

During the decommissioning of the NASA Plum Brook Reactor Facility (PBRF) Cs-137 was discovered in offsite sections of Plum Brook. While the average activity level is low (from 0.54 to 1.2 pCi/g above the 0.26 pCi/g local background level) NASA committed to the local community to perform cleanup activities along the banks of Plum Brook. The effort is considered to be ALARA in its nature. The area involves a stretch of several miles, from the NASA Plum Brook Station (PBS) fenceline to the point where the stream banks end, and the stream spreads out into a wetlands. This work is currently planned for the summer of 2010, when dryer weather is typically experienced, and the level of Plum Brook is at a minimum.

The targets of the cleanup effort are the isolated spots of elevated activity that were identified during characterization. These were locations with activity ranging from the mid-teens to as high (in a single case) as 90 pCi/g. They are typically a few inches to no more than a few feet in area, and are rather shallow. There were several instances during characterization where the act of collecting a sample eliminated the spot altogether. These spots are located along the banks, sometimes several hundred feet apart.

A team consisting of a Radiation Protection (RP) technician supported by one or two decommissioning workers is anticipated on each bank. The RPs will be using the same detectors that were used during characterization (Ludlum Model 2350-1 with 44-10 sodium iodide detector, and a gamma-spectrum window set to focus of Cs-137 activity) or an equivalent. For areas previously covered by characterization survey efforts the locations to be remediated will be based on known GPS coordinates of elevated readings. Remediation will be performed for spots above 13.34 pCi/g. This is well below the level that NASA's dose pathway analysis shows is safe, but it is the same level used upstream in Pentolite Ditch. This makes it easy to explain to the public, while meeting the goals of ALARA. Areas above this level will be marked, and the decommissioning workers will dig up the impacted soil using hand tools. The soil collected in this manner will be placed in a temporary container such as a drum at the dig site. When full, or at the end of the workday, the container of soil will be moved to PBRF. It will be held for consolidation and assessed for proper disposition.

For the Lower Meander section, which was not previously fully characterized, the RP techs will perform a 100% survey of the bank area, and will mark areas above the Remediation Action Limit. The location of these areas and the preremediation cpm readings will be noted (including GPS coordinates), the area will be marked, and remediation will take place as in other areas. When the section is complete a record of the readings, locations, and cleanup activities for this section will be provided to the NRC.

This plan is based on NASA's belief that conditions in the minimally characterized "Lower Meander" section are the same as the fully characterized sections located both upstream and downstream. The Work Execution Package covering the remediation will include the requirement for the Project Radiation Safety Officer to review the work as it progresses, and to stop and reconsider the situation if conditions are found to be other than expected (isolated deposits showing elevated readings which are easily remediated). NASA believes this approach will assure the protection of public safety and is in keeping with principles of ALARA.

