SECTION 8.0

SAMPLING PROCEDURES

SECTION 8.1

SURFACE SOIL SAMPLING

1.0 Purpose

To describe the procedures for collecting samples of surface soil for routine radiochemical/radiophysical 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

- ✔ Digging implement: garden trowel, shovel, spoons, post-hole digger, etc.
- ✔ Special sampling apparatus (cup cutter, shelby tube, etc.) as required.
- ✔ Plastic bags, approximately 10 cm diameter x 30 cm long.
- ✔ Cardboard "ice cream" containers (1 quart size) or geology sample bags.
- ✔ Twist-ties.
- ✔ Masking tape.
- ✔ Record forms and/or logbook.
- ✔ Labels and security seals.
- ✔ Indelible pen.
- ✔ Equipment cleaning supplies, as appropriate (see Section 4.5).

3.2 Sample Collection

NOTE: Because standard surface soil contamination criteria for radionuclides are usually applicable to the average concentration in the upper 15 cm of soil, the usual sampling protocol described here is based on obtaining a sample of this upper 15 cm. Special situations, such as to evaluate trends or airborne deposition, determining near

surface contamination profiles, and measuring non-radiological contaminants, necessitate special sampling procedures. These special situations are evaluated and incorporated into site-specific survey plans as the need arises.

Direct surface and 1 meter gamma radiation measurements may be performed at each location before initiating sampling. This will identify the presence of gross radionuclide contamination which will require special handling and equipment cleanup procedures. Contact the site coordinator if the exposure rate measurement exceeds the capability of the instrumentation available on site before proceeding with sample collection. If contamination is suspected a beta-gamma "open" and "closed" measurement may also be desired before sampling begins.

3.2.1 Loosen the soil at the selected sampling location to a depth of 15 cm, using a trowel or other digging implement.

3.2.2 Remove large rocks, vegetation, and foreign objects (These items may also be collected as separate samples, if appropriate.)

3.2.3 Place approximately 1 kg of this soil into a container sufficient to ensure moisture leakage and/or cross-contamination does not occur. If it is not possible to reach a depth of 15 cm using a hand tool (i.e. trowel or shovel) 1 kg of soil should be collected from the accessible depth. The actual depth should be recorded on the sample container and the data form.

3.2.4 Seal the sample container.

3.2.5 Label and secure the sample container 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).

3.2.6 Record sample identification, location, and other pertinent data on appropriate record forms (Figures B-13, B-14, B-15, or equivalent), maps, drawings, and/or site logbook.

3.2.7 If the location has been identified as having elevated activity a measurement should be obtained after the sample is collected to determine the possibility of contamination at a depth greater than 15 cm. If a subsurface sample is deemed necessary, refer to Section 8.2.

3.2.8 Clean sampling tools, as necessary, before proceeding to the next sampling location, in accordance with instructions in Section 4.5.

3.3 Field Compositing of Samples

NOTE: The application of composite sampling is determined on a site-specific basis as directed by the site coordinator. Data quality objectives for the project, analytical cost considerations, and special case site conditions are used to identify situations where sample compositing may be employed. Generally, five samples may be included in a composite with a maximum number of ten. The area represented by a composite sample will vary and should not exceed 100 m^2 unless directed by the site coordinator. Refer to the note under Step 3.2 for applicable information related to sampling depths and measurements.

3.3.1 Collect equal aliquots of soil over 15 cm depth intervals from each location that will be included in the composite and place in bowl, on plastic sheeting or other type of containment.

3.3.2 Thoroughly mix sample and break up aggregates.

3.3.3 Divide soil into equal quadrants.

3.3.4 Place an equal aliquot (approximately 50 to 100 grams) from each quadrant into the sample container.

3.3.5 Repeat steps 3.3.2 through 3.3.4 a total of 3 times. Total sample amount collected should approximate 1 kg.

3.3.6 Proceed with steps 3.2.4 through 3.2.8 of this section.