

## **Benefits of Upgradient Contaminant Flux Reduction**

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**Abstract.** Back diffusion and its effects on aquitards' ability to store and release contaminants have been of great interest to Colorado State University (CSU) since 2002. Most recently, Dupont has expressed interest and given financial support for specific aspects of this vein of research.

These specific tasks are, first, to increase intuition of the mechanisms of back diffusion through visualization studies. A sand and clay layered tank will be flushed with a fluorescing tracer and documented throughout to accomplish this task. Second, a multiple layer analytical solution will be developed that can be used to make a priori analyses of the benefits of upgradient contaminant flux reduction in sandy aquifers. This effort requires many mathematical tests and much troubleshooting. Last, the use of single well tracer tests will be explored with the intent of measuring the integral ability of sandy aquifers to transmit and store contaminants. These integral parameters will be key to the multiple layer solution. Field tests will be conducted at Canadian Force Base Borden, Ontario and F. E. Warren Air Force Base, Wyoming to determine these parameters.

Completion of these three tasks will improve our ability to predict downgradient water quality benefit that can be achieved through upgradient flux reduction. The net benefit of this will be a basis for sound decisions regarding managing source zones and related plumes.

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