

FROM THE NORTH DAKOTA STATE WATER COMMISSION



The completed fish passage on Warwick Dam.

Warwick Dam Repair & Fish Passage Completed

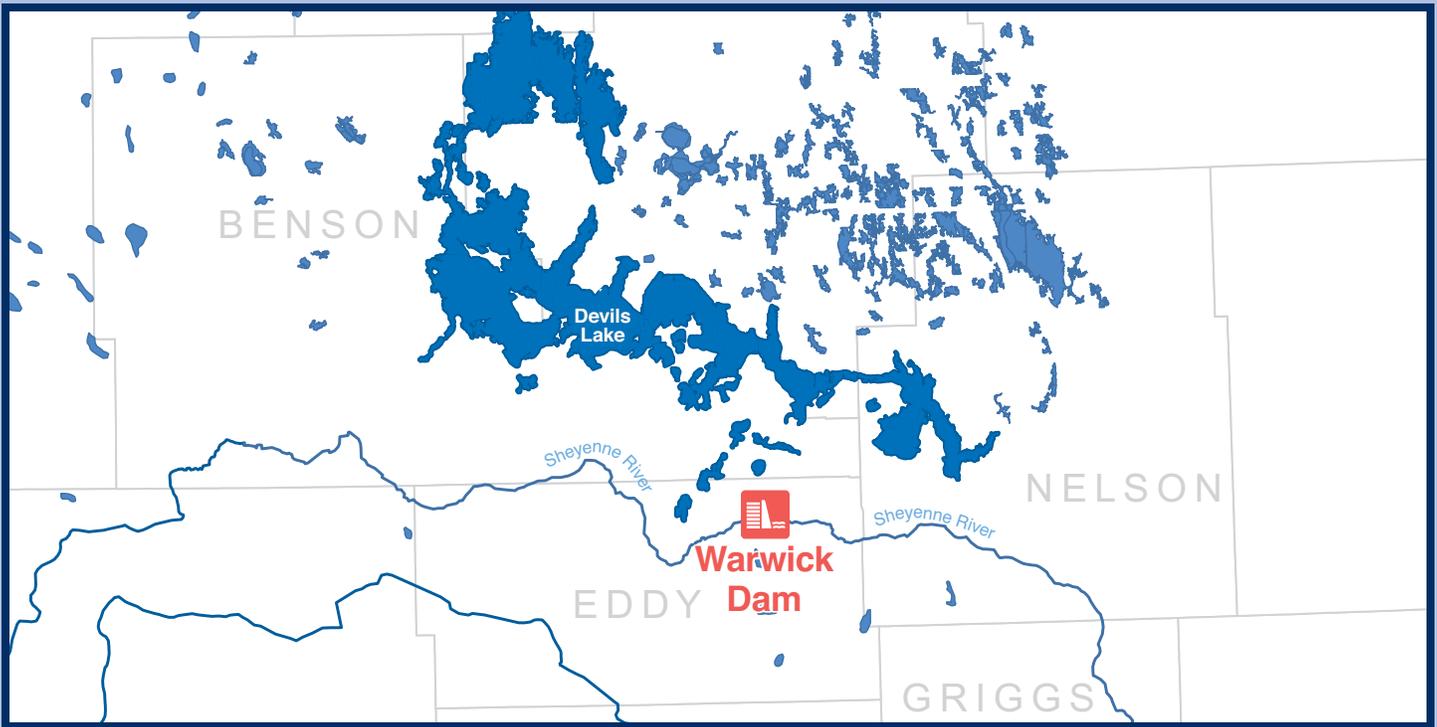
Several years of work, gathering together cost-share partners, and engineering design by the Eddy County Water Board, Upper Sheyenne Joint Water Resource Board, and the State Water Commission have culminated in the repair of Warwick Dam on the Sheyenne River as well as the installation of a fish passage.

As happened with the Sheyenne Dam repair in 2008, the Upper Sheyenne Joint Board worked closely with Eddy County in order to build partnerships with the various entities that are interested in structures like Warwick Dam. The Board was instrumental in bringing together eight funding partners; the State Water Commission, Game and Fish, Ramsey County Water Resource Board, Devils Lake Basin Joint Water Resource Board, Fish and Wildlife Service, Cass County Water Resource District, and ND Outdoor Heritage Fund. In 2012, the State Water Commission approved \$110,150 in cost-share towards eligible costs of the project.

Located four miles south of Warwick, in Eddy County, Warwick Dam is one of the many North Dakota dams built through the Works Progress Administration and Civilian Conservation Corps jobs programs created in response to the Great Depression.

Warwick Dam was built in 1933, and is a smaller low-head dam, with a reservoir volume of 300 acre-feet, and a surface area of 200 acres. Like many dams built during the rush of Depression-era projects, it was approaching the end of its functional lifespan, with freeze-thaw cycles, the natural flows of the river, and time, taking their toll.

