7-24-2007

Baseflow Prediction for Mitigating for Flow Uncertainty

Kevin Boggs et al.

Abstracts of the presentations given on Tuesday, 24 July 2007, in Session 5 of the UCOWR Conference.

Baseflow Prediction for Mitigating for Flow Uncertainty

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ABSTRACT

Ground water contributes a substantial proportion of flow to many rivers and streams. Although this contribution is less variable than overland runoff, baseflow does vary due to variations in aquifer recharge and pumping. Effects of recharge and pumping components are lagged in time and dampened in magnitude by aquifer characteristics of transmissivity and storativity, and by distances between the event and the river. Time lags ranging from months to years create the potential for forecasting future baseflows, however, variation is dampened as time lags increase. Long-term variations therefore create greater opportunity for longer term forecasts. Time-lag and dampening effects is being evaluated through time-series analysis of historical data, analytical models, and numerical models. Application of these techniques in the eastern Snake River Plain in Idaho provides and indication of the potential for forecasting changes to spring discharge in the Thousand Springs area. Application of the forecasting techniques is expected to be of value to commercial fish hatcheries, hydropower interests, and others.

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