at approximately $36,000. ■

COMMISSION MEETING MINUTES

By Patrick Fridgen

The North Dakota State Water Commission (Commission) held a telephone conference call meeting in the Governor's conference room at the State Capitol in Bismarck, July 18, 2001.

Jim Lennington, Project Manager of the Southwest Pipeline Project (SWPP) announced several upcoming bid openings. On July 18, bids were opened for the construction of a second New England reservoir that will have a capacity of 1.24 million gallons. Also on July 18, bids were opened for a Twin Buttes reservoir, which will be located one mile north of Bowman and have a capacity of 249,000 gallons.

Mr. Lennington then announced a July 26 bid opening for a rural water distribution system in the Twin Buttes service area. This contract includes about 123.5 miles of rural water distribution pipeline that will serve 99 connections in rural Bowman County east of Bowman and a small portion of southern Slope County. The estimated cost of the contract is $2,299,000.

It was brought to the Commission's attention that Coteau Properties Company intends to construct a coal haul and dragline road across the SWPP's raw water pipeline near Coteau mine in Mercer County. When the SWPP was originally constructed in that area in 1989, Coteau Properties stated its intentions to mine the area some day, however, there was no practical way to avoid the mineable coal reserves with the SWPP route. Coteau was planning the crossing for 2004, but has now moved it up to the spring of 2002.

Several meetings have been held with Basin Electric Cooperative, since they also have a pipeline in the same affected area. After an investigation by Bartlett & West Engineers, it was determined that the best alternative to protect the pipelines is to construct a bridge for the haul road. SWPP's share of the estimated cost for construction is between $125,000 and $175,000, with an additional $30,000 for engineering. Loss of coal to Coteau because of the SWPP will cost another $9,800.

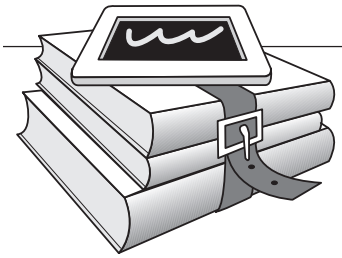
Also with the SWPP, the Commission awarded contract 2-4C, Twin Buttes Service Area, Main Transmission Pipeline (Bowman-Scranton), to Nygard Construction of Garrison.

And finally, the Commission was presented with the resignation of Pinkie Evans-Curry, the Southwest Water Authority Manager and CEO, effective July 31, 2001. Operations Chief, Ray Christensen, has been appointed as the interim manager. ■

Hofstad, Halcrow appointed to Commission

Curtis Hofstad of Starkweather, North Dakota was appointed by Governor John Hoeven to serve as a member of the State Water Commission, replacing Judith DeWitz. Hofstad's term officially began July 1, 2001 and will expire June 30, 2005. Hofstad owns and operates a family farm in Ramsey County and is the vice-chairman of the Ramsey County Water Resource District.

Earlier in the summer, Charles "Mac" Halcrow of Drayton, North Dakota was also appointed to serve on the Commission, replacing Florenz Bjornson. Halcrow's term began in May and will expire June 30, 2005. Halcrow farms in Pembina County and is the former mayor of West Fargo. ■



Planning to irrigate?

If you are planning to invest in an irrigation system as part of your farm operation, here are a few important questions that should be considered.

Why do you want to irrigate?

The primary factor that prompts you to invest in irrigation should be to increase net farm income over dryland production. Irrigating just because the water is available, as insurance against insufficient rainfall, or because you have fields with irrigable soils should not be good enough reasons alone. It must be understood that the higher yields possible with irrigation will require greater management skills and inputs in the form of fertilizer and pest control. In short, the transition from dryland to irrigated agriculture is not an easy one, although the benefits to your farm's income can make the extra work worthwhile.

Are your soils irrigable?

You must check the county soil survey to determine the irrigation suitability of the soils in the fields you want to irrigate. If your county soil survey hasn't been printed, the local Natural Resource Conservation Service (NRCS) office can obtain the information for you. Not all soils can be irrigated due to various physical problems, such as low infiltration rates and poor internal drainage, which may cause salt buildup. Soils are classified as either irrigable, conditional, or non-irrigable:

- *Irrigable soils* - have no restrictions for sustained irrigation using proper application rates, amounts, and water quality.
- *Conditional soils* - have restrictions for sustained successful irrigation due to such factors as water table elevation, layers of low permeability, potential for salinization, steep slopes, and other problems. Some restrictions can be corrected with drainage, however, conditional soils should have a detailed field level soil survey conducted before irrigation is developed.
- *Non-irrigable soils* - have severe restrictions to irrigation and should only be developed where they make up a very small portion of an area consisting of irrigable soils.

Can you obtain the quantity and quality of water you need?

The water supply is the heart of any irrigation development. If you are going to use a surface water source, check with the State Water Commission (SWC) to determine if there will be sufficient water available during the summer months. If you are going to use ground water, check the county ground water survey published by the SWC. It will provide approximate information as to location, size, and production capacity of the aquifers within your county.

Small aquifers may exist that are not shown in the county ground water survey. Test drilling and pumping is the only sure way to determine if sufficient water is available. The minimum amount needed is six gallons per minute per irrigated acre. A state certified irrigation well driller should drill the test holes. If there is sufficient water, one or two of the test holes should be developed as observation wells to monitor the effect of irrigation pumping on the ground water level.

Both ground and surface water should be tested for quality. Water samples sent to places such as the NDSU Soil Testing Laboratory along with the soil survey information will be analyzed for quality and correlated with the soil conditions on your farm. This is very important because the soil type will determine the quality of water that can be used.

Water permits for irrigation should be obtained before a production well is drilled and irrigation systems are constructed. Water permit applications and instructions can be obtained from the SWC. When submitted to the SWC, the application must be accompanied by the appropriate fee, a map showing the location of the water diversion, acreage to be irrigated, and a signed certificate of a surveyor. You can fill out the permit application with the help of a local surveyor, the NRCS, SWC, or a consulting engineer.

When a water permit is first issued it is called a conditional permit. Once the water source is developed and the irrigation system has been installed and inspected by the State Water Commission, the conditional permit is then upgraded to a perfected permit.

In next month's Primer, we will look at additional questions that should be considered by anyone who may be "planning to irrigate." If you have any questions or would like further information regarding irrigation, contact the State Water Commission at 900 East Boulevard Avenue, Dept. 770, Bismarck, ND 58505-0850, or call (701)328-2750. ■

Adapted from: "Planning to Irrigate... a Checklist" by Thomas Scherer and James Weigel. Printed with permission from NDSU Extension Services.