

Decision Support System for Reservoir Operations in Colorado

DENVER WATER

PROJECT SUMMARY

Denver Water required decision support tools to improve the operations and management of local reservoirs. Riverside Technology, inc. participated in developing and implementing procedures that incorporated extended streamflow predictions forecast information.

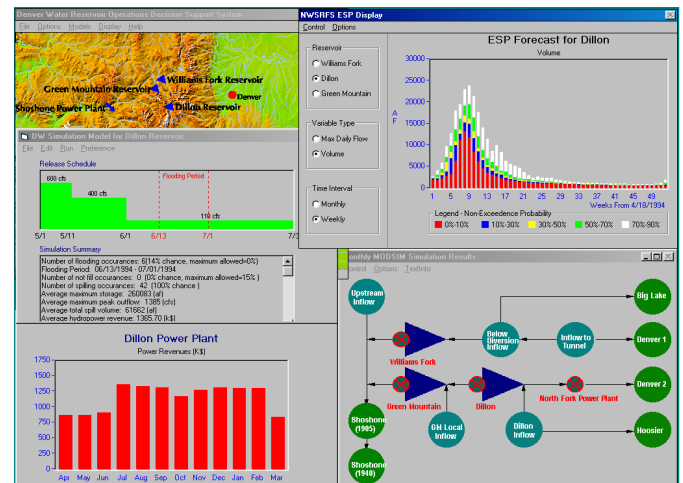
LOCATION
Colorado, U.S.A.

PERIOD
1997 – 1998

PROJECT DETAILS

Riverside Technology, inc. (Riverside) participated in a cooperative research project involving Denver Water, the U.S. Bureau of Reclamation (USBR), the National Weather Service (NWS), and Colorado State University (CSU) to develop procedures for incorporating extended streamflow prediction (ESP) forecast information into reservoir operations.

The project team selected a suitable historical period to reconstitute operations and verify ESP forecast information by generating and analyzing ESP forecast traces for the verification period. The verification information was used to determine the accuracy of the forecasts and how representative the results will be for other locations.



National Weather Service River Forecast System ESP Display

The modeling effort involved incorporating ESP forecast information into Denver Water and USBR operations at the Williams Fork and Blue River basins. The emphasis was on using existing models to simulate Denver Water and USBR operations. The project team chose MODSIM to be the operational model because it is an efficient river network simulation model, and it is suitable for use with ESP data. Riverside incorporated operational rules into MODSIM, and verified and recalibrated the model based on historical releases made during the selected reconstitution period.

Once the model adequately represented Denver Water and USBR operations, Riverside assessed the operational rules using the historical calibration period. The assessment procedure considers operational constraints and allows the examination of trade-offs of reservoir uses while meeting release and diversion demands. Riverside also modified the model so that ESP forecast information could be used in reservoir operations. In addition, Riverside:

- Performed historical reconstitution of forecast information.
- Analyzed how operational release decisions would occur with and without ESP data.
- Assessed and quantified the benefits of having the additional information provided by ESP.

The project resulted in the development of innovative decision support tools used by Denver Water personnel to improve the management of Denver Water and USBR reservoirs.

RELATED PROJECTS

Columbia River Basin Streamflow Forecast System

Watershed and Reservoir Model Calibrations for Locations in the Northeast United States

Colorado River Decision Support System

South Platte Decision Support System

global science solutions

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