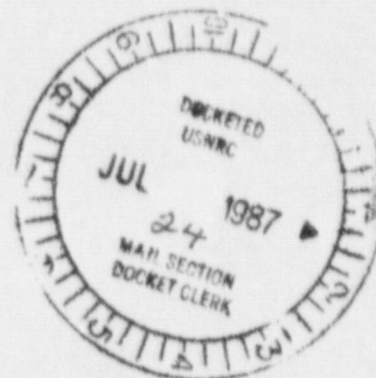




Department of Energy  
Albuquerque Operations Office  
P.O. Box 5400  
Albuquerque, New Mexico 87115

July 21, 1987

Mr. Dale Smith  
Director, Uranium Recovery  
Field Office  
Region IV  
U.S. Nuc. Reg. Commission  
P.O. Box 25325  
Denver, CO 80225



Dear Mr. Smith:

The DOE UMTRA Project Office proposes to change the current procedure for preparation of soil samples used to verify the clean-up of radiologically contaminated soils around UMTRA sites and vicinity properties. We plan to modify the existing procedure of preparing a composite soil sample comprised of 19 to 24 plugs taken over a 100 square meter area. The new procedure will include preparing a composite sample comprised of 9 plugs taken over this same area. This modification is based on the enclosed report which was prepared based on a recently completed study undertaken to investigate errors associated with preparing different types of composite soil samples used for verification analysis.

Currently a composite soil sample is prepared by taking approximately 21 plugs over a 100 square meter area. The sample is then analyzed to confirm that the area meets the Environmental Protection Agency (EPA) standards for Title I sites (40 CFR-192). Effort and expense involved in collection of these samples has been shown to be quite significant. It is estimated that 3,300 acres of UMTRA Project property will require verification at a cost of approximately 4 million dollars. The magnitude of this expense prompted the UMTRA Project Office to investigate the possibility of modifying the existing verification procedure to see if any savings could be realized.

An extensive soil sampling study was undertaken at our Shiprock, New Mexico site. The study was conducted over a large windblown area that had been previously remediated and verified. During remedial action, the area was cleared of brush and thus was greatly disturbed. It was felt this disturbance would greatly increase spatial inhomogeneities in contamination throughout the area. Therefore sampling errors experienced would represent a worst-case situation compared to other UMTRA Project sites.

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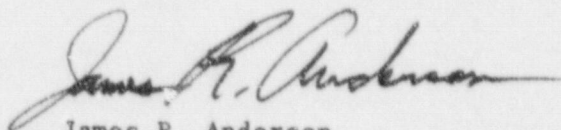
Plots measuring 100 square meters were sampled by taking soil plugs over these areas and preparing composite samples. The number of plugs per composite sample varied from 5 to 21. Through the use of extensive replicate sampling and analysis, the mean and standard deviations of Ra-226 concentrations were determined for each type of composite for several different plots. Data obtained from the study were then subjected to a thorough statistical review and analysis.

Results of the study indicate that for levels of 2 pCi/g plus background or below, the accuracy of the estimated mean Ra-226 concentration is essentially the same for both 9-plug and 21-plug composite samples. This is especially relevant in that current remedial action field excavation control radiation measurements typically result in clean-up to at least these levels.

The data obtained to date confirm that most properties that undergo remedial action have final mean radium concentrations near background levels. It is likely that excessive verification effort is being expended on the majority of properties in order to minimize the predictive error associated with sampling the few properties contaminated to within 1 or 2 pCi/g of the EPA limit of 5 pCi/g + background for radium.

Please provide by August 21, 1987, any comments which you may have on the enclosed report. Contact Richard Richey of my staff with any questions you might have regarding this correspondence.

Sincerely,



James R. Anderson  
Project Manager  
Uranium Mill Tailings Project Office

Enclosure