



TECHNICAL MEMORANDUM

Date: 22 February 2012

To: Mark Roberts, Cynthia Barr,
U.S. Nuclear Regulatory Commission (U.S. NRC)

Prepared By: Carl Young, PM, Cabrera Services Inc. *Carl Young*
Mahmudur Rahman, Ph.D., Cabrera Services Inc. *Mahmudur Rahman*

SUBJECT: Revised Site-Specific Derived Concentration Guideline Limits (DCGLs) for Each Radionuclide of Concern (ROC) at the Low Level Radioactive Burial Site (LLRBS) at USDA's Agricultural Research Service (ARS), Henry A. Wallace Beltsville Agricultural Research Center (BARC), (Maryland)

cc: USDA Beltsville LLRBS DP Project File (Cabrera Project 06-3070.01)
Henry Siegrist, CHP, Cabrera Services, Inc.
John Jensen, United State Department of Agriculture
Derek Cornette, U.S. Army Joint Military Command

This technical memorandum presents proposed revisions to calculations presented in the Revised Decommissioning Plan (dated January 2012) for the Low Level Radioactive Burial Site (LLRBS) at U.S. Department of Agriculture Agricultural Research Service, Henry A. Wallace Beltsville Agricultural Research Center, Maryland. The calculations are used in the RESRAD code to determine the Derived Concentrations Guideline Levels (DCGLs) that will be utilized during the final status survey in support of site decommissioning activities at the LLRBS.

A site-specific DCGL was determined for each ROC by selecting the most conservative DCGLs developed under base case residential farmer scenario, and two alternative scenarios: intrusion by a driller and intrusion by excavation of a basement. The results are presented in Section 4.2.4 (Table 8-1) of the Revised Decommissioning Plan. Upon further discussions with the US NRC, the following four changes will be made in the basement excavation alternative scenario:

- Adding meat and milk exposure pathway scenarios for the surface simulation;
- Assigning "0" value for irrigation rate in the surface simulation;
- Assigning "1" value for percent contaminated fraction for aquatic in the subsurface simulation; and



- Adding drinking water and plant exposure pathways for the subsurface simulation.

The revised assigned values for RESRAD input parameters resulted in lower ROC-specific DCGLs under the building excavation scenario, which in turn have resulted in lower site-specific DCGLs. Table 1 presents the revised DCGLs under base case residential farmer scenario, driller scenario and revised basement excavation scenario. The most conservative DCGL for each ROC was selected as the revised site-specific DCGL.

Table 1: Results of Revised Site-Specific DCGLs

ROCs	DCGL (pCi/g)			Revised Site-Specific DCGL (pCi/g)
	Base Case Scenario	Driller Scenario	Basement Excavation Scenario	
C-14	22.4	2250	21.0	21
Cl-36	18	989	13.2	13.2
Cs-137	273.3	344	16.9	16.9
H-3	121.2	54969	121	121
Ni-63	120,424	24,108,000	77,954	77,954
Pb-210	2.0	2.3	1.9	1.9
Ra-226	2.2	121	4.6	2.2
Sr-90	4.9	26	4.7	4.7

Based on our discussions with US NRC, we are submitting this Technical Memorandum as an addendum to the Revised Decommissioning Plan (dated January, 2012). It is our understanding that a new revision of the Decommissioning Plan using these updated modeling parameters and DCGLs is not required by US NRC.