## CONNECTICUT YANKEE ATOMIC POWER COMPANY



HADDAM NECK PLANT 362 INJUN HOLLOW ROAD • EAST HAMPTON, CT 06424-3099

> MAR - 1 2005 <u>CY-05-057</u> Docket No. 50-213

RE: 10 CFR 20.2002

U. S. Nuclear Regulatory Commission Attn: Document Control Desk Washington, D C 20555

### Haddam Neck Plant Supplemental Information Request for Approval of Proposed Procedures in Accordance with 10 CFR 20.2002

In a letter dated September 16, 2004<sup>1</sup>, Connecticut Yankee Atomic Power Company (CYAPCO) proposed to transfer certain of its solid waste from decommissioning of the Haddam Neck Plant (HNP) facilities (e.g., structures and buildings) to a disposal facility. Specifically, CYAPCO proposed to dispose of demolition debris from decommissioning of the HNP facilities to the US Ecology Idaho Facility, located in Grand View, Idaho.

CYAPCO has performed a conservative radiological assessment of the demolition debris material and determined that the potential dose to workers involved in the transportation and placement of the waste at the site and to members of the public after closure of the facility will be no more than a few millirem per year Total Effective Dose Equivalent (TEDE) and a small fraction of NRC limits for exposure to members of the public of 25 millirem/yr TEDE. This assessment was provided to the NRC by letter dated September 16, 2004.<sup>1</sup>

By letter dated December 17, 2004<sup>2</sup>, provided an on-site survey limit for the disposition of waste in Intermodal-type containers that can be shipped to US Ecology Idaho disposal site.

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<sup>&</sup>lt;sup>1</sup> G. H. Bouchard (CYAPCO) letter to the US NRC Document Control Desk, dated September 16, 2004, "Request for Approval of Proposed Procedures in accordance with 10 CFR 20.2002", CY-04-168.

<sup>&</sup>lt;sup>2</sup> G. van Noordennen (CYAPCO) letter to the US NRC Document Control Desk, dated December 17, 2004 "Supplemental Information Request for Approval of Proposed Procedures in Accordance with 10 CFR 20.2002", CY-04-252.

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The purpose of this letter is to provide supplemental information requested by the NRC Staff in a teleconference with CYAPCO on February 22, 2005.

The above mentioned information requested by the NRC staff is in two subject areas:

- 1. Additional characterization information was not available for inclusion in the original submittal of this request.
- 2. On-site survey limits for various shipping containers other than the Intermodal-type which CYAPCO intends to utilize to ship waste to the US Ecology Idaho site.

These information needs are addressed as follows:

#### Characterization Information:

The original submittal of this request provided a significant amount of characterization information for most of the areas that will generate building debris to be shipped to US Ecology Idaho. The two areas for which characterization information was limited were the Containment Building walls and floors inside the containment liner and the Spent Fuel Building.

**Containment Building Internal Walls and Floors:** 

The characterization data in the original submittal was considered limited only for the radionuclides H-3 and C-14. The contamination mechanism for these radionuclides was suspected of being gaseous diffusion into the concrete rather than due to leakage of contaminated liquids which is the mechanism for the other radionuclides of interest. For the radionuclides other than H-3 and C-14, using the floor concentrations for both the walls and floors (which was done in the original submittal) was felt to be very conservative as the wall contamination levels are normally much lower then the floor concentrations.

To increase the understanding of the H-3 and C-14 concentrations in concrete inside containment, eight (8) additional concrete cores have been taken at six (6) new locations in various areas of the containment interior. As can be seen in the enclosed Figures, these cores when combined with the original 4 cores (ones that were analyzed for C-14 including 2 analyzed for H-3) cover all three floor levels of containment and the two interior wall levels. The additional characterization data for these 8 samples is displayed in the revised Table 3 (for the significant radionuclides: H-3, C-14, Co-60 and Cs-137) along with the samples results from the original submittal for which H-3 and/or C-14 was analyzed. This data was reviewed against the conclusions made in the original submittal. The following was determined:

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- Except for H-3, when significant contamination is present, the core wafer closest to the surface contains contamination that is at least an order of magnitude higher than that in the next sample. This confirmed the original conclusion in this respect. To characterize the waste, the surface wafer concentration is diluted by the total thickness of the floor or for the internal walls (as they are contaminated on both sides), by half of the thickness of the walls.
- As can be seen in the revised Table 3, the ratio of C-14 to Co-60 shows significant variability across the samples taken inside the Containment Building. This would be expected, as discussed earlier, due to the different contamination mechanisms for C-14 and Co-60. The use of a scaling factor to Co-60 as discussed in the original submittal is not appropriate for C-14.
- 3. The concentrations of C-14 in the waste, diluted over the appropriate depth of concrete, are generally consistent. This data is consistent with that contained in the original submittal.
- 4. The concentrations of H-3, Co-60 and Cs-137 in the waste (surface concentrations diluted over the appropriate depth) are lower then those presented in the original submittal.

Considering the above, the following modifications are made to the original submittal of this request:

- 1. For the Containment Building internal walls and floors, the C-14 concentration to be used to determine the post closure dose will be that contained in the revised Table 3 using actual characterization data in lieu of using a scaling factor to the waste Co-60 concentration. This change results in a change to the weighted average C-14 concentration for all the waste proposed for disposal at US Ecology (revised Table 8 enclosed) and a change in the projected total post closure dose calculation (revised Table 9 enclosed). These changes do not alter the conclusion of the original submittal that "the potential dose to workers involved in the transportation and placement of the waste at the site and to members of the public after closure of the facility will be no more than a few millirem per year Total Effective Dose Equivalent (TEDE) and a small fraction of NRC limits for exposure to members of the public of 25 millirem/yr TEDE".
- 2. Although the average waste concentrations for H-3, Co-60 and Cs-137 determined for the Containment Building interior concrete walls and floors are lower then those contained in the original submittal, the original higher values will be retained for conservatism.

Spent Fuel Building:

Due to the operable status of the Spent Fuel Building, characterization has not been undertaken. After movement of all the spent fuel out of the building, characterization will be done. The results of these samples will be compared to

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the waste concentrations assumed in the original submittal. If the results show higher waste concentrations, the NRC will be informed as to the effect of these differences on the conclusions of this submittal. If the waste concentrations are below the values that have been presented, the samples results will be retained and be available for NRC inspection.

