

## **Comparing the Glover-Balmer method with a calibrated groundwater model to estimate aquifer-stream impacts due to altered field water management**

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**Abstract.** Historically, analytical models such as the Glover-Balmer method have been used to assess the impact of field-based water management on groundwater-surface water interactions. In this study, we investigate the applicability of such a method by comparison with results from a MODFLOW-UZF groundwater flow model that has been calibrated and tested for the Lower Arkansas River Valley (LARV) in southeastern Colorado. Comparisons are performed by stressing the numerical model to simulate addition or extraction of water to specific cultivated fields, and determining accretion or depletion to the river due to the system stress. The Glover-Balmer model is provided inputs based on the aquifer parameter values developed by the MODFLOW-UZF model, and stream accretions/depletions from the analytical model are compared to those simulated by the numerical model. Over 30 comparisons are established for different cultivated fields to encompass the complex hydrologic conditions within the LARV. This presentation will describe how scenarios between the two models are established, and discuss major findings.