Although Warwick Dam was built for the purpose of recreation, Warwick Dam also provides the site for a USGS gaging station that has been collecting data for an impressive 65 years. This gaging station is used by various natural resource entities, including the State Water Commission to better manage and understand the Sheyenne and Red rivers.



Although Eddy County greatly desired to see Warwick Dam restored, the significant costs associated with construction greatly surpassed the ability of the county to fund the project on its own.

One of the ways that the Warwick Dam project was able to draw in many diverse funding partners was with the addition of a fish passage on the structure. A fish passage, in this case, is essentially a gently sloped rock structure on the downstream side of the dam, which allows fish to move upstream over the dam for most of the year. Fish passage structures can reconnect river segments separated by dams or barriers, which improves the health of the aquatic community. "Aquatic populations across the country are rapidly declining for many reasons; however, impacts caused by the fragmentation of rivers is a major factor," said Steve Krentz of the U.S. Fish and Wildlife Service. "These barriers prevent fish from reaching important habitats, primarily through upstream movements. When a project like this finds common ground for local users, and delivers benefits to fish and mussels that use these prairie rivers, it is an enjoyable experience," continued Krentz. "It has been a pleasure having the opportunity to work with these partners, seeing them pull together and finding solutions that primarily benefit the local area but help contribute to conservation at a larger landscape level."

Other entities, like Cass County and the Water Commission have an interest in seeing water storage structures be maintained or improved in tributaries of the Red River, to help with flood mitigation. Lastly,

maintaining the location and physical parameters at the USGS gage, along with its extensive period of record, provide a useful tool for water resource management and research.

The total cost of the project was approximately \$255,000. Construction was started in November 2015. The relatively dry year, coupled with a warm November allowed construction to continue until almost December.

The rehabilitation of Warwick Dam is an excellent example of what joint water boards can accomplish, drawing upon many different partners, building consensus, and developing projects that are beneficial to their basin.



Construction of the descending stone structure that allows fish to move upstream at Warwick Dam.



Assistant State Engineer Takes On New Career

After ten years of dedicated service, [Michelle Klose](#) resigned from the State Water Commission in January 2016, and accepted a position as the City of Bismarck's new Public Works Director of Utilities.

Klose began her career with the State Water Commission in 2005, as the Northwest Area Water Supply (NAWS) project manager. As manager of NAWS, Klose directed project construction and operations, while addressing international issues and litigation associated with the project.

The NAWS project was first authorized by the Garrison Diversion Reformation Act of 1986 and the Dakota Water Resources Act of 2000 under the Municipal, Rural, and Industrial (MR&I) Grant Program. Construction of NAWS began in April 2002, with a main line and associated features being built between the City of Minot and Lake Sakakawea. Since the beginning of construction, the project has faced legal challenges and international attention.

Prior to the NAWS project, communities and rural water systems within the NAWS project area were supplied by ground water, that was poor in both quality and quantity. The City of Berthold's ground water in particular was found to be unsuitable for drinking water. Klose made it her mission to find an interim solution for a water supply source for Berthold and surrounding areas. She recruited the help of former Mayor of Minot, Curt Zimbelman, the NAWS Advisory Council, and former Minot's Public Works Director, Alan Walter.

During this arduous time, Klose, the cities and rural water systems worked together to finalize an agreement stating that Minot would begin selling water to the State Water



Ceremony commemorating Berthold's new interim water supply in August 2008.

Commission, for resale to the City of Berthold through the NAWS pipeline. The deal provided Berthold with drinking water until NAWS can provide the long-term solution, which has been determined to be Missouri River water. A pipeline from Minot to Berthold started supplying water in August 2008. "This was without a doubt one of my greatest accomplishments as the NAWS Project Manager," said Klose. "I was extremely passionate about the project, and was elated to get an adequate interim water supply for the residents of Berthold."

In 2011, Klose was promoted to Assistant State Engineer at the State Water Commission. The new position required her to be involved with various water issues across the state, including appropriation, regulation, and development; the NAWS project; Western Area Water Supply Project; and federal policy responses.

Klose was also tasked with chairing the Policy Subcommittee of the State Water Commission to address cost-share issues on water projects ranging from flood protection to drinking water supply. She also represented North Dakota on the congressionally authorized Missouri River Recovery Implementation Committee (MRRIC) to address local interests in the recovery of endangered species on the Missouri River, and represented the state's interests as a member of the Western States Water Council. "While serving as the Assistant State Engineer, Michelle filled an immense and fundamental role in various projects," said State Engineer Todd Sando. "She created beneficial and valuable relationships throughout the state and also advised and represented North Dakota on a national level throughout her years of service."

"I am so thankful for my time at the State Water Commission," said Klose. "It has been challenging and rewarding in so many ways. I know that my business relationships, resources, and insight on water issues will carry over in my new career. But I will deeply miss the people at the Water Commission. The amount of knowledge and understanding of water resources in the agency is fantastic."



North Dakota State Water Commission
Todd Sando, P.E., State Engineer
900 East Boulevard Ave. • Bismarck, ND 58505
(701) 328-2750 • <http://swc.nd.gov>

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