#### On-site Survey Limits for Additional Types of Waste Containers:

In addition to the Intermodal-type containers discussed in our December 17<sup>th</sup> letter, CYAPCO may be using B-25 type boxes to ship waste to US Ecology Idaho. An action level has been developed to identify when it is appropriate to transport waste in a B-25 box to US Ecology or to an alternate disposal site if the container dose rates exceed the alternate waste disposal procedure criteria of 10 CFR 20.2002. This action level is a bounding value developed using the same assumptions and methodology as were used to determine the actions levels for Intermodal-type boxes in the December 17<sup>th</sup> letter<sup>2</sup>.

Using totally filled B-25 boxes containing the highest density material allowed by the package weight, a 1 meter dose rate of 2  $\mu$ r/hr is selected as a reliable and conservative action level for determining compliance with the alternate disposal procedure survey criteria. It is considered that containers exhibiting dose rates below the action level may be shipped to US Ecology Idaho and those exhibiting higher dose rates need to investigated further to determine radionuclide concentrations or shipped to alternate facilities.

As this limit is 50 % of the limit for Intermodal containers, the corresponding dose to transportation workers will be less that that shown acceptable in the December 17<sup>th</sup> letter<sup>2</sup>. Should some very dense material be shipped in B-25 boxes such that the boxes are not completely filled to the maximum allowable weight, the 1 meter dose rate limits shown on Graph 1 below will be followed.

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Graph 1: Action Levels for B-25 Containers at Maximum Loading

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Although not expected, should other sized containers be used, appropriate dose rate limits will be determined using the same basis as shown above.

CYAPCO hereby requests expedited review and approval of this request to support our decommissioning activities at the HNP.

If you should have any questions regarding this submittal, please contact me at (860) 267-3938.

Sincerely,

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Gerard P. van Noordennen Regulatory Affairs Manager

Attachment

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cc: S. J. Collins, NRC Region 1 Administrator

T. B. Smith, NRC Project Manager, Haddam Neck Plant

R. R. Bellamy, Chief, Decommissioning and Laboratory Branch, NRC Region1

E. L. Wilds, Jr., Director, CT DEP Monitoring and Radiation Division

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## Attachment 1 (Total of 8 pages)

Figure 1 Containment Floor Samples

Figure 2 Containment Internal Wall and Charging Floor Samples

Three (3) Attachments of Diagrams from the Survey/Sampling Work Plan – SSWP

Reactor Containment Building Elevation 1'-6"

**Reactor Containment Building Elevation 22'** 

Reactor Containment Building Elevation 48'-6"

Three (3) Revised Tables

Table 3, Containment Floor and Wall Samples, Revision 1

Table 8, Average Waste Concentration Calculation, Revision 1

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Table 9, Post Closure Dose Calculation, Revision 1











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## TABLE 3 (Revision 1)

