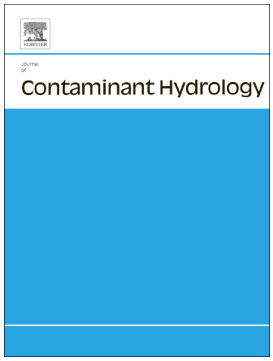

Validation of a new device to quantify groundwater-surface water exchange

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Validation of a New Device to Quantify Groundwater-Surface Water Exchange

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Abstract

Distributions of flow across the groundwater-surface water interface should be expected to be as complex as the geologic deposits associated with stream or lake beds and their underlying aquifers. In these environments, the conventional Darcy-based method of characterizing flow systems (near streams) has significant limitations, including reliance on parameters with high uncertainties (e.g., hydraulic conductivity), the common use of drilled wells in the case of streambank investigations, and potentially lengthy measurement times for aquifer characterization and water level measurements. Less logistically demanding tools for quantifying exchanges across streambeds have been developed and include drive-point mini-piezometers, seepage meters, and temperature profiling tools. This project adds to that toolbox by introducing the Streambed Point Velocity Probe (SBPVP), a reusable tool designed to quantify groundwater-surface water interactions (GWSWI) at the interface with high density sampling, which can effectively, rapidly, and accurately complement conventional methods. The SBPVP is a direct push device that measures *in situ* water velocities at the GWSWI with a small-scale tracer test on