



## GEOTECHNICAL AND WATER RESOURCES ENGINEERING



### KEY ENGINEERING ELEMENTS:

- Hydrologic analysis
- Geotechnical analysis
- Spillway sizing
- Flood routing
- Water control features
- Scour potential of spillway channels

### CLIENT BENEFITS:

- Additional storage without additional property acquisition or embankment raise
- Updated spillways satisfying SEO requirements
- New reservoir interconnect



**RJH Consultants, Inc.**  
**9800 Mt. Pyramid Court, Suite 330**  
**Englewood, CO 80112**  
**Phone: 303-225-4611**  
**Fax: 303-225-4615**  
**Toll Free: 866-900-1930**  
[www.rjh-consultants.com](http://www.rjh-consultants.com)

## JERRY CREEK RESERVOIRS, MESA COUNTY, CO UTE WATER CONSERVANCY DISTRICT

RJH Consultants, Inc. (RJH) was retained by Ute Water Conservancy District (District) to perform final design and construction support services for renovations necessary to Jerry Creek Reservoirs No. 1 and No. 2, located about 32 miles northeast of Grand Junction, Colorado. Jerry Creek Reservoir No. 2 is the largest reservoir; a Class 1, 135-foot-high, earth embankment dam with a current impoundment of 6,300 acre-feet (ac-ft). Jerry Creek Reservoir No. 1 is a 57-foot-high earth embankment dam impounding 1,100 ac-ft.

The renovations provided 1,200 ac-ft of additional water storage at Jerry Creek Reservoir No. 2. The modified spillway passes the inflow design flood (IDF) from Jerry Creek Reservoir No. 2 (upper basin reservoir) through Jerry Creek No. 1 (lower basin reservoir) and into Plateau Creek via a drainage channel called Interdiction Ditch, which collects sediment-laden flow that is undesirable for raw water supply from local site drainage .

There are several complex technical issues that were properly managed by RJH during final design services to ensure the District was provided design and construction documents for achieving the overall project goals. The technical issues related to raising the normal pool level at Reservoir No. 2 and corresponding issues with other Jerry Creek Reservoirs facilities affected by the enlargement that were addressed by RJH are described as follows:

- Rais the existing spillway and normal pool approximately 7 feet at Reservoir No. 2 creating additional water storage without raising the dam crest.
- Pass a majority of the IDF through the new Reservoir No. 2 emergency spillway directly into Reservoir No. 1. The Jerry Creek Reservoirs will act as a storage system to safely pass the IDF through both reservoirs into the lower drainage basin using the new spillways to convey reservoir discharges without creating dam safety concerns.
- Route a majority of the reservoir storm discharge from Reservoir No. 1 through a new emergency spillway at Reservoir No. 1 into Plateau Creek. This emergency spillway was designed to incorporate local drainage flows collected by Interdiction Ditch and discharge from the Reservoir No.2 emergency spillway into Plateau Creek.
- Incorporate the results of a Site-Specific Probable Maximum Precipitation (SSPMP) Study for the Jerry Creek Reservoirs drainage basin into existing flood and reservoir routing computer models. The revised flood routing models using the SSPMP resulted in a smaller IDF and required less capacity (less construction cost) for the proposed new emergency spillway at both reservoirs.
- Perform hydrologic and hydraulic analyses for routing of the IDF, which was used to design water control features at the Jerry Creek Reservoirs. The hydraulic models determined the size of spillway structures and the hydrologic reservoir routing models evaluated safely passing the IDF into Plateau Creek with minimal erosion potential in the spillway channels.
- Design spillway improvements to handle the peak spillway discharges while meeting Colorado State Engineer's Office (SEO) dam safety design criteria.
- Modify the interconnect pipeline located between the reservoirs to incorporate a mid-level interconnect structure. The interconnect structure will function to pass a range of more frequent storm events as uncontrolled releases from Reservoir No. 2 into Reservoir No. 1.

The project was constructed in 2008 and is expected to fill the additional storage volume during the 2009 season.