Mathematical Modeling and Analysis of Test Data at FRC

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In preparation for a field-scale demonstration of uranium reduction, we have:

1. Developed mathematical models of flow, transport, and biogeochemical transformations, and
2. Analyzed pumping and tracer-test data to determine system parameters.

Mathematical models include analytical solutions, MODFLOW, a new finite-volume flow model, particle tracking, and PHREEQC. We will present results from the application of some of these models to data analysis. The pumping tests have provided information about the system's conductivity and specific storage and, to a lesser extent, anisotropy degree and direction. The tracer test has been useful in determining breakthrough curves, and in demonstrating the presence of fast-flow pathways and the possibility that this is a dual-porosity system.