Containment Floor & Wall Samples

	Original Sample Results Provided with September Submittal Additional Sample Results as of 2/15/05																																	
	Floor	# 175	Floor	r # 176	Conta	in. Sum	p # 185	Conta	in. Sum	ip # 186			Inte	ernal W	all Sam	nple # 1	87	Intern	al Wa	# 188	Int	ernal V	Vall #	189	Interr	nal Wa	ll #190	Charo	. Floo	r # 191	Charg	. Floor	# 192	
							<u>i</u>			ſ			Ou	tside	1	Inside	-		Outsic	le	Out	side	Ins	ide		Outsid	e	(	Outsid	e	Č	Dutside	3	
Radionuclide	175-1C 01	175-10 02	176-10 01	176- 1C-02	185- 1C-01	185-1C 02	185-1C 03	186- 1C-01	186- 1C-02	186-1C 03	Average Scaling Factor (to Co-60) for Contain- ment Floor/ Sump Surface Samples		3100- 187- 1C-01	3100- 187-10 02	3100- 187- 4C- 03	3100- 187- 4C- 04	3100- 187- 4C- 05	3100- 188- 1C-01	3109- 188- 1C- 02	3100- 188- 1C-03	3200- 189- 1C- 01	3200- 189- 1C- 02	3200- 189- 4C- 03	3200- 189- 4C- 04	3100- 190- 1C- 01	3100- 190- 1C- 02	3100- 188- 1C-03	3300- 191- 1C- 01	3300- 191- 1C- 02	3300- 191- 1C-03	3300- 192- 1C- 01	3300- 192- 1C- 02	3300- 192- 1C-03	Avg of 1s Samples Diluted over Tota depth (Al Sample Results)
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	p <b>Ci/g</b>	·pCi/g	pCi/g	* <u>est</u> ,	· - 10	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCì/ġ	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
H-3			0.50		1400			1170			Use Avg		1120	1070	701	1510	626	783	1610	1080	648	1870	1780	471	467	1010	178	696	1560	1620	772	356	837	1014.57
Co-60	7.78	0.52	23.10		240.0	0.50	0.51	25.40	0.57	0.54	27.087		131	0.11	0.10	0.15	450	35	0.10	0.12	10.1	0.14	0.11	516	<u>~.187</u>	0.08	0.08	217	0.08	0.08	6.8 1.83	0.09	0.15	N/A N/A
Cs-137	34.90	0.05	17.00	0.06	1270	6.02	0.15	584	1.59	0.04	Use Avg		. 1.72	0.03	0.03	0.03	0.31	2.67	0.03	0.05	1.03	0.02	0.04	· 6.58	·0.42	. 0.03	0.04	5.79	0.02	0.01	17.1	0.01	0.03	N/A
			•			• •																												
Ratio of C-14/Co-60	92.54		15.15	5	0.29			0,36				ji.	1065		1		4961	78			39.8			1962	,1928	!		48.2			3.72		`	
Avg C-14 Conc.	75.00		36.46	<u>і —</u>	Decon	0.50		Decon	0.57	,·		.'	18.2				62.5	4.9			1.4			71:7	26.0			30.1			0.9			27.36
Diluted Over Concrete Depth															1											1     								
Avg Co-60 Conc.	0.81		2.41		Decon	0.04	<u>ا</u> .	Decon	0.07		•	·.	0.02				0.01	0.06			0.04			0.04	0.01			0.63			0.25			0.33
Diluted Over Concrete Depth						<b></b> 1				-				-												: ; 						_		
Avg Cs-137 Conc.	3.64		1.77	7	Decon	0.70	)	Decon	0.18		0	-	0.24				0.04	0.37	ز ایوردوات		0.14		1	· 0.91	0.06	3		0.80			2.38	_		1.10
Diluted Over Concrete Depth									•						Ì											, , , ,								
Sept. Submittal		Conta	inment	t Floor				C	ontain	ment ir	nternal Wa	lls			i						ra) 15. *117.			<b>u</b>	<b>.</b> .	. :								
Radionuclide	Duratek Sample 1/27/99 SML #1 First 0.5' pCi/g 23.40	Duratek Sample 1/27/99 SML #1 0.5 to 1 inch pCi/g	Duratek Sample 1/27/99 SML #1 1 to 1.5 inch pCi/g	Avg Over All Samp at SML #1 pCi/g 8 33	Avg #1 Diluted over Entire Floor Depth pCi/g	Duratek Sample 1/27/99 SML #2 First 0.5" pCi/g	Duratek Sample 1/27/99 SML #2 0.5 to 1 inch pCi/g	Avg Over All Samp at SML #2 pCi/g	Avg #2 Diluted over Entire Floor Depth pCi/g	Duratek Sample 1/27/99 SML #3 First 0.5" pCi/g	Duratek Sample 1/27/99 SML #3 0.5 • to 1 inch pCl/g	Duratek Sample 1/27/99 SML #3 1 to 1.5 inch pCi/g	Avg Over All Samp at SML #3 pCi/g	Avg #3 Diluted over Entire Floor Depth pCl/g			· • • • • • • • • • • • • • • • • • • •		77 24 2 - 2 - 4 2 - 2 - 4 2 - 2 - 4 2 - 2 - 4 2 - 2 - 4	ماند مارین مرتبطین مرتبطین مرتبطین مرتبطین مرتبطین	1.2 ( ) 		руд јл 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	44 64 9 9 9 9 9 9 9 9 9 9 9 9 9										
Cs-137	23.40	0.49	0.76	93.42	5.84	2.12	1.10	1.61	0.02	13.66	0.23	0.52	4.95	0.05	1.	• •	: 9			33.		 ;				יב ב. [[.								
Note:	Sampl	e Resu	its in B	old Ty	pe are «	<minim< td=""><td>um Det</td><td>ectable</td><td>e Activi</td><td>ity (MD</td><td>A) (MDA V</td><td>/alue Sl</td><td>hown)</td><td></td><td><b>וו</b> ג ג</td><td>1</td><td>نہ و<sup>ر</sup> دی</td><td>ы. С. 18</td><td></td><td>ng ng n</td><td></td><td><b>.</b></td><td></td><td>۔ _ ^ر</td><td>۰۰ مذم</td><td>:: ::</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></minim<>	um Det	ectable	e Activi	ity (MD	A) (MDA V	/alue Sl	hown)		<b>וו</b> ג ג	1	نہ و <sup>ر</sup> دی	ы. С. 18		ng n		<b>.</b>		۔ _ ^ر	۰۰ مذم	:: ::								

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## Table 8 (Revision 1)

