Appendix A

RESRAD Dose Modeling Supporting Information

ATTACHMENT A LEVEL 2 MODELING

BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name	Data Source
R011	Area of contaminated zone (m**2)	5.130E+02	1.00E+04	---	AREA	Site has 46 designated burial pits; 39 used; pit dimensions 10 ft x 12 ft by 10 ft deep. Assume total area based on 46 burial pits = (46*10*12)/3.28 = 513 sq m (0.13 acres) REF[d] Section 2.2 and Table 1
R011	Thickness of contaminated zone (m)	1.524E-01	2.00E+00	---	THICK0	Assume all remaining residual activity remains in a 0.5 ft thick layer at the bottom of the burial pit after remediation.
R011	Length parallel to aquifer flow (m)	2.270E+01	1.00E+02	---	LCZPAQ	assumes square site with length parallel to flow equal to square root of site area as set by parameter AREA
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	2.50E+01	---	BRDL	
R011	Time since placement of material (yr)	0.000E+00	0.00E+00	---	TI	
R012	Initial principal radionuclide (pCi/g): ^{14}C	1.000E+00	0.00E+00	---	S1(1)	Based on REF[d] Section 2.7 and Table 2 and normalized to 1 pCi/g
R012	Initial principal radionuclide (pCi/g): ^{36}Cl	1.000E+00	0.00E+00	---	S1(2)	Based on REF[d] Section 2.7 and Table 2 and normalized to 1 pCi/g
R012	Initial principal radionuclide (pCi/g): ^{137}Cs	1.000E+00	0.00E+00	---	S1(3)	Based on REF[d] Section 2.7 and Table 2 and normalized to 1 pCi/g
R012	Initial principal radionuclide (pCi/g): ^{55}Fe	1.000E+00	0.00E+00	---	S1(4)	Based on REF[d] Section 2.7 and Table 2 and normalized to 1 pCi/g
R012	Initial principal radionuclide (pCi/g): ^{22}Na	1.000E+00	0.00E+00	---	S1(6)	Based on REF[d] Section 2.7 and Table 2 and normalized to 1 pCi/g
R012	Initial principal radionuclide (pCi/g): ^{63}Ni	1.000E+00	0.00E+00	---	S1(7)	Based on REF[d] Section 2.7 and Table 2 and normalized to 1 pCi/g
R012	Initial principal radionuclide (pCi/g): ^{210}Pb	1.000E+00	0.00E+00	---	S1(8)	Based on REF[d] Section 2.7 and Table 2 and normalized to 1 pCi/g
R012	Initial principal radionuclide (pCi/g): ^{226}Ra	1.000E+00	0.00E+00	---	S1(9)	Based on REF[d] Section 2.7 and Table 2 and normalized to 1 pCi/g
R012	Initial principal radionuclide (pCi/g): ^{90}Sr	1.000E+00	0.00E+00	---	S1(10)	Based on REF[d] Section 2.7 and Table 2 and normalized to 1 pCi/g
R012	Concentration in groundwater (pCi/L): ^{14}C	not used	0.00E+00	---	W1(1)	
R012	Concentration in groundwater (pCi/L): ^{36}Cl	not used	0.00E+00	---	W1(2)	
R012	Concentration in groundwater (pCi/L): ^{137}Cs	not used	0.00E+00	---	W1(3)	
R012	Concentration in groundwater (pCi/L): ^{55}Fe	not used	0.00E+00	---	W1(4)	
R012	Concentration in groundwater (pCi/L): ^{22}Na	not used	0.00E+00	---	W1(6)	
R012	Concentration in groundwater (pCi/L): ^{63}Ni	not used	0.00E+00	---	W1(7)	
R012	Concentration in groundwater (pCi/L): ^{210}Pb	not used	0.00E+00	---	W1(8)	
R012	Concentration in groundwater (pCi/L): ^{226}Ra	not used	0.00E+00	---	W1(9)	
R012	Concentration in groundwater (pCi/L): ^{90}Sr	not used	0.00E+00	---	W1(10)	
R013	Cover Depth (m)	0.000E+00	0.00E+00	---	COVER0	
R013	Density of cover material (g/cm**3)	not used	1.50E+00	---	DENSCV	
R013	Cover depth erosion rate (m/y)	not used	1.00E-03	---	VCV	

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BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name	Data Source
R013	Density of contaminated zone (g/cm**3)	1.431E+00	1.50E+00	---	DENSCZ	NUREG-5512 Vol 2
R013	Contaminated zone erosion rate (m/y)	1.000E-03	1.00E-03	---	VCZ	
R013	Contaminated zone total porosity	4.000E-01	4.00E-01	---	TPCZ	Soils present in the vicinity of the burial pits at the site are sand and gravel terrace deposits overlying bedrock. Utilize RESRAD default.
R013	Contaminated zone field capacity	2.000E-01	2.00E-01	---	FCCZ	
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.00E+01	---	HCCZ	
R013	Contaminated zone b parameter	5.300E+00	5.30E+00	---	BCZ	
R013	Average annual wind speed (m/sec)	2.000E+00	2.00E+00	---	WIND	Soil Screening Guidance for Radionuclides:Technical Background Document Part 2.3 "Inhalation of Fugitive Dusts" EPA/540-R-00-006
R013	Humidity in air (g/m**3)	8.000E+00	8.00E+00	---	HUMID	
R013	Evapotranspiration coefficient	5.000E-01	5.00E-01	---	EVAPTR	
R013	Precipitation (m/yr)	9.812E-01	1.00E+00	---	PRECIP	NUREG/CR-6697, "Development of Probabilistic RESRAD 6.0 and RESRAD-Build 3.0 Computer Codes", Chapter 3 Meteorological Table 4.1-1 Precipitation Data, Washingtoin Nat'l AP, D.C. 38.63 inches
R013	Irrigation (m/yr)	2.000E-01	2.00E-01	---	RI	
R013	Irrigation mode	Overhead	Overhead	---	IDITCH	Common mode of irrigation
R013	Runoff coefficient	2.000E-01	2.00E-01	---	RUNOFF	
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.00E+06	---	WAREA	
R013	Accuracy for water/soil computations	1.000E-03	1.00E-03	---	EPS	
R014	Density of saturated zone (g/cm**3)	1.431E+00	1.50E+00	---	DENSAQ	NUREG-5512 Vol 2
R014	Saturated zone total porosity	4.000E-01	4.00E-01	---	TPSZ	
R014	Saturated zone effective porosity	2.000E-01	2.00E-01	---	EPSZ	
R014	Saturated zone field capacity	2.000E-01	2.00E-01	---	FCSZ	
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.00E+02	---	HCSZ	
R014	Saturated zone hydraulic gradient	2.000E-02	2.00E-02	---	HGWT	
R014	Saturated zone b parameter	5.300E+00	5.30E+00	---	BSZ	
R014	Water table drop rate (m/yr)	1.000E-03	1.00E-03	---	VWT	
R014	Well pump intake depth (m below water table)	1.000E+01	1.00E+01	---	DWIBWT	
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL	MB used for smaller areas (<1000 m^2); RESRAD Manual Section E.3.1
R014	Well pumping rate (m**3/yr)	2.500E+02	2.50E+02	---	UW	
R015	Number of unsaturated zone strata	1	1	---	NS	
R015	Unsat. Zone 1, thickness (m)	4.573E+00	4.000E+00	---	H(1)	Depth to ground water is approximately 25 feet below ground surface; the burial pits floor is anticipated to be 10 feet below ground resulting a 15 feet (3.04 m) unsaturated zone beneath the pits, REF[d] Section 3.3.1.2 and 6.5.
R015	Unsat. Zone 1, soil densiy (g/cm**3)	1.431E+00	1.500E+00	---	DENSUZ (1)	NUREG-5512 Vol 2

ATTACHMENT A LEVEL 2 MODELING

BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

				Used by RESRAD		
Menu	Parameter	User Input	Default	(If different from user input)	Parameter Name	Data Source
R015	Unsat. Zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ (1)	
R015	Unsat. Zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)	
R015	Unsat. Zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ (1)	
R015	Unsat. Zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)	
R015	Unsat. Zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)	
R016	Distribution coefficients for ^{14}C			---		
R016	Contaminated zone (cm**3/g)	6.700E+00	0.00E+00	---	DCNUCC(1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Unsaturated zone (cm**3/g)	6.700E+00	0.00E+00	---	DCNUCC(1,1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Saturated zone (cm**3/g)	0.000E+00	0.00E+00	---	DCNUCS(1)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	1.582E-01	ALEACH(1)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	not used	SOLUBK(1)	RESRAD code Computed
R016	Distribution coefficients for ^{36}Cl					
R016	Contaminated zone (cm**3/g)	1.700E+00	1.00E-01	---	DCNUCC(2)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Unsaturated zone (cm**3/g)	1.700E+00	1.00E-01	---	DCNUCC(2,1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Saturated zone (cm**3/g)	1.000E-01	1.00E-01	---	DCNUCS(2)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	5.714E-01	ALEACH(2)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	not used	SOLUBK(2)	RESRAD code Computed
R016	Distribution coefficients for ^{137}Cs					
R016	Contaminated zone (cm**3/g)	2.700E+02	4.60E+03	---	DCNUCC(3)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Unsaturated zone (cm**3/g)	2.700E+02	4.60E+03	---	DCNUCC(3,1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Saturated zone (cm**3/g)	4.600E+03	4.60E+03	---	DCNUCS(3)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	4.047E-03	ALEACH(3)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	not used	SOLUBK(3)	RESRAD code Computed
R016	Distribution coefficients for ^{55}Fe					
R016	Contaminated zone (cm**3/g)	1.600E+02	1.00E+03	---	DCNUCC(4)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Unsaturated zone (cm**3/g)	1.600E+02	1.00E+03	---	DCNUCC(4,1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Saturated zone (cm**3/g)	1.000E+03	1.00E+03	---	DCNUCS(4)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	6.826E-03	ALEACH(4)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	not used	SOLUBK(4)	RESRAD code Computed
R016	Distribution coefficients for ^{22}Na					
R016	Contaminated zone (cm**3/g)	7.600E+01	1.00E+01	---	DCNUCC(6)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model

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BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

				Used by RESRAD		
Menu	Parameter	User Input	Default	(If different from user input)	Parameter Name	Data Source
R016	Unsaturated zone (cm**3/g)	7.600E+01	1.00E+01	---	DCNUCC(6,1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Saturated zone (cm**3/g)	1.000E+01	1.00E+01	---	DCNUCS(6)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	1.435E-02	ALEACH(6)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	not used	SOLUBK(6)	RESRAD code Computed
R016	Distribution coefficients for ^{63}Ni					
R016	Contaminated zone (cm**3/g)	4.000E+02	1.00E+03	---	DCNUCC(7)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Unsaturated zone (cm**3/g)	4.000E+02	1.00E+03	---	DCNUCC(7,1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Saturated zone (cm**3/g)	1.000E+03	1.00E+03	---	DCNUCS(7)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	2.733E-03	ALEACH(7)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	not used	SOLUBK(7)	RESRAD code Computed
R016	Distribution coefficients for ^{210}Pb					
R016	Contaminated zone (cm**3/g)	2.700E+02	1.00E+02	---	DCNUCC(8)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Unsaturated zone (cm**3/g)	2.700E+02	1.00E+02	---	DCNUCC(8,1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Saturated zone (cm**3/g)	1.000E+02	1.00E+02	---	DCNUCS(8)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	4.047E-03	ALEACH(8)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	not used	SOLUBK(8)	RESRAD code Computed
R016	Distribution coefficients for ^{226}Ra					
R016	Contaminated zone (cm**3/g)	5.000E+02	7.00E+01	---	DCNUCC(9)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Unsaturated zone (cm**3/g)	5.000E+02	7.00E+01	---	DCNUCC(9,1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Saturated zone (cm**3/g)	7.000E+01	7.00E+01	---	DCNUCS(9)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	2.186E-03	ALEACH(9)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	not used	SOLUBK(9)	RESRAD code Computed
R016	Distribution coefficients for ^{90}Sr					
R016	Contaminated zone (cm**3/g)	1.500E+01	3.00E+01	---	DCNUCC(10)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Unsaturated zone (cm**3/g)	1.500E+01	3.00E+01	---	DCNUCC(10,1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Saturated zone (cm**3/g)	3.000E+01	3.00E+01	---	DCNUCS(10)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	7.188E-02	ALEACH(10)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	not used	SOLUBK(10)	RESRAD code Computed

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BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

				Used by RESRAD		
Menu	Parameter	User Input	Default	(If different from user input)	Parameter Name	Data Source
R017	Inhalation Rate (m**3/yr)	8.513E+03	8.40E+03	---	INHALR	Annual inhalation rate based on weighted fractional time on site for indoor and outdoor breathing rates using NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.91" or 0.9*8760*0.6571/(.6571+.1101)+1.4*8760*.1101/(.6571+.1101) = 8513 m^3/yr
R017	Mass loading for inhalation (g/m**3)	4.000E-04	1.00E-04	---	MLINH	Mass loading in air describes the airborne dust conditions on the site. Value is the conservative value for gardening from NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.91"
R017	Exposure duration	3.000E+01	3.00E+01	---	ED	
R017	Shielding factor, inhalation	2.500E-01	4.00E-01	---	SHF3	Median of the range (0.2-0.3) from study designed to investigate the fraction of indoor dust relative to outdoor dust (Rutz 1997, *Estimate of Contamination Levels in Indoor Dust Resulting From Contamination of Soils.)*
R017	Shielding factor, external gamma inhalation	5.512E-01	7.00E-01	---	SHF1	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R017	Fraction of time indoors	6.571E-01	5.00E-01	---	FIND	The fraction of total year (8760 hr) that is spent indoors on site. Equals 0.6571 x 8760 = 5756 hrs spent indoors on site or 15.75 hours/day. NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R017	Fraction of time spent outdoors (on site)	1.101E-01	2.50E-01	---	FOTD	The fraction of total year (8760 hr) that is spent outdoors on site. Equals 0.1101 x 8760 = 964 hrs spent outdoors on site or 2.64 hours/day.
R017	Shape factor flag, external gamma	1.000E+00	1.00E+00	>0 shows circular AREA	FS	RESRAD Default
R018	Fruits, vegetables and grain consumption (kg/yr)	1.118E+02	1.60E+02	---	DIET(1)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61 (Sum of fruits, grain, roots)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.40E+01	---	DIET(2)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Milk consumption (L/yr)	2.330E+02	9.20E+01	---	DIET(3)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.30E+01	---	DIET(4)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61

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BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

				Used by RESRAD		
Menu	Parameter	User Input	Default	(If different from user input)	Parameter Name	Data Source
R018	Fish consumption (kg/yr)	2.060E+01	5.40E+00	---	DIET(5)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Other seafood consumption (kg/yr)	0.000E+00	9.00E-01	---	DIET(6)	Non ocean site; assumes no freshwater mollusks, frogs, and turtles in category
R018	Soil ingestion rate (g/yr)	1.826E+01	3.65E+01	---	SOIL	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Drinking water intake (L/yr)	4.785E+02	5.10E+02	---	DWI	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Contamination fraction of drinking water	1.000E+00	1.00E+00	---	FDW	
R018	Contamination fraction of household water	not used	1.00E+00	---	FHHW	
R018	Contamination fraction of livestock water	1.000E+00	1.00E+00	---	FLW	
R018	Contamination fraction of irrigation water	1.000E+00	1.00E+00	---	FIRW	
R018	Contamination fraction of aquatic food	5.000E-01	5.00E-01	---	FR9	RESRAD Default
R018	Contamination fraction of plant food	0.17	-1	1.000E+00	FPLANT	Set to one to allow for ingestion of 100% of homegrown produce
R018	Contamination fraction of meat	-1	-1	1.000E+00	FMEAT	Base contamination fraction on site land area fraction
R018	Contamination fraction of milk	0.17	-1	1.000E+00	FMILK	Base contamination fraction on site land area fraction
R019	Livestock fodder intake for meat (kg/day)	2.685E+01	6.80E+01	---	LFI5	NUREG 5512 Vol 4 Table 3 Beef Forage, grain, hay (8.13+2.42+16.3) = 26.85 kg/day
R019	Livestock fodder intake for milk (kg/day)	6.325E+01	5.50E+01	---	LFI6	NUREG 5512 Vol 4 Table 3 milk cow forage, grain, hay (35.2+1.95+26.1) = 63.25 kg/day
R019	Livestock water intake for meat (L/day)	5.000E+01	5.00E+01	---	LWI5	
R019	Livestock water intake for milk (L/day)	6.000E+01	1.60E+02	---	LWI6	NUREG 5512 Vol 4 Table 3 milk cow water intale = 60 L/day
R019	Livestock soil intake (kg/day)	2.000E-02	5.00E-01	---	LSI	NUREG 5512 Vol 4 Table 3 beef/milk cow soil intale = 0.02 kg/day
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.00E-04	---	MLFD	
R019	Depth of soil mixing layer (m)	1.500E-01	1.50E-01	---	DM	
R019	Depth of roots (m)	9.000E-01	9.00E-01	---	DROOT	
R019	Drinking water fraction from ground water	not used	1.00E+00	---	FGWDW	
R019	Household water fraction from ground water	1.000E+00	1.00E+00	---	FGWHH	
R019	Livestock water fraction from ground water	1.000E+00	1.00E+00	---	FGWLW	
R019	Irrigation fraction from ground water	1.000E+00	1.00E+00	---	FGWIR	
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	4.000E+00	7.00E-01	---	YV(1)	NUREG-5512 Vol 1 Table 6.14 Crop Yields for Food Crops, other vegetables
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.000E+00	1.50E+00	---	YV(2)	NUREG-5512 Vol 1 Table 6.14 Crop Yields for Food Crops
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.500E+00	1.10E+00	---	YV(3)	NUREG-5512 Vol 1 Table 6.13 Crop Yields for Animal Products, assume largest value of 1.5 for beef and milk
R19B	Growing Season for Non-Leafy (years)	2.500E-01	1.70E-01	---	TE(1)	NUREG-5512 Vol 1 Table 6.12 Minimum Crop-Growing Periods, assume other vegetables value of 90 days

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BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

				Used by RESRAD		
Menu	Parameter	User Input	Default	(If different from user input)	Parameter Name	Data Source
R19B	Growing Season for Leafy (years)	2.500E-01	2.50E-01	---	TE(2)	
R19B	Growing Season for Fodder (years)	8.000E-02	8.00E-02	---	TE(3)	NUREG-5512 Vol 1 Table 6.12 Minimum Crop-Growing Periods, assume forage value of 30 days
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.00E-01	---	TIV(1)	
R19B	Translocation Factor for Leafy	1.000E+00	1.00E+00	---	TIV(2)	
R19B	Translocation Factor for Fodder	1.000E+00	1.00E+00	---	TIV(3)	
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.50E-01	---	RDRY(1)	
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.50E-01	---	RDRY(2)	
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.50E-01	---	RDRY(3)	
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.50E-01	---	RWET(1)	
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.50E-01	---	RWET(2)	
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.50E-01	---	RWET(3)	
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.00E+01	---	WLAM	
C14	C-12 concentration in water (g/cm**3)	2.00E-05	2.00E-05	---	C12WTR	
C14	C-12 concentration in contaminated soil (g/g)	3.00E-02	3.00E-02	---	C12CZ	
C14	Fraction of vegetation carbon from soil	2.00E-02	2.00E-02	---	CSOIL	
C14	Fraction of vegetation carbon from air	9.80E-01	9.80E-01	---	CAIR	
C14	C-14 evasion layer thickness in soil (m)	3.00E-01	3.00E-01	---	DMC	
C14	C-14 evasion flux rate from soil (1/sec)	7.00E-07	7.00E-07	---	EVSN	
C14	C-12 evasion flux rate from soil (1/sec)	1.00E-10	1.00E-10	---	REVSN	
C14	Fraction of grain in beef cattle feed	8.00E-01	8.00E-01	---	AVFG4	
C14	Fraction of grain in milk cow feed	2.00E-01	2.00E-01	---	AVFG5	
C14	DCF Correction Factor for gaseous forms of C14	8.89E+01	0.00E+00	---	CO2F	
STOR	Storage times of contaminated foodstuffs (days):					
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.40E+01	---	STOR_T(1)	
STOR	Leafy vegetables	1.000E+00	1.00E+00	---	STOR_T(2)	
STOR	Milk	1.000E+00	1.00E+00	---	STOR_T(3)	
STOR	Meat and poultry	2.000E+01	2.00E+01	---	STOR_T(4)	NUREG-5512 Vol 1 Table 6.11 Holdup Time for Food Consumption, assume beef value of 20 days
STOR	Fish	7.000E+00	7.00E+00	---	STOR_T(5)	
STOR	Crustacea and mollusks	7.000E+00	7.00E+00	---	STOR_T(6)	
STOR	Well water	0.000E+00	1.00E+00	---	STOR_T(7)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
STOR	Surface water	0.000E+00	1.00E+00	---	STOR_T(8)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
STOR	Livestock fodder	0.000E+00	4.50E+01	---	STOR_T(9)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R021	Thickness of building foundation (m)	not used	1.50E-01	---	FLOOR1	

ATTACHMENT A LEVEL 2 MODELING

BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

				Used by RESRAD		
Menu	Parameter	User Input	Default	(If different from user input)	Parameter Name	Data Source
R021	Bulk density of building foundation (g/cm**3)	not used	2.40E+00	---	DENSFL	
R021	Total porosity of the cover material	not used	4.00E-01	---	TPCV	
R021	Total porosity of the building foundation	not used	1.00E-01	---	TPFL	
R021	Volumetric water content of the cover material	not used	5.00E-02	---	PH2OCV	
R021	Volumetric water content of the foundation	not used	3.00E-02	---	PH2OFL	
R021	Diffusion coefficient for radon gas (m/sec):					
R021	in cover material	not used	2.00E-06	---	DIFCV	
R021	in foundation material	not used	3.00E-07	---	DIFFL	
R021	in contaminated zone soil	not used	2.00E-06	---	DIFCZ	
R021	Radon vertical dimension of mixing (m)	not used	2.00E+00	---	HMIX	
R021	Average building air exchange rate (1/hr)	not used	5.00E-01	---	REXG	
R021	Height of the building (room) (m)	not used	2.50E+00	---	HRM	
R021	Building interior area factor	not used	0.00E+00	Code Computed	FAI	
R021	Building depth below ground surface (m)	not used	-1.00E+00	Code Computed	DMFL	
R021	Emanating power of Rn-222 gas	not used	2.50E-01	---	EMANA(1)	
R021	Emanating power of Rn-220 gas	not used	1.50E-01	---	EMANA(2)	
TITL	Number of graphical time points	1024	---	---	NPTS	
TITL	Maximum number of integration points for dose	17	---	---	LYMAX	default value from RESRAD code for scenario chosen
TITL	Maximum number of integration points for risk	257	---	---	KYMAX	default value from RESRAD code for scenario chosen

Notes:

[a] Dose Conversion factors used in these RESRAD runs are RESRAD default and follow Heast 2001 Morbidity except as shown on Attachment C

[b] Times for calculations are RESRAD default values; values are not shown in table

[c] Radii of shape factor array and fractions of annular areas within AREA are not used since default shape circular is used

[d] Characterization Survey Work Plan, USDA Low Level Radioisotope Burial Site, Beltsville Agricultural Research Center, Beltsville, MD Cabrera Services Inc, Nov 2004

ATTACHMENT B LEVEL 2 MODELING

BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name	Data Source
R011	Area of contaminated zone (m**2)	5.577E+03	1.00E+04	---	AREA	Tritium detected in groundwater; utilize entire Site area 0f 60, 000 sq ft = 5,577 m^2 (1.38 acres) REF[d] Section 2.2
R011	Thickness of contaminated zone (m)	4.573E+00	2.00E+00	---	THICK0	Assume remaining residual activity remains in a layer between the excavated bottom of the trench and the depth below ground surface to groundwater in the vicinity of the site is 25 ft - 10 ft = 15 ft (4.4 m). REF[d] Section 3.3.1.2.
R011	Length parallel to aquifer flow (m)	7.500E+01	1.00E+02	---	LCZPAQ	assumes square site with length parallel to flow equal to square root of site area as set by parameter AREA
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	2.50E+01	---	BRDL	
R011	Time since placement of material (yr)	0.000E+00	0.00E+00	---	TI	
R012	Initial principal radionuclide (pCi/g): ^{3}H	1.000E+00	0.00E+00	---	S1(5)	Based on REF[d] Section 2.7 and Table 2 and normalized to 1 pCi/g
R012	Concentration in groundwater (pCi/L): ^{3}H	not used	0.00E+00	---	W1(5)	
R013	Cover Depth (m)	0.000E+00	0.00E+00	---	COVER0	
R013	Density of cover material (g/cm**3)	not used	1.50E+00	---	DENSCV	
R013	Cover depth erosion rate (m/y)	not used	1.00E-03	---	VCV	
R013	Density of contaminated zone (g/cm**3)	1.431E+00	1.50E+00	---	DENSCZ	NUREG-5512 Vol 2
R013	Contaminated zone erosion rate (m/y)	1.000E-03	1.00E-03	---	VCZ	
R013	Contaminated zone total porosity	4.000E-01	4.00E-01	---	TPCZ	Soils present in the vicinity of the burial pits at the site are sand and gravel terrace deposits overlying bedrock. Utilize RESRAD default.
R013	Contaminated zone field capacity	2.000E-01	2.00E-01	---	FCCZ	
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.00E+01	---	HCCZ	
R013	Contaminated zone b parameter	5.300E+00	5.30E+00	---	BCZ	
R013	Average annual wind speed (m/sec)	2.000E+00	2.00E+00	---	WIND	Soil Screening Guidance for Radionuclides:Technical Background Document Part 2.3 "Inhalation of Fugitive Dusts" EPA/540-R-00-006
R013	Humidity in air (g/m**3)	8.000E+00	8.00E+00	---	HUMID	
R013	Evapotranspiration coefficient	5.000E-01	5.00E-01	---	EVAPTR	
R013	Precipitation (m/yr)	9.812E-01	1.00E+00	---	PRECIP	NUREG/CR-6697, "Development of Probabilistic RESRAD 6.0 and RESRAD-Build 3.0 Computer Codes", Chapter 3 Meteorological Table 4.1-1 Precipitation Data, Washingtoin Nat'l AP, D.C. 38.63 inches
R013	Irrigation (m/yr)	2.000E-01	2.00E-01	---	RI	
R013	Irrigation mode	Overhead	Overhead	---	IDITCH	Common mode of irrigation
R013	Runoff coefficient	2.000E-01	2.00E-01	---	RUNOFF	
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.00E+06	---	WAREA	
R013	Accuracy for water/soil computations	1.000E-03	1.00E-03	---	EPS	
R014	Density of saturated zone (g/cm**3)	1.431E+00	1.50E+00	---	DENSAQ	NUREG-5512 Vol 2

ATTACHMENT B LEVEL 2 MODELING

BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name	Data Source
R014	Saturated zone total porosity	4.000E-01	4.00E-01	---	TPSZ	
R014	Saturated zone effective porosity	2.000E-01	2.00E-01	---	EPSZ	
R014	Saturated zone field capacity	2.000E-01	2.00E-01	---	FCSZ	
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.00E+02	---	HCSZ	
R014	Saturated zone hydraulic gradient	2.000E-02	2.00E-02	---	HGWT	
R014	Saturated zone b parameter	5.300E+00	5.30E+00	---	BSZ	
R014	Water table drop rate (m/yr)	1.000E-03	1.00E-03	---	VWT	
R014	Well pump intake depth (m below water table)	1.000E+01	1.00E+01	---	DWIBWT	
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL	MