



Testing the purge extent and parameter stabilization criteria for representative sampling

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Groundwater contamination plumes are complex and dynamic systems. The temporal and spatial behaviour of a contaminant plume addressed by repeated sampling of a monitoring well set. In order to address the temporal tendencies, the results of the consecutive samples taken from the same monitoring well must be compatible with each other. According to relevant literature, the sampling methods and the sampling equipment can affect the laboratory results of the samples, therefore the sampling procedure is one of the essential components of the compatibility criteria. Sampling procedure consist the purging of the well prior to sampling. Most regulation define purge extent as a 3-5 multiply volume calculated from the water column in the well. Regulations also refer to stabilization of purged water parameters, such as pH, specific conductance and temperature. Purge criteria regulated by technical standards, however, regulations are not clear in every aspects. Parameter stabilization criteria is one of the unsettled issues. Repeated samplings conducted in adjacent monitoring wells at a kerosene-contaminated site. Both wells are practically identical as for well construction. Each well were sampled multiple times using low flow purging technique. Parameter readings were set at 30 seconds apart. Sample representativeness was defined when none of the pH, specific conductance, temperature and ORP value changed for 3 minutes. Triplicate samples taken at the beginning of purging, at one, two and three times well volumes and at parameter stabilization. Triplicate samples meant to account for laboratory errors. Results indicate, that the extent of the purging necessary to reach parameter stabilization varied considerable within one well, and there was differences between adjacent, identically constructed wells. The water column based purge criteria may not grant the representativeness of the samples.