Average Waste Concentration Calculation

Source of Concrete Waste	Estimated Waste Weight (Million Ibs)	Contam- ination Levels Based On	Average Co-60 Concen- tration by Source (pCi/g)	Average Cs-137 Concen- tration by Source (pCi/g)	Average H-3 Concen- tration by Source (pCi/g)	C-14 Scaling Factor to Co-60	C-14 Concen- tration (pCi/g)	Mn-54 Scaling Factor to Co-60	Mn-54 Concen- tration (pCl/g)	Fe-55 Scaling Factor to Co-60	Fe-55 Concen- tration (pCi/g)	Ni-63 Scaling Factor to Co-60	Ni-63 Concen- tration (pCi/g)	Sr-90 Scaling Factor to Co-60	Sr-90 Concen- tration (pCi/g)	Nb-94 Scaling Factor to Co-60	Nb-94 Concen- tration (pCi/g)	Tc-99 Scaling Fator to Co-60	Tc-99 Concen- tration (pCi/g)	Ag-108m Scaling Factor to Co-60	Ag-108m Concen- tration
Containment Walls	40	Actual	0.06	0.05	5.48	2.522	0.143	0.003	0.000	0.737	0.042	0.322	0.018	Use Actual	0.011	0.0020	0.0001	0.0127	0.0007	0.0036	0.0002
Cont. Floor & Internal	20	Actual Floor	0.67	2.69	1285.00	N/A	27.356	0.010	0.006	0.226	0.151	12.289	8.214	0.0486	0.032	0.0072	0.0048	0.0343	0.0229	0.0112	0.0075
RHR Floors	1	Actual	.1.73	5.78	8.45	0.011	0.020	0.003	0.005	0.737	1.272	0.322	0.556	0.0678	0.117	0.0020	0.0034	0.0127	0.0219	0.0036	0.0062
RHR Walls	2	Actual	0.18	0.63	7.66	0.011	0.002	0.003	0.000	0.737	0.130	0.322	0.057	Use Actual	0.073	0.0020	0.0003	0.0127	0.0022	0.0036	0.0006
Waste Disposal Walls	2.5	<b>RHR Walls</b>	0.18	0.63	7.66	0.011	0.002	0.003	0.000	0.737	0.130	0.322	0.057	RHR Walls	0.073	0.0020	0.0003	0.0127	0.0022	0.0036	0.0006
Waste Disposal Floors	0.5	Actual	. 2.79	4.59	8.45	0.011	0.032	0.003	0.007	0.737	2.058	0.322	0.899	0.0678	0.189	0.0020	0.0055	0.0127	0.0354	0.0036	::0.0100
PAB Above El. 17.5'	7	Cont. Floor	0.67	2.69	7.66	0.011	0.008	0.003	0.002	0.737	0.493	0.322	0.215	0.0486	0.032	0.0020	0.0013	0.0127	0.0085	0.0036	- 0.0024
Fuel Pool Walls & Floor	· 1	<b>RHR Floors</b>	1.73	5.78	8.45	0.011	0.020	0.003	0.005	0.737	1.272	0.322	0.556	0.0678	0.117	0.0020	0.0034	0.0127	0.0219	0.0036	- 0.0062
Remainder of Fuel Bldg	8	<b>RHR Walls</b>	0.18	0.63	7.66	0.011	0.002	0.003	0.000	0.737	0.130	0.322	0.057	RHR Walls	0.073	0.0020	0.0003	0.0127	0.0022	0.0036	• 0.0006
Service Building	8	Cont. Walls	0.06	0.05	5.48	0.011	0.001	0.003	0.000	0.737	0.042	0.322	0.018	Cont. Walls	0.011	0.0020	0.0001	0.0127	0.0007	0.0036	0.0002
Misc Struct/Soil/Asphalt	. 10	Cont. Walls	0.06	0.05	5.48	0.011	0.001	0.003	0.000	0.737	0.042	0.322	0.018	Cont. Walls	0.011	0.0020	0.0001	0.0127	0.0007	0.0036	0.0002
Total	100	Weighted															·				
		Avg. Conc.	0.284	0.974	261.88		5.53		1.67E-03	1	0.14		1.69		2.77E-02		1.25E-03		6.49E-03		2.04E-03
•	•																				
						•											1	•		•	
Source of Concrete Waste	Estimated Waste Weight (Million Ibs)	Contam- Ination Levels	Average Co-60 Concen- tration by Source (pCi/g)	Cs-134 Scaling Factor to Co-60	Cs-134 Concen- tration (pCi/g)	Eu-152 Scaling Factor to Co-60	Eu-152 Concen- tration (pCi/g)	Eu-154 Scaling Factor to Co-60	Eu-154 Concen- tration (pCi/g)	Eu-155 Scaling Factor to Co-60	Eu-155 Concen- tration (pCi/g)	Pu-238 Scaling Factor to Co-60	Pu-238 Concen- tration (pCi/g)	Pu-239 Scaling Factor to Co-60	Pu-239 Concen- tration (pCi/g)	Pu-241 Scaling Fator to Co-60	Pu-241 Concen- tration (pCi/g)	Am-241 Scaling Fator to Co-60	Am-241 Concen- tration (pCi/g)	Cm-243 Scaling Fator to Co-60	Cm-243 Concen- tration (pCi/g)
Source of Concrete Waste Containment Walls	Estimated Waste Weight (Million Ibs) 40	Contam- ination Levels	Average Co-60 Concen- tration by Source (pCi/g) 0.06	Cs-134 Scaling Factor to Co-60 0.0048	Cs-134 Concen- tration (pCi/g) 0.0003	Eu-152 Scaling Factor to Co-60 0.0087	Eu-152 Concen- tration (pCi/g) 0.0005	Eu-154 Scaling Factor to Co-60 0.0043	Eu-154 Concen- tration (pCi/g) 0.0002	Eu-155 Scaling Factor to Co-60 0.0066	Eu-155 Concen- tration (pCi/g) 0.0004	Pu-238 Scaling Factor to Co-60	Pu-238 Concen- tration (pCi/g) 0.0006	Pu-239 Scaling Factor to Co-60 0.0031	Pu-239 Concen- tration (pCi/g) 0.0002	Pu-241 Scaling Fator to Co-60	Pu-241 Concen- tration (pCi/g) 0.0099	Am-241 Scaling Fator to Co-60	Am-241 Concen- tration (pCi/g) 0.0008	Cm-243 Scaling Fator to Co-60	Cm-243 Concen- tration (pCi/g) 0.0002
Source of Concrete Waste Containment Walls Cont. Floor & Internal	Estimated Waste Weight (Million Ibs) 40 20	Contam- Ination Levels Actual Actual Floor	Average Co-60 Concen- tration by Source (pCi/g) 0.06 0.67	Cs-134 Scaling Factor to Co-60 0.0048 0.0312	Cs-134 Concen- tration (pCi/g) 0.0003 0.0209	Eu-152 Scaling Factor to Co-60 0.0087 0.0277	Eu-152 Concen- tration (pCi/g) 0.0005 0.0185	Eu-154 Scaling Factor to Co-60 0.0043 0.0236	Eu-154 Concen- tration (pCi/g) 0.0002 0.0158	Eu-155 Scaling Factor to Co-60 0.0066 0.0214	Eu-155 Concen- tration (pCi/g) 0.0004 0.0143	Pu-238 Scaling Factor to Co-60 0.0112 0.0150	Pu-238 Concen- tration (pCi/g) 0.0006 0.0101	Pu-239 Scaling Factor to Co-60 0.0031 0.0057	Pu-239 Concen- tration (pCi/g) 0.0002 0.0038	Pu-241 Scaling Fator to Co-60 0.1758 0.1837	Pu-241 Concen- tration (pCi/g) 0.0099 0.1228	Am-241 Scaling Fator to Co-60 0.0143 0.0332	Am-241 Concen- tration (pCi/g) 0.0008 0.0222	Cm-243 Scaling Fator to Co-60 0.0036 0.0043	Cm-243 Concen- tration (pCi/g) 0.0002 0.0029
