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Reference



TECHNICAL &
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TRAINING

GROUND-WATER MONITORING AND SAMPLING TECHNOLOGY:

Design, Installation, Development, of Ground-Water Monitoring Wells

COURSE NOTES



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Design, Installation, Development, and Sampling
of
Ground-Water Monitoring Wells

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Problems Purging Low-Yield Wells

- May not recover sufficiently to produce sample volume required
- Recovery time may be excessive, affecting sample chemistry
- Purging below top of screen may cause:
 - jetting or cascading in well screen, resulting in a loss of VOCs and dissolved gasses
 - oxidation of dissolved metals
 - trapped air in the well screen and filter pack
 - increased sample turbidity

Purge Volume Based on Indicator Parameter Stabilization

- Measuring indicator parameters while purging to determine purge volume
- Purging completed when parameters have changed and stabilized, indicating formation water in sampling zone
- Stabilization defined as a designated change in measured values over a selected period of time, number of readings or volume of water
 - $\pm 10\%$ over three consecutive readings
 - $\pm 10\%$ over X gallons or liters
 - $\pm 10\%$ over X minutes
 - \pm designated units over readings, volume or time

Indicator Parameters for Purging

- Indicator parameters include:
 - pH
 - temperature (T)
 - conductivity (C) *SC (Temp compensated)*
 - dissolved oxygen (DO)
 - turbidity
- DO and C most reliable indicators
 - pH stabilizes quickly
 - T is easily affected by sunlight, air temperature
 - turbidity not an indicator of water quality, but should be measured when sampling for metals

GW M&A Rem. Robert Paul
↓ low flow sampling

Flow Rates for Purging

- Traditionally high for efficient purging
- Should not exceed pumping rates used for well development
- Should not cause excessive drawdown of water in well and surrounding formation
- High purging rates can affect samples
 - increased turbidity can elevate analyte concentrations
 - drawdown can cause jetting, cascading, stripping, mixing of zones within aquifer