SECTION 6

CHARACTERIZATION SURVEY

6.1 INTRODUCTION. The Characterization Survey is designed to define the extent and magnitude of contamination. It typically concentrates on those portions of the site which are known to have been or are suspected of having been affected by operations involving radioactive materials. The type of information obtained from a characterization survey is often limited to that necessary to differentiate a surface as contaminated or non-contaminated. It should be sufficiently detailed to provide data for planning the decontamination efforts, to include decontamination techniques, schedules, and necessary health and safety considerations during decontamination.

6.2 OBJECTIVES/ASSUMPTIONS.

6.2.1 Objectives. To identify areas where radioactive contamination levels exceed acceptable levels.

6.2.2 Assumptions. The scoping survey has been completed for the area of interest and submitted to the USAEHA project officer for review. If a grid system was in place for the scoping survey then it will remain for the characterization survey.

6.3 SURVEY DESIGN AND PROCEDURES.

6.3.1 Information. The survey officers will be responsible for the collection and review of all pertinent documentation and information. Every site will have its special aspects and special check needs. The following list of information is suggestive only and a specific site checklist will need to be formulated for each site.

(A) Operational radiological history of the site.

(B) Monitoring history of site (Scoping Survey).

(C) Radiological characteristics of site.

(D) Surveying procedures for the site.

(E) Names of responsible persons, contractors, etc.

(F) Survey design and procedure followed.

6.3.2 Conduct of the Characterization Survey. As was the situation with the scoping survey, the choice of survey technique should take into consideration the possible future use of the results to supplement the final status survey data. This survey is typically concentrated on those portions of the site which are known to have been or are suspected of having been affected by site operations involving radioactive material. A high degree of data accuracy is required when values are near regulatory guidelines. This will assure proper decision making based on actual radiological conditions.

6.3.2.1 Document/Records Review. A thorough review of the historical data, Scoping Survey Procedures and Reports will be conducted prior to conducting the Characterization survey. The survey team will develop a sampling plan based on the Scoping Survey Report.

6.3.2.2 Inspection of Installation Facilities. The performance of the actual site visits by the survey team members will depend on results of scoping survey. The applicability of these factors, as well as the time constraints of the survey, will dictate the use of separate or concurrent surveys. The inspection of the installation may include, but is not restricted to the following:

(A) Physical inspection of the site to be surveyed to ensure the condition of the site has not changed since the Scoping Survey. If the site has been compromised by any activity the site must be resurveyed.

(B) Inspection of the grid system or any system that was used to verify that the locations are reproducible locations. If the locations are not reproducible, then seek the assistance of the Scoping Survey Team to reproduce the locations. If a grid system is not used, then a sampling plan should be designed in such a manner that the locations can easily be reproduced.

(C) A clean area, building, room, or office, which has never been compromised by the use, storage, or any activity involving radioactive material, will be converted into a field laboratory. This is where all instrumentation QA/QC functions will be performed and all paperwork can be filled out. If needed, a field counting laboratory can also be established, depending on the needs of the project.

(D) Background Radiation Study. A radiological background study will be conducted to determine the levels and variance of the natural background radiation which are typical to the area, and to the type of buildings. Areas which are known not to have radioactive material stored or used will be surveyed for this purpose.

(E) Blank (clean/unused) wipes should be submitted to the laboratory for use in determining background for the wipe survey.

(F) The grid system of the survey site will be the same grid system used by the licensee or the facility for their scoping survey of the area. The grid should be a network of evenly spaced perpendicular lines. It must be able to assist in locating sampling points from the clean-up and assist in reproducing the sampling data.

(G) Having studied all available prior information on the specific site to be surveyed for the characterization survey, including all prior surveys, the survey officers while conducting the survey should do independent biased sampling in addition to the sampling plan.

6.3.3 Field Measurements and Sampling. The characterization survey must be made while the stakes, flags, or other temporary markers still define the survey blocks used by the licensee for his scoping survey. Elements of this survey design include instrumentation survey techniques, soil sampling, water sampling, and other media samples as needed (see Instrumentation Section 12).

6.3.3.1 Alpha survey instruments will be held less than 0.5 centimeters (cm) away from the surface to be surveyed. The alpha probe should be held in place for reading (do not "scan" with the alpha probe).

6.3.3.2 Beta-gamma survey instruments will be held at approximately 1 cm from the surface to be surveyed. Scanning should be done slowly (at about 2 cm/sec).

6.3.3.3 Gamma survey instruments will be held about 1 meter from the surface area to be surveyed. The highest readings in each grid will be recorded.

6.3.3.4 External radiation exposure measurements will be measured from random grids and recorded on the Data Collection Form.

6.3.4 Quality Assurance/Quality Control. The responsibility of ensuring quality surveys is that of all members of the survey team from laboratory technician on up to senior project officer. At a minimum the following should be done.

6.3.4.1 All data obtained during any survey should be reviewed by a designated QA/QC project officer. At a minimum the following should be looked for on the Data Collection Forms.

(A) Instruments MDAs are less than 75% of the NRC guidelines for release to unrestricted use.

(B) All data sheets are properly filled out.

(C) All instrument operational checks are within the guidelines of NUREG/CR-5849.

(D) A Statistical Analysis of all Data (See NUREG/CR-5849). Ensure any value above guidelines are explained.

6.3.4.2 Field blanks, blanks (clean/unused), split samples, duplicates, and spikes should be used to ensure quality data.

6.3.4.3 Depending on the size of the survey, the project officer may have the QA/QC officer replicate a portion of USAEHA's survey to ensure reproducibility and accuracy.

6.3.4.4 Additional QA/QC procedures are addressed in Appendix C.

6.3.5 Final Report. A final report will be prepared after completion of field work and analysis of field samples. A formal report should be dispatched from USAEHA upon completion of the survey.