A METHOD FOR ESTIMATING GROUND-WATER RETURN FLOW TO THE LOWER COLORADO RIVER IN THE YUMA AREA, ARIZONA AND CALIFORNIA-EXECUTIVE SUMMARY

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ABSTRACT

Substantial quantities of water diverted from the lower Colorado River in the Yuma area, Arizona and California, return to a reach of the river as ground-water flow. A method for estimating these quantities involves the computation of ground-water return-flow rates using hydraulic analyses of ground-water flow at 18 cross sections in a reach of the river adjacent to irrigated land in the Yuma area.

The hydraulic-analysis method uses aquifer characteristics and average annual gradients that are based on measurement of river stage and ground-water heads in each cross section. Aquifer characteristics were estimated mainly from the evaluation of aquifer response to changes in river stage.

The average annual return flow for 1975-78 was estimated to be 44,000 acre-feet from lands on the Arizona side of the river and 38,000 acre-feet form lands on the California side. Estimates of total return flow for the Yuma reach compare favorably with estimates made using surface-water-budget and salinity-budget methods.

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