

PROPOSED FINAL SURVEY PROTOCOL

The proposed final survey protocol is somewhat complex due to the need to account for both the contamination in the unsaturated zone at depths of up to 3 feet and contamination in the saturated zone. The outline of the final survey plan is as follows and is summarized in Figure 2.

- Scan ground surface using NaI detector
- Within each 25 m² subgrid quadrant, at the location with NaI surface scan result, perform exposure rate measurement at 1 meter above ground surface and collect surface soil sample (biased soil sample 0-6")
- **If exposure rate measurement and surface soil sample meet unrestricted use criteria no further sampling required**
- If exposure rate measurement exceeds average criteria but is less than 2 times average, four additional exposure rate measurements will be performed within the 25 m² subgrid
- **If the average of the resulting 5 exposure rate measurements meet the criteria no further measurements required**
- If the surface soil sample is greater than the criteria but less than 3 times the criteria, collect three additional samples in the 25 m² subgrid
- **If the average of the resulting 4 soil samples meets the criteria no further soil sampling required**
- If the soil meets the criteria but the exposure rate exceeds criteria, collect a composite sample of the unsaturated zone soil (1-3 feet) at the location with the highest surface scan result. Compositing over a 1 meter depth of subsurface soil is consistent with NRC guidance provided in "Method for Surveying and Averaging Concentrations of Thorium in Contaminated Subsurface Soil," February 13, 1997, letter from John T. Buckley, NRC, to Howard A. Pulsifer, AAR Corporation.
- If the composite sample of the unsaturated zone soil column meets the 10 pCi/g soil criteria, then the elevated exposure rate is assumed to result from saturated zone soil and the following actions taken:
 1. The noncontaminated unsaturated zone soil in the area exceeding the exposure rate criteria will be removed and stockpiled for use as clean backfill.
 2. The saturated soil will be excavated below the water table until the exposure rate at 1 meter above the water table surface is reduced to levels that will meet the criteria after the unsaturated soil is replaced using pre-calculated remediation action level as described above

The area will be backfilled and regraded to original contour and exposure rate measurements performed to confirm compliance with the criteria