Source of Concrete Waste Containment Walls Cont. Floor & Internal RHR Floors	Estimated Waste Weight (Million Ibs) 40 20	Contam- Ination Levels Actual Actual Floor Actual	Average Co-60 Concen- tration by Source (pCi/g) 0.06 0.67 1.73	Cs-134 Scaling Factor to Co-60 0.0048 0.0312 0.0048	Cs-134 Concen- tration (pCi/g) 0.0003 0.0209 0.0082	Eu-152 Scaling Factor to Co-60 0.0087 0.0277 0.0087	Eu-152 Concen- tration (pCi/g) 0.0005 0.0185 0.0150	Eu-154 Scaling Factor to Co-60 0.0043 0.0236 0.0043	Eu-154 Concen- tration (pCi/g) 0.0002 0.0158 0.0075	Eu-155 Scaling Factor to Co-60 0.0066 0.0214 0.0066	Eu-155 Concen- tration (pCi/g) 0.0004 0.0143 0.0114	Pu-238 Scaling Factor to Co-60 0.0112 0.0150 0.0112	Pu-238 Concen- tration (pCi/g) 0.0006 0.0101 0.0193	Pu-239 Scaling Factor to Co-60 0.0031 0.0057 0.0031	Pu-239 Concen- tration (pCi/g) 0.0002 0.0038 0.0053	Pu-241 Scaling Fator to Co-60 0.1758 0.1837 0.1758	Pu-241 Concen- tration (pCi/g) 0.0099 0.1228 0.3034	Am-241 Scaling Fator to Co-60 0.0143 0.0332 0.0143	Am-241 Concen- tration (pCi/g) 0.0008 0.0222 0.0246	Cm-243 Scaling Fator to Co-60 0.0036 0.0043 0.0036	Cm-243 Concen- tration (pCi/g) 0.0002 0.0029 0.0062
Source of Concrete Waste Containment Walls Cont. Floor & Internal RHR Floors RHR Walls	Estimated Waste Weight (Million Ibs) 40 20 1 2	Contam- Ination Levels Actual Actual Actual Actual	Average Co-60 Concen- tration by Source (pCi/g) 0.06 0.67 1.73 0.18	Cs-134 Scaling Factor to Co-60 0.0048 0.0312 0.0048 0.0048	Cs-134 Concen- tration (pCi/g) 0.0003 0.0209 0.0082 0.0008	Eu-152 Scaling Factor to Co-60 0.0087 0.0277 0.0087	Eu-152 Concen- tration (pCi/g) 0.0005 0.0150 0.0015	Eu-154 Scaling Factor to Co-60 0.0043 0.0236 0.0043 0.0043	Eu-154 Concen- tration (pCi/g) 0.0002 0.0158 0.0075 0.0008	Eu-155 Scaling Factor to Co-60 0.0066 0.0214 0.0066	Eu-155 Concen- tration (pCi/g) 0.0004 0.0143 0.0114 0.0012	Pu-238 Scaling Factor to Co-60 0.0112 0.0150 0.0112 0.0112	Pu-238 Concen- tration (pCi/g) 0.0006 0.0101 0.0193 0.0020	Pu-239 Scaling Factor to Co-60 0.0031 0.0057 0.0031	Pu-239 Concen- tration (pCi/g) 0.0002 0.0038 0.0053 0.0005	Pu-241 Scaling Fator to Co-60 0.1758 0.1837 0.1758 0.1758	Pu-241 Concen- tration (pCi/g) 0.0099 0.1228 0.3034 0.0310	Am-241 Scaling Fator to Co-60 0.0143 0.0332 0.0143 0.0143	Am-241 Concen- tration (pCi/g) 0.0008 0.0222 0.0246 0.0025	Cm-243 Scaling Fator to Co-60 0.0036 0.0036 0.0036	Cm-243 Concen- tration (pCi/g) 0.0002 0.0029 0.0062 0.0006
Source of Concrete Waste Containment Walls Cont. Floor & Internal RHR Floors RHR Walls Waste Disposal Walls	Estimated Waste Weight (Million Ibs) 40 20 1 2 2.5	Contam- ination Levels Actual Actual Floor Actual Actual RHR Walls	Average Co-60 Concen- tration by Source (pCi/g) 0.06 0.67 1.73 0.18 0.18	Cs-134 Scaling Factor to Co-60 0.0048 0.0312 0.0048 0.0048 0.0048	Cs-134 Concen- tration (pCi/g) 0.0003 0.0209 0.0082 0.0008 0.0008	Eu-152 Scaling Factor to Co-60 0.0087 0.0277 0.0087 0.0087	Eu-152 Concen- tration (pCi/g) 0.0005 0.0185 0.0150 0.0015 0.0015	Eu-154 Scaling Factor to Co-60 0.0043 0.0236 0.0043 0.0043 0.0043	Eu-154 Concen- tration (pCI/g) 0.0002 0.0158 0.0075 0.0008 0.0008	Eu-155 Scaling Factor to Co-60 0.0066 0.0214 0.0066 0.0066 0.0066	Eu-155 Concen- tration (pCi/g) 0.0004 0.0143 0.0114 0.0012 0.0012	Pu-238 Scaling Factor to Co-60 0.0112 0.0150 0.0112 0.0112 0.0112	Pu-238 Concen- tration (pCi/g) 0.0006 0.0101 0.0193 0.0020 0.0020	Pu-239 Scaling Factor to Co-60 0.0031 0.0057 0.0031 0.0031	Pu-239 Concen- tration (pCi/g) 0.0002 0.0005 0.0005 0.0005	Pu-241 Scaling Fator to Co-60 0.1758 0.1758 0.1758 0.1758	Pu-241 Concen- tration (pCi/g) 0.0099 0.1228 0.3034 0.0310 0.0310	Am-241 Scaling Fator to Co-60 0.0143 0.0332 0.0143 0.0143	Am-241 Concen- tration (pCi/g) 0.0008 0.0222 0.0246 0.0025 0.0025	Cm-243 Scaling Fator to Co-60 0.0036 0.0036 0.0036 0.0036	Cm-243 Concen- tration (p̂Ci/g) 0.0002 0.0002 0.0006 0.0006
Source of Concrete Waste Containment Walls Cont. Floor & Internal RHR Floors RHR Walls Waste Disposal Walls Waste Disposal Floors	Estimated Waste Weight (Million Ibs) 40 20 1 20 1 20 2.5 0.5	Contam- Ination Levels Actual Actual Floor Actual RHR Walls Actual	Average Co-60 Concen- tration by Source (pCi/g) 0.06 0.67 1.73 0.18 0.18 2.79	Cs-134 Scaling Factor to Co-60 0.0048 0.0312 0.0048 0.0048 0.0048 0.0048	Cs-134 Concen- tration (pCi/g) 0.0003 0.0209 0.0082 0.0008 0.0008 0.0008	Eu-152 Scaling Factor to Co-60 0.0087 0.0087 0.0087 0.0087 0.0087	Eu-152 Concen- tration (pCi/g) 0.0005 0.0185 0.0150 0.0015 0.0015 0.0243	Eu-154 Scaling Factor to Co-60 0.0043 0.0236 0.0043 0.0043 0.0043 0.0043	Eu-154 Concen- tration (pCi/g) 0.0002 0.0158 0.0075 0.0008 0.0008 0.0121	Eu-155 Scaling Factor to Co-60 0.0066 0.0066 0.0066 0.0066	Eu-155 Concen- tration (pCi/g) 0.0004 0.0143 0.0114 0.0012 0.0012 0.0185	Pu-238 Scaling Factor to Co-60 0.0112 0.0150 0.0112 0.0112 0.0112	Pu-238 Concen- tration (pCi/g) 0.0006 0.0101 0.0193 0.0020 0.0020 0.0313	Pu-239 Scaling Factor to Co-60 0.0031 0.0031 0.0031 0.0031 0.0031	Pu-239 Concen- tration (pCi/g) 0.0002 0.0003 0.0005 0.0005 0.0005	Pu-241 Scaling Fator to Co-60 0.1758 0.1758 0.1758 0.1758 0.1758	Pu-241 Concen- tration (pCi/g) 0.0099 0.1228 0.3034 0.0310 0.0310 0.4908	Am-241 Scaling Fator to Co-60 0.0143 0.0332 0.0143 0.0143 0.0143	Am-241 Concen- tration (pCi/g) 0.0008 0.0222 0.0246 0.0025 0.0025 0.0398	Cm-243 Scaling Fator to Co-60 0.0036 0.0036 0.0036 0.0036	Cm-243 Concen- tration (pCi/g) 0.0002 0.0002 0.0006 0.0006 0.0006 0.0100
