Water Well Profiling in the Central and West Coast Basins, Los Angeles County CA

Tuesday, May 8, 2012: 1:30 p.m.
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Dynamic and ambient well profiling were considered at 11 drinking water supply wells in the Central and West Coast Basins in southern Los Angeles County, California, over the past two years by the Water Replenishment District of Southern California (WRD). Each of these wells are impacted by water quality issues that render the water non-potable without treatment. Identifying the flow contributions and water chemistry across the perforated intervals allow a chemical mass-balance evaluation to be performed to determine the relative water quality contributions to the well during static and pumping conditions. Identifying and isolating the contaminating zones could improve overall water quality and eliminate the need for wellhead treatment or a new water well.

WRD retained services to evaluate each well and perform the well profiling, if possible, using miniaturized dye tracer pulse injection and depth-discrete sampling equipment without pump removal. Of the 11 candidate wells evaluated, two had both dynamic and ambient profiles performed, six had dynamic profiling, two had ambient profiling, and the remaining three wells could not be profiled for various reasons including insufficient space between the pump column and well casing to allow the miniaturized profiling equipment to pass through, other conditions at the well, or changes in plans by the well owner.

Important considerations for test success included performing a chain survey to determine whether the well profiling equipment will pass through inside the well prior to the profiling, obtaining accurate well construction information, obtaining representative aquifer water samples, and maintaining a constant pumping rate. The dynamic well profiling produced more consistent results for wells that could pump for long periods of time and at a constant rate. The presentation will present the results, problems, costs, and lessons learned from the well profiling performed during this two-year period.