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Wen Li* (liw2@clarkson.edu), **G.R. Liu**, **Guangming Yao** and **Michelle Crimi**. *Simulation of groundwater flow captured by the horizontal reactive media well using cell-based smoothed radial point interpolation method.*

The Horizontal Reactive Media Treatment well (HRX well) is a novel technology for in-situ treatment of contaminated groundwater. The most significant technical performance risk associated with field-scale implementation of the HRX well is installation and construction. Therefore, the groundwater capture simulation plays a very important role in the design of HRX well. We propose a cell-based smoothed radial point interpolation method (CS-RPIM) for simulating groundwater flow captured by HRX well. This numerical formulation is based on tetrahedral background meshes which can be generated automatically. The cell-based local smoothing domain makes CS-RPIM an ideal way for simulating groundwater flow in the environment with multiple hydraulic conductivities. The generalized smoothed Galerkin weak form makes it possible to select local support nodes more flexibly than the standard weak form. The use of multiquadric (MQ) radial basis in creating RPIM shape functions ensures the non-singularity of moment matrix. Numerical experiments show CS-RPIM has higher accuracy and convergence rate than FEM based on the same meshes. We also analyze the effect of the in-well hydraulic conductivity and the dimension of well on the groundwater capture zone. (Received September 24, 2018)