Source of Concrete Waste Containment Walls Cont. Floor & Internal RHR Floors RHR Walls Waste Disposal Walls Waste Disposal Floors PAB Above EI, 17.5'	Estimated Waste Weight (Million Ibs) 40 20 1 20 1 20 20 1 20 5 7	Contam- ination Levels Actual Actual Floor Actual Actual RHR Walls Actual Cont. Floor	Average Co-60 Concen- tration by Source (pCi/g) 0.06 0.67 1.73 0.18 0.18 2.79 0.67	Cs-134 Scaling Factor to Co-60 0.0048 0.0048 0.0048 0.0048 0.0048 0.0048	Cs-134 Concen- tration (pCi/g) 0.0003 0.0209 0.0082 0.0008 0.0008 0.0133 0.0032	Eu-152 Scaling Factor to Co-60 0.0087 0.0087 0.0087 0.0087 0.0087 0.0087	Eu-152 Concen- tration (pCi/g) 0.0005 0.0185 0.0150 0.0015 0.0015 0.0243 0.0058	Eu-154 Scaling Factor to Co-60 0.0043 0.0236 0.0043 0.0043 0.0043 0.0043 0.0043	Eu-154 Concen- tration (pCi/g) 0.0002 0.0158 0.0075 0.0008 0.0008 0.0121 0.0029	Eu-155 Scaling Factor to Co-60 0.0066 0.0066 0.0066 0.0066 0.0066	Eu-155 Concen- tration (pCi/g) 0.0004 0.0143 0.0114 0.0012 0.0012 0.0012 0.0185 0.0044	Pu-238 Scaling Factor to Co-60 0.0112 0.0150 0.0112 0.0112 0.0112 0.0112	Pu-238 Concen- tration (pCi/g) 0.0006 0.0101 0.0193 0.0020 0.0020 0.0313 0.0075	Pu-239 Scaling Factor to Co-60 0.0031 0.0031 0.0031 0.0031 0.0031	Pu-239 Concen- tration (pCi/g) 0.0002 0.0038 0.0005 0.0005 0.0005 0.0086 0.0021	Pu-241 Scaling Fator to Co-60 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758	Pu-241 Concen- tration (pCi/g) 0.0099 0.1228 0.3034 0.0310 0.0310 0.4908 0.1175	Am-241 Scaling Fator to Co-60 0.0143 0.0332 0.0143 0.0143 0.0143 0.0143	Am-241 Concen- tration (pCi/g) 0.0008 0.0222 0.0246 0.0025 0.0025 0.00398 0.0095	Cm-243 Scaling Fator to Co-60 0.0036 0.0036 0.0036 0.0036 0.0036	Cm-243 Concen- tration (pCi/g) 0.0002 0.0029 0.0006 0.0006 0.0006 0.0100 0.0024
Source of Concrete Waste Containment Walls Cont. Floor & Internal RHR Floors RHR Walls Waste Disposal Walls Waste Disposal Floors PAB Above El. 17.5' Fuel Pool Walls & Floor	Estimated Waste Weight (Million Ibs) 40 20 1 20 1 20 1 20 1 20 7 1 20 1 1	Contam- Ination Levels Actual Actual Floor Actual Actual RHR Walls Actual Cont. Floor RHR Floors	Average Co-60 Concen- tration by Source (pCi/g) 0.06 0.67 1.73 0.18 0.18 0.18 2.79 0.67 1.73	Cs-134 Scaling Factor to Co-60 0.0048 0.0048 0.0048 0.0048 0.0048 0.0048	Cs-134 Concen- tration (pCi/g) 0.0003 0.0209 0.0082 0.0008 0.0008 0.0008 0.0032 0.0032	Eu-152 Scaling Factor to Co-60 0.0087 0.0087 0.0087 0.0087 0.0087 0.0087	Eu-152 Concen- tration (pCi/g) 0.0005 0.0150 0.0015 0.0015 0.0243 0.0058 0.0150	Eu-154 Scaling Factor to Co-60 0.0043 0.0236 0.0043 0.0043 0.0043 0.0043 0.0043	Eu-154 Concen- tration (pCi/g) 0.0002 0.0158 0.0075 0.0008 0.0008 0.0029 0.0029 0.0075	Eu-155 Scaling Factor to Co-60 0.0066 0.0066 0.0066 0.0066 0.0066 0.0066	Eu-155 Concen- tration (pCi/g) 0.0004 0.0143 0.0114 0.0012 0.0012 0.0012 0.0185 0.0044 0.0114	Pu-238 Scaling Factor to Co-60 0.0112 0.0150 0.0112 0.0112 0.0112 0.0112 0.0112	Pu-238 Concen- tration (pCi/g) 0.0006 0.0101 0.0193 0.0020 0.0020 0.0313 0.0075 0.0193	Pu-239 Scaling Factor to Co-60 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031	Pu-239 Concen- tration (pCi/g) 0.0002 0.0038 0.0005 0.0005 0.0005 0.0086 0.0021 0.0053	Pu-241 Scaling Fator to Co-60 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758	Pu-241 Concen- tration (pCi/g) 0.0099 0.1228 0.3034 0.0310 0.0310 0.4908 0.1175 0.3034	Am-241 Scaling Fator to Co-60 0.0143 0.0322 0.0143 0.0143 0.0143 0.0143 0.0143	Am-241 Concen- tration (pCi/g) 0.0008 0.0222 0.0246 0.0025 0.0025 0.0398 0.0095 0.0246	Cm-243 Scaling Fator to Co-60 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036	Cm-243 Concen- tration (pCi/g) 0.0002 0.0029 0.0062 0.0006 0.0006 0.0100 0.0024 0.0062
Source of Concrete Waste Containment Walls Cont. Floor & Internal RHR Floors RHR Walls Waste Disposal Walls Waste Disposal Floors PAB Above EI, 17.5' Fuel Pool Walls & Floor Remainder of Fuel Bldg	Estimated Waste Weight (Million Ibs) 40 20 1 20 1 20 1 20 1 20 1 20 1 20 1 2	Contam- Ination Levels Actual Actual Floor Actual RHR Walls Actual Cont. Floors RHR Floors RHR Walls	Average Co-60 Concen- tration by Source (pCi/g) 0.06 0.67 1.73 0.18 0.18 2.79 0.67 1.73 0.18	Cs-134 Scaling Factor to Co-60 0.0048 0.0048 0.0048 0.0048 0.0048 0.0048 0.0048	Cs-134 Concen- tration (pCi/g) 0.0003 0.0209 0.0082 0.0008 0.0008 0.0032 0.0082 0.0082	Eu-152 Scaling Factor to Co-60 0.0087 0.0087 0.0087 0.0087 0.0087 0.0087 0.0087	Eu-152 Concen- tration (pCi/g) 0.0005 0.0150 0.0015 0.0243 0.0058 0.0150 0.0015	Eu-154 Scaling Factor to Co-60 0.0043 0.0043 0.0043 0.0043 0.0043 0.0043 0.0043 0.0043	Eu-154 Concen- tration (pCI/g) 0.0002 0.0158 0.0075 0.0008 0.0008 0.0121 0.0029 0.0075 0.0008	Eu-155 Scaling Factor to Co-60 0.0066 0.0066 0.0066 0.0066 0.0066 0.0066 0.0066	Eu-155 Concen- tration (pCi/g) 0.0004 0.0143 0.0114 0.0012 0.0012 0.0185 0.0044 0.0114 0.0012	Pu-238 Scaling Factor to Co-60 0.0112 0.0112 0.0112 0.0112 0.0112 0.0112 0.0112 0.0112	Pu-238 Concen- tration (pCi/g) 0.0006 0.0101 0.0193 0.0020 0.0020 0.0313 0.0075 0.0193 0.0020	Pu-239 Scaling Factor to Co-60 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031	Pu-239 Concen- tration (pCi/g) 0.0002 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005	Pu-241 Scaling Fator to Co-60 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758	Pu-241 Concen- tration (pCi/g) 0.0099 0.1228 0.3034 0.0310 0.0310 0.4908 0.1175 0.3034 0.0310	Am-241 Scaling Fator to Co-60 0.0143 0.0143 0.0143 0.0143 0.0143 0.0143 0.0143	Am-241 Concen- tration (pCi/g) 0.0008 0.0222 0.0246 0.0025 0.0398 0.0095 0.0246 0.0025	Cm-243 Scaling Fator to Co-60 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036	Cm-243 Concen- tration (pCi/g) 0.0002 0.0002 0.0006 0.0006 0.0100 0.00062 0.00062 0.00062
