Modification and Application of FWENC Stabilization Process to Enhance Leach Resistance in Surrogates and Actual Radioactive Sludges *

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Representative sludge samples from two ORNL storage tank farms (W23, MVST), along with two sludge surrogates, were treated using a process developed by the Foster Wheeler Environmental Corporation for stabilization of Oak Ridge tank sludges. Because the initial stabilization process failed on some sludges, the process was modified to allow longer contact times and better mass transfer of the stabilization additives. The general approach permits waste consolidation by removing free water and immobilizing RCRA contaminants using additives. The results presented here were collected as an independent assurance for the Department of Energy of the viability of the FWENC process and its modifications for compliance with WACs and storage needs prior to shipping of final waste forms. Data from water accumulation affinity and TCLP performance tests for both stabilized surrogates and actual sludges will be shown. Stabilized surrogates were also subjected to freeze/thaw thermal cycling, long-term storage under conditions simulating East Tennessee's ambient weather, and radiation durability testing. The latter tests were designed to determine sustainability of TCLP performance and free water accumulation, which are important considerations for transport and storage of tank final waste forms.