

SECTION 8.11

SURFACE WATER AND GROUND WATER SAMPLING FOR CHEMICAL ANALYSIS

1.0 Purpose

To describe the procedures to collect samples of surface water and ground water for chemical analysis.

2.0 Responsibilities

- The site coordinator is responsible for assuring that this procedure is implemented.
- Survey team personnel are responsible for following this procedure.

3.0 Procedure

3.1 Equipment

- ✓ Dipper: constructed from a telescoping pole and a stainless steel, teflon or glass beaker attached to the pole with a clamp. Cleaned as specified in Section 8.13.
- ✓ For sampling at specific depths: Weighted bottle or peristaltic pump equipped with teflon and tygon tubing, teflon or stainless steel bailer, or other appropriate equipment. Tubing cleaned as specified in Section 8.13.
- ✓ Sample containers: analytical parameter specific as to type (typically a 3.8 liter amber glass bottle with teflon lined cap). Containers must be prepared as described in Section 8.13 or otherwise specified in the site-specific survey plan.
- ✓ Sample preservatives: Analytical parameter specific, specified site-specific survey plan.
- ✓ Miscellaneous test equipment as needed. Water quality meter, vacuum filter, pipettes, etc.
- ✓ Labels and security seals, record forms, logbooks, chain-of-custody forms.
- ✓ Indelible pen.
- ✓ Visqueen sheets for staging equipment.

- ✓ Sample shipment container packing materials, ice or “blue ice”.
- ✓ Equipment decontamination supplies (described in Section 8.14).

3.2 Sample Collection

3.2.1 Surface Water Sampling

3.2.1.1 For sampling water at the surface, carefully lower dipper into the water and withdraw a sample. Care must be taken to avoid aerating the sample during sampling and handling if the analytical parameters include volatile organics.

3.2.1.2 If the sampling plan includes depth samples, then either a pump or a weighted bottle may be used to retrieve samples from a specific depth.

3.2.1.2.1 Weighted Bottle Sampling

3.2.1.2.1.1 Attach line marked with depth indicators to the weighted bottle.

3.2.1.2.1.2 Lower the bottle to the desired depth and remove stopper using the manual release mechanism.

3.2.1.2.1.3 Fill the bottle, retrieve sample, and transfer to the appropriate sample container.

3.2.1.2.2 Peristaltic Pump Depth Sampling

3.2.1.2.2.1 Mark off teflon tubing to indicate the depth intervals.

3.2.1.2.2.2 Attach inlet tubing to a two hole stopper by means of glass tubing and teflon connectors which is fitted to a sample collection flask or sample bottle. Outlet port from stopper is fitted with glass tubing. Attach tygon tubing at this point and fit to pump.

3.2.1.2.2.3. Collect sample. Replace tubing between each sample.

- 3.2.1.3 If sample preservatives are required, they should be added to the sample container at this time.
- 3.2.1.4 Pour sample into the sample container. Tilt sample bottle and pour sample slowly down the inside wall in order to avoid aeration.
- 3.2.1.5 The sample filtering procedures, when required, will be discussed in the site-specific survey plan.
- 3.2.1.6 Label and secure the sample in accordance with Section 8.15 and the chain-of-custody procedures in Section 8.16. Record pertinent information on the Chain-of-Custody Form (Figure B-16 or equivalent).
- 3.2.1.7 Record sample identification, location, depth, date, time, and other pertinent data on field work forms, maps, and/or logbooks.
- 3.2.1.8 Use a clean sampling device for the next sample location or decontaminate equipment in accordance with Section 8.14.
- 3.2.1.9 Change sample gloves before proceeding with next sample.

3.2.2 Ground Water Sampling (Option 1)

NOTE: If sampling from an established monitoring well, calculate the volume of the well and purge the well of three well volumes ($V=\pi r^2h$): Collect purged water for appropriate handling. Monitoring of water quality parameters (i.e. dissolved oxygen, pH, eH, conductivity, temperature, etc.) may be required until parameters have stabilized $\pm 10\%$ to ensure adequate purging. The necessary equipment for parameter monitoring is procured on a site-specific basis and operated in accordance with the manufacturer's instructions.

- 3.2.2.1 Lower the bailer apparatus into the borehole or other sub-surface source of water.
- 3.2.2.2 Allow water to flow into the bailer (use care to avoid buildup of sediments on the bailer diaphragm, which could prevent the diaphragm from sealing).
- 3.2.2.3 Retrieve the bailer and transfer contents into a container. If sampling for volatile organics, care must be taken to avoid aerating the sample.
- 3.2.2.4 Repeat procedure until 3.8 liters or other specified volume of sample has been collected.
- 3.2.2.5 Repeat steps 3.2.1.5 through 3.2.1.9.

3.2.3 Ground Water Sample (Option 2)

3.2.3.1 Lower the inlet end of tubing until it contacts the water surface.

3.2.3.2 Start pump and collect water directly into sample container, avoiding sample aeration.

3.2.3.3 Empty flask into container as necessary.

3.2.3.4 Repeat until 3.8 liters of sample or other appropriate volume has been collected.

3.2.3.5 Repeat steps 3.2.1.5 through 3.2.1.9.