

National Ground-Water Monitoring Network Tip Sheet on Defining Monitoring Categories

Monitoring Categories

Monitoring points within each subnetwork (Background, Suspected Changes, or Documented Changes) will be assigned to at least one monitoring category (surveillance, trend, or special studies) by the data provider (Figure 1) based on the frequency of measurement or sampling. The suggested monitoring frequencies for each category are discussed below after the categories are defined. The monitoring frequency is, in part, determined by regional and local aquifer characteristics.

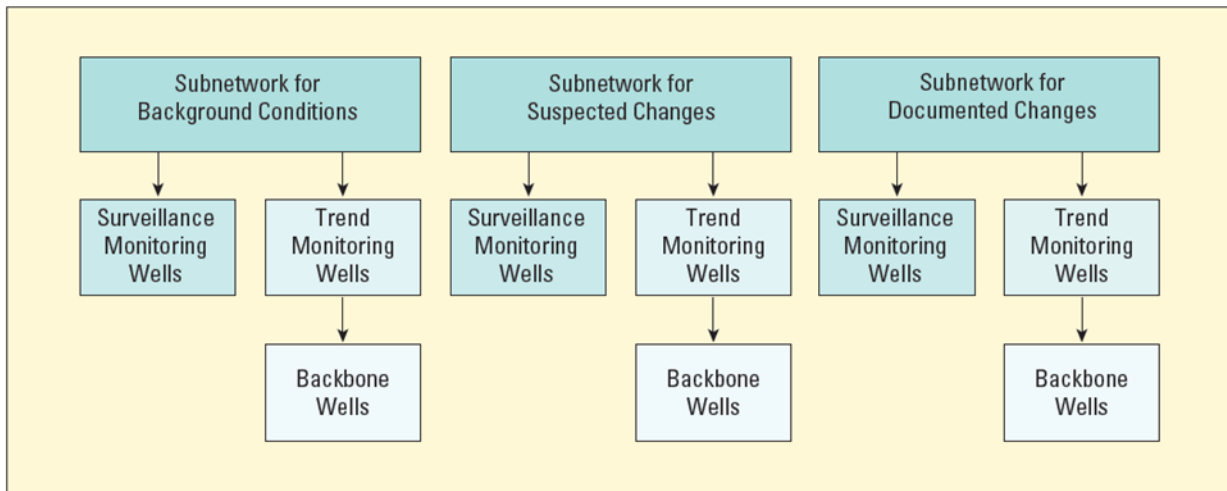


Figure 1 Classification of the wells in each subnetwork as surveillance or trend monitoring wells, and the identification of the subset of trend wells to be classified as “backbone wells.”

- **Trend Monitoring**
 - Trend monitoring provides detailed data to assess both long-term trends and seasonal variations.
 - Data collection is more frequent, but at a smaller number of wells than surveillance monitoring.
 - Over time, trend monitoring can be thought of as a series of “tie points” that are used in conjunction with the surveillance wells to monitor the ground-water resources in the United States.
 - Every consideration possible should be given to continuing the long-term record from these wells.
- **Surveillance Monitoring**
 - Surveillance monitoring provides data to assess long-term natural trends or the effect of slowly changing anthropogenic activities at a higher spatial density.
 - Ground-water level surveillance monitoring is sometimes described as periodic aquifer “mass measurements,” or “synoptic measurements.”

- Surveillance monitoring could be used in conjunction with trend monitoring to periodically report on the overall water-level and water-quality conditions, or status, of the ground-water resources in the United States over time.
- An overall snapshot of ground-water conditions in an aquifer can be obtained with surveillance monitoring.
- The frequency of surveillance monitoring generally is much less than trend monitoring. Surveillance sites, however, will be associated with a nearby 'Trend' site to 'tie' the site to long-term and seasonal trends.

Frequency of Monitoring Water Levels

Because the primary focus of the NGWMN is to monitor ground-water conditions in principal and major aquifers, the frequency of measurement is designed to adequately detect short-term, seasonal, and long-term ground-water level fluctuations of interest and to discriminate between the effects of short- and long-term hydrologic stresses.

- Trend monitoring is designed to look at long-term and seasonal water levels at a limited number of wells; thus, a minimum monitoring frequency of at least quarterly is suggested for trend water-level sites.
- Continuous monitoring is considered to be ideal for trend water-level sites.

Surveillance monitoring is designed to periodically assess water level with more spatial detail. The frequency of surveillance monitoring could range from quarterly for small networks to every 5 years for regional, multi-aquifer networks.

- A minimum monitoring frequency of once per 3 years is suggested for surveillance water-level monitoring.

Frequency of Sampling for Water-Quality Network Sites

Because the primary focus of the NGWMN is to monitor ground-water conditions in principal and major aquifers, the frequency of sampling is designed to adequately detect short-term, seasonal, and long-term water quality changes.

- Trend monitoring is designed to look at long-term water-quality conditions at a limited number of wells. A sampling frequency of at least once per year is suggested for trend water-quality sites.

Surveillance monitoring is designed to periodically assess water level with more spatial detail. The frequency of surveillance monitoring could range from quarterly for small networks to every 5 years for regional, multi-aquifer networks.

- A minimum sampling frequency of once every 10 years is suggested for surveillance water-quality sites.

Reference

Subcommittee on Ground Water of the Advisory Committee on Water Information, 2009 (revised 2013), A national framework for ground water monitoring in the United States: Advisory Committee on Water Information, accessed October 23, 2013, at http://acwi.gov/sogw/ngwmn_framework_report_july2013.pdf.