

Dull Knife Watershed Dam Rehabilitation Project Johnson County, Wyoming

Fact Sheet
January 2019

History of the Dam:

The Dull Knife Dam in the North Fork Powder River Watershed was constructed in 1966 by the North Fork Water Users Association with the assistance of the USDA Natural Resources Conservation Service Watershed Program.

In 2014 the Water Users Association formed the Dull Knife Irrigation District, which now is responsible for operation and management of the dam.

Why Rehabilitate the Dam?

The dam was constructed as a significant hazard dam. A breach analysis study in 2005 highlighted the loss of life, livestock and property that would occur if a breach of the dam occurred and the dam was reclassified to high hazard.

A breach of the dam would inundate 58 miles of floodplains along the North Fork of the Powder River.

The existing auxiliary rock spillway had been continually eroding since the dam was constructed and had progressively gotten worse. Erosion not only occurred when water flowed over the spillway, but it also progressed from freeze-thaw cycles that continually eroded the fractured rock material.

Rehabilitation Details:

Major design items included a downstream buttress on the main dam, slip lining the existing 36-inch diameter outlet pipe (~460 ft), additional rip rap on the main dam upstream slope, an impact basin and flow measurement flume for the main dam, replacement of the thimble and intake gate for the outlet works on the main dam, new concrete labyrinth spillway, mass concrete spillway chute and stilling basin, foundation drains for both the main dam and saddle dam, and new spillway channel.



A new concrete labyrinth spillway was installed as part of the rehabilitation project.

Cost of the Project:

The cost to rehabilitate the Dull Knife Dam was \$6,288,000.

NRCS provided \$4,087,200 through the Watershed Protection and Flood Prevention Program and the remaining \$2,200,800 was paid by local sponsors, including The Wyoming Water Development Commission.

Benefits:

The rehabilitation project will maintain irrigation water storage which benefits approximately 3,360 acres. The rehabilitation will also help protect an estimated 77 people who live and work in 21 residences below the dam; three major roads; and additional infrastructure downstream that would be at risk in the event the dam failed.

It will also extend the life of the dam for another 100 years.

Partners:

Dull Knife Irrigation District of Johnson County
Wyoming Water Development Commission
USDA NRCS

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