ASR, continued from page 27

Recent data from an ASR well that stores reclaimed water in a confined aquifer at Chandler, Arizona, showed THM concentrations declining from 170 µg/L to 19 µg/L during two months of storage, while HAA concentrations declined from 96 µg/L to less than 2 µg/L (Clinton, in press). TOC during this period fell from 7.36 mg/L to 2.94 mg/L. Nutrient and pH changes indicated microbial activity. Chloride and total dissolved solids concentrations during recharge and recovery indicated no significant mixing between recharge water and ambient groundwater.

Research Areas

As we become increasingly dependent upon aquifer recharge to sustain our water supply, we will need to focus research on enhancing water quality through natural and sustainable subsurface physical, microbial, and geochemical processes, whether they occur close to the well during ASR operations or beneath a recharge basin during surface recharge. The current understanding of subsurface microbial and geochemical processes occurring during ASR storage is limited. Much can be learned from the hazardous waste field, where "push-pull" technology, very similar to ASR, is used to clean up contaminated aquifers. Genetic research is beginning to identify the microbes contributing to observed water quality changes so that their activity may eventually be enhanced or controlled. Geochemical research is needed, with monitor wells located very close to ASR wells so that water quality changes close to the well may be studied and better understood. ASR cycle testing, particularly with sampling every few minutes during the first few hours of recovery, can illuminate water quality changes close to the well. Further research is needed to confirm the breakdown products of DBP attenuation. Through these continuing efforts, we can improve our understanding of water quality changes during ASR storage.

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