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## Application of a new point measurement to estimate groundwater-surface water exchange

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PAPER NO.127-7

## 127-7: APPLICATION OF A NEW POINT MEASUREMENT TO ESTIMATE GROUNDWATER-SURFACE WATER EXCHANGE

**Monday, 23 October 2017 03:10 PM - 03:25 PM**

*Washington State Convention Center - Room 613/614*

The StreamBed Point Velocity Probe (SBPVP), a new point measurement device, measures *in situ* groundwater velocities at the groundwater-surface water interface (GWSWI, based on a mini-tracer test on the probe surface. This device yields velocities without reliance on estimations of hydraulic conductivity ( $K$ ), porosity ( $n$ ), or hydraulic gradients. The SBPVP was applied to a meander of the Grindsted stream (Denmark) to determine patterns of groundwater-surface water exchange (GWSWE). Analysis of the spatial distribution of velocity values suggests the sediments in the Grindsted streambed are highly heterogeneous. Calculated discharges were combined with geochemical data to determine the mass discharge of specific solutes (PCE, TCE, cis-DCE, and VC). Total mass discharge of the contaminants was found to be concentrated in several "hot spots" that occurred in locations determined by both magnitudes of concentrations and velocities. Given these localized hot spots, detailed information about flow at the GWSWI could be vital to understanding solute, and, by extension, nutrient, movement in ecosystems affected by exchange. Such information could be crucial to effective remediation design.

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and Solute Transport at the  
Groundwater–Surface Water Interface

**Program:** Topical Sessions

**Day:** Monday, 23 October 2017

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