



## 2021 WATER COMMISSION CONSTRUCTION SEASON OVERVIEW

During the 2021 construction season, the Department of Water Resources' (DWR) Design and Construction Section conducted repairs and modifications to water resource structures throughout the state, and assisted in the maintenance and operations of the Devils Lake Outlets.



### HARVEY DAM, WELLS COUNTY

Harvey Dam is located just south of the city of Harvey and serves as the embankment for ND Highway 3. It is an earth embankment dam with an arched corrugated metal pipe (CMP) principal spillway conduit. The Wells County Water Resource District, along with DWR Dam Safety staff, wanted to perform an inspection of the floor of the conduit pipe, which is normally under water. To further complicate the situation, the low-level outlet valve in the inlet structure could not be fully closed due to debris in the valve and corrosion of the operating stem.

The DWR Construction Crew started by clearing debris from the valve and removing the operating stem so the valve could be closed by hand. They cleared beaver dams from below the downstream end of the pipe to improve the drainage of the plunge pool. Finally, they were on site the day of the inspection to operate pumps to remove the remaining water so the Dam Safety staff and representatives of the water resource district could inspect the floor of the pipe.



### DEVILS LAKE OUTLETS

The Devils Lake Outlets, owned and operated by the DWR, discharge a maximum of 600 cubic feet per second of water from Devils Lake. There are two outlets; one on the west end of Devils Lake at Round Lake south of Minnewaukan, which pumps water out of Devils Lake through a system of pump stations, canals, and pipes to an outfall structure along the Sheyenne River 14 miles away. The east outlet pumps water from Devils Lake through a pump station on East Devils Lake through an eight-foot diameter, five-and-a-half mile long pipe to an outfall structure on Tolna Coulee.

The DWR construction crew assisted the Devils Lake Outlet staff with several projects to maintain the facilities. These projects included repairing erosion and rip-rap, clearing debris from the canal at the west outlet, taking soundings in Round Lake to help with the understanding of how the water is being restricted as the lake lowers, and repairing the coatings on pumps and piping at both outlets.



### DAVIS BUTTES RESERVOIR, STARK COUNTY

The Davis Buttes Reservoirs, owned by the DWR and managed by the Southwest Pipeline Project, store 1 million gallons of potable water in two tanks. They serve the communities of Gladstone, Taylor, Richardton, Glen Ullin, and Hebron as well as 1,100 rural citizens. The tanks are located atop the Davis Buttes just northeast of Dickinson.

A large erosion scarp formed below the reservoirs on the south side of the butte. Due to concerns that the scarp would continue to grow toward, and possibly undermine the tanks, it was decided to armor the scarp to prevent further erosion.

The project involved several steps. First the DWR Construction & Well Drilling staff pumped seven cubic yards of bentonite grout into voids and cracks in the eroded area. 46 cubic yards of sand was then placed to construct a filter over the eroded area. The sand layer was then covered with a geotextile fabric, 29 tons of drainage rock, and 80 cubic yards of rock rip-rap to armor the area from further erosion.

### US GEOLOGICAL SURVEY

The DWR continued to cooperate with the US Geological Survey (USGS) on the maintenance and improvement of the USGS's stream gauging sites in North Dakota. The Construction Crew participated in the construction and rehabilitation of several gauge houses across the state, including the rehabilitation of sheet pile weirs at Foxholm and at Burnt Creek north of Bismarck.



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