SECTION 8.4

WATER SAMPLING

1.0 Purpose

To describe the procedure for collecting samples of water from surface and subsurface sources.

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

U Bailing implement: Borehole bailer - ORISE design, cup, can, pail, or other appropriate device.

U Submersible vacuum, or peristaltic pump with power source.

U Four liter plastic container, storage boxes and tags, or other container type as applicable.

U Funnel.

U Large Erlenmeyer Flask with two-hole stopper.

U Tygon tubing.

U Labels and security seals.

U Indelible pen.

U Record forms and/or logbook.

U Cleaning supplies, as appropriate (see Section 4.5).

U Sample preservatives as appropriate.

U Field filtering apparatus as appropriate.

3.2 Sample Collection

3.2.1 Surface Sample

3.2.1.1 Dip water carefully from the selected location or if using pump, insert collection tube into surface water being careful to avoid collection of bottom sediment or vegetation.

3.2.1.2 Using a funnel, transfer the water into a container or when using a pump discharge directly into sample container.

3.2.1.3 Collect a total of 3.8 liters of sample. Lesser amounts may be adequate, dependent upon analytical parameters.

3.2.1.4 Cap the container tightly.

3.2.1.5 Label and secure the sample in accordance with Section 8.15 and the chain-of-custody procedure in Section 8.16. Record pertinent information on the Chain-of-Custody Form (Figure B-16 or equivalent).

3.2.1.6 The container should be placed in a cardboard box (also properly labeled) for better storage.

3.2.1.7 Record pertinent data on the Miscellaneous Sample Record Form (Figure B-17 or equivalent) and/or site logbook.

3.2.1.8 Clean collecting equipment, as necessary before proceeding with further sample collection, in accordance with instructions in Section 4.5. Note: When using a pump and tubing for sample collection, rinse tubing and pump (as applicable) with three volumes of deionized water.

3.3 Groundwater (well or borehole) Sample (Option 1)

NOTE: If sampling from an established monitoring well, calculate the volume of the well and purge the well of three well volumes ($V = \pi r^2 h$). 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 ± 10% to ensure adequate purging. The necessary equipment for parameter monitoring is procured on a site-specific basis and operated in accordance with the manufacturers instructions.

3.3.1 Lower the bailer apparatus into the borehole or other sub-surface source of water.

3.3.2 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).

3.3.3 Retrieve the bailer and transfer contents into a container. If sampling for volatile organics, care must be taken to avoid aerating the sample (See Section 8.11).

3.3.4 Repeat procedure until 3.8 liters or other specified volume of sample has been collected.

3.3.5 Repeat steps 3.2.1.5 through 3.2.1.8.

3.4 Groundwater Sample (Option 2)

3.4.1 Lower the inlet end of tubing until it contacts the water surface in a well or borehole or is located at the desired depth interval in a body of water.

3.4.2 Start pump and collect water directly into a flask or sample container, avoiding sample aeration.

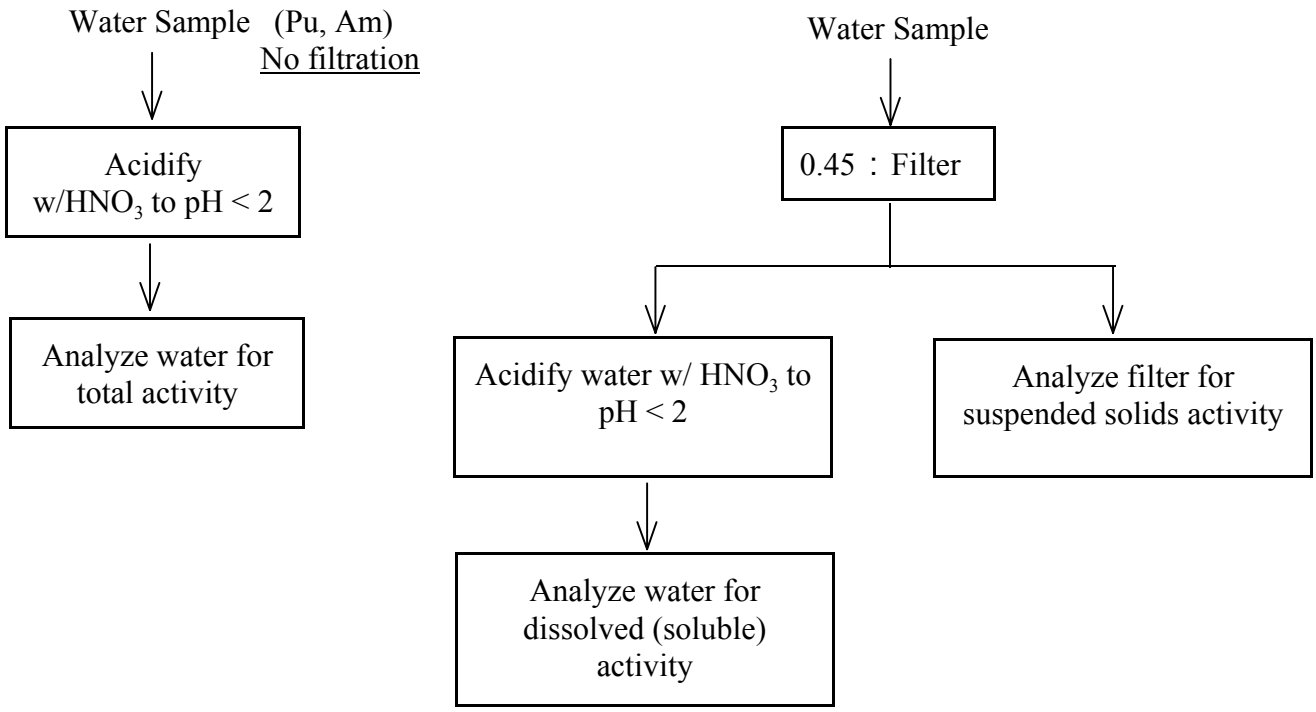
3.4.3 Empty flask into container as necessary.

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

3.4.5 Repeat steps 3.2.1.5 through 3.2.1.8.

3.5 Sample Filtering/Acidification

Field filtration or acidification is determined on a project-specific basis. The following flow chart is a guide for when each step is appropriate. Specific procedures will be provided in project-specific survey plans.



NOTE: If analysis for volatile radionuclides of concern such as H-3, C-14, Tc-99, or iodines will be required, other procedures may apply. The Laboratory Manager will privide specific requirements.