Source of Concrete Waste Containment Walls Cont. Floor & Internal RHR Floors RHR Walls Waste Disposal Walls Waste Disposal Floors PAB Above El. 17.5' Fuel Pool Walls & Floor Remainder of Fuel Bldg Service Building	Estimated Waste Weight (Million Ibs) 40 20 1 20 20 1 2,5 0,5 7 7 1 8 8 8 8	Contam- Ination Levels Actual Actual Floor Actual RHR Walls Actual Cont. Floor RHR Floors RHR Walls Cont. Walls	Average Co-60 Concen- tration by Source (pCi/g) 0.06 0.67 1.73 0.18 0.18 2.79 0.67 1.73 0.18 0.18 0.18	Cs-134 Scaling Factor to Co-60 0.0048 0.0048 0.0048 0.0048 0.0048 0.0048 0.0048 0.0048	Cs-134 Concen- tration (pCi/g) 0.0003 0.0209 0.0082 0.0008 0.0008 0.0133 0.0032 0.0082 0.0008 0.0008	Eu-152 Scaling Factor to Co-60 0.0087 0.0087 0.0087 0.0087 0.0087 0.0087 0.0087	Eu-152 Concen- tration (pCi/g) 0.0005 0.0150 0.0015 0.0015 0.0015 0.0058 0.0150 0.0015	Eu-154 Scaling Factor to Co-60 0.0043 0.0236 0.0043 0.0043 0.0043 0.0043 0.0043 0.0043	Eu-154 Concen- tration (pCI/g) 0.0002 0.0158 0.0008 0.0008 0.0008 0.0121 0.0029 0.0075 0.0008 0.0008 0.0002	Eu-155 Scaling Factor to Co-60 0.0066 0.0066 0.0066 0.0066 0.0066 0.0066 0.0066	Eu-155 Concen- tration (pCi/g) 0.0004 0.0143 0.0114 0.0012 0.0012 0.0012 0.0044 0.0014 0.0012 0.0004	Pu-238 Scaling Factor to Co-60 0.0112 0.0112 0.0112 0.0112 0.0112 0.0112 0.0112 0.0112 0.0112	Pu-238 Concen- tration (pCi/g) 0.0006 0.0101 0.0193 0.0020 0.0020 0.0313 0.0075 0.0193 0.0020 0.0020	Pu-239 Scaling Factor to Co-60 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031	Pu-239 Concen- tration (pCi/g) 0.0002 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005	Pu-241 Scaling Fator to Co-60 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758	Pu-241 Concen- tration (pCi/g) 0.0099 0.1228 0.3034 0.0310 0.0310 0.4908 0.1175 0.3034 0.0310 - 0.0099	Am-241 Scaling Fator to Co-60 0.0143 0.0143 0.0143 0.0143 0.0143 0.0143 0.0143 0.0143	Am-241 Concen- tration (pCi/g) 0.0008 0.0222 0.0246 0.0025 0.0398 0.0095 0.0246 0.0025 0.0246	Cm-243 Scaling Fator to Co-60 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036	Cm-243 Concen- tration (p̂Ci/g) 0.0002 0.0002 0.0006 0.0006 0.0100 0.0006 0.0006 0.0006 0.0006 0.0006 0.0006
Source of Concrete Waste Containment Walls Cont. Floor & Internal RHR Floors RHR Walls Waste Disposal Walls Waste Disposal Floors PAB Above EI, 17.5' Fuel Pool Walls & Floor Remainder of Fuel Bldg Service Building Misc Struct/Soil/Asphalt	Estimated Waste Weight (Million Ibs) 40 20 1 2 2.5 0.5 7 7 1 8 8 8 8 10	Contam- Ination Levels Actual Actual Floor Actual Actual RHR Walls Actual Cont. Floor RHR Floors RHR Walls Cont. Walls Cont. Walls	Average Co-60 Concen- tration by Source (pCi/g) 0.06 0.67 1.73 0.18 0.18 0.18 0.79 0.67 1.73 0.18 0.06 0.06	Cs-134 Scaling Factor to Co-60 0.0048 0.0312 0.0048 0.0048 0.0048 0.0048 0.0048 0.0048 0.0048 0.0048	Cs-134 Concen- tration (pCi/g) 0.0003 0.0209 0.0082 0.0008 0.0008 0.0003 0.0003 0.0003 0.0003	Eu-152 Scaling Factor to Co-60 0.0087 0.0087 0.0087 0.0087 0.0087 0.0087 0.0087 0.0087 0.0087	Eu-152 Concen- tration (pCi/g) 0.0005 0.0150 0.0015 0.0015 0.00150 0.00150 0.00150 0.0005 0.0005	Eu-154 Scaling Factor to Co-60 0.0043 0.0043 0.0043 0.0043 0.0043 0.0043 0.0043 0.0043 0.0043 0.0043	Eu-154 Concen- tration (pCi/g) 0.0002 0.0158 0.0075 0.0008 0.0121 0.0029 0.0075 0.0008 0.0002 0.0002	Eu-155 Scaling Factor to Co-60 0.0066 0.0066 0.0066 0.0066 0.0066 0.0066 0.0066 0.0066 0.0066	Eu-155 Concen- tration (pCi/g) 0.0004 0.0143 0.0114 0.0012 0.0012 0.0012 0.0044 0.0114 0.0012 0.0004	Pu-238 Scaling Factor to Co-60 0.0112 0.0150 0.0112 0.0112 0.0112 0.0112 0.0112 0.0112 0.0112 0.0112	Pu-238 Concen- tration (pCi/g) 0.0006 0.0101 0.0193 0.0020 0.0020 0.0313 0.0075 0.0193 0.0020 0.0006 0.0006	Pu-239 Scaling Factor to Co-60 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031 0.0031	Pu-239 Concen- tration (pCi/g) 0.0002 0.0038 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0002	Pu-241 Scaling Fator to Co-60 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758 0.1758	Pu-241 Concen- tration (pCi/g) 0.0099 0.1228 0.3034 0.0310 0.4908 0.1175 0.3034 0.0310 0.0310 0.0099 0.0099	Am-241 Scaling Fator to Co-60 0.0143 0.0143 0.0143 0.0143 0.0143 0.0143 0.0143 0.0143 0.0143	Am-241 Concen- tration (pCi/g) 0.0008 0.0222 0.0246 0.0025 0.0025 0.0398 0.0095 0.0246 0.0025 0.0246 0.0025 0.0008	Cm-243 Scaling Fator to Co-60 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036	Cm-243 Concen- tration (pCi/g) 0.0002 0.0029 0.0006 0.0006 0.0100 0.00024 0.0002 0.0002 0.0002

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Note: 1. Information changed from the original submittal shown in italics

Document Control Desk

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## Table 9 (Revision 1)

## **Post Closure Dose Calculation**

Radio- nuclide	Dose Equivalent per Concentration of Radionuclide - Resident Farmer (mrem/yr per pCi/g)	Weighted Average of All Waste (pCi/g)	Post Closure Dose for Avg of All Waste (mrem/yr)
H-3	1.045E-05	261.88	2.737E-03
C-14	3.060E-01	5.53	1.692E+00
Mn-54	6.286E-25	1.67E-03	1.052E-27
Fe-55	0.000E+00	0.14	0.000E+00
Co-60	1.653E-21	0.28	4.692E-22
Ni-63	0.000E+00	1.69	0.000E+00
Sr-90	0.000E+00	0.0277	0.000E+00
Nb-94	9.961E-01	1.25E-03	1.246E-03
Tc-99	2.221E-01	6.49E-03	1.441E-03
Ag-108m	5.764E-01	2.04E-03	1.176E-03
Cs-134	5.881E-26	4.89E-03	2.875E-28
Cs-137	6.850E-27	0.97	6.674E-27
Eu-152	1.567E-23	5.01E-03	7.854E-26
Eu-154	5.997E-23	3.81E-03	2.286E-25
Eu-155	0.000E+00	3.85E-03	0.000E+00
Pu-238	2.004E-06	3.69E-03	7.398E-09
Pu-239	0.000E+00	1.23E-03	0.000E+00
Pu-241	0.000E+00	5.09E-02	0.000E+00
Am-241	0.000E+00	6.58E-03	0.000E+00
Cm-243	0.000E+00	1.11E-03	0.000E+00
Total Po	ost Closure Dose	(mrem/yr)	1.699E+00

Notes: 1. Values in Bold Type are based on Minimum Detectable Activity (MDA) (i.e. Radionuclide was not detected at the MDA concentration)

2. Information changed from the original submittal shown in shaded cells