

Groundwater Sampling - Filtering, Low Flow Purging

Effective Date: January 5, 1998

After a monitoring well has been properly installed and developed, a groundwater sample should be collected which is truly representative of groundwater conditions. "Representative groundwater samples" should be collected in a manner in which the water chemistry of the sample is not altered due to either to the method of "pumping" or the materials from which the "pump" is made. To achieve this objective, the following groundwater sample collection methods are recommended for voluntary cleanup/innocent owner/operator applicants:

1. The monitoring well should be purged such that "stagnant" water is not sampled. This may be accomplished through the historically common method of removing multiple well volumes until water quality indicator parameters stabilize or "micro-purge" using similar water quality indicator parameters. Either method should employ low-flow (i.e., a flow rate that does not exceed the rate at which the well was developed) techniques to minimize stress on the aquifer. Water level drawdown provides the best indication of stress imparted by a given flow-rate for a given hydrological situation.
2. The applicant should collect groundwater samples using a low-flow rate (e.g., 0.1 liter/minute) that does not exceed the rate at which the well was developed. The primary goal is to avoid artificially increasing or decreasing naturally suspended particle concentrations. This is particularly important when sampling for metals. Entrained sediment can result in an erroneously elevated dissolved levels for lead in groundwater suggesting that cleanup is necessary when in fact it is not.
3. An applicant should never filter groundwater samples where aquifers contain naturally occurring suspended particles resulting from transport through the aquifer due to the nature of the subsurface geology (i.e., secondary permeability features such as large fractures, solution channels in carbonate rocks, or macropores; not low water-yielding settings such as clays or silts) or when groundwater samples are collected from drinking water wells.
4. If, in spite of proper well construction, development, purging, and sampling; and excluding item 3 above, the groundwater samples require filtering due to excessive turbidity (i.e., turbidity exceeds 10 nephelometric turbidity units), an applicant may filter groundwater samples. The applicant should not use a filter with a pore size smaller than 10.0 microns and filters should be replaced frequently to avoid clogging, which will decrease the effective pore size. The relevant facts should be clearly documented to justify the need for filtering the samples.

Effective Date for Limitation on Use of Filters. The aforementioned provisions are consistent with the technical guidance provided by the Voluntary Cleanup Section since its creation on September 1, 1995. Accordingly, samples collected after September 1, 1995 should meet these provisions. Groundwater samples collected prior to September 1, 1995 which were filtered may be used if they are otherwise representative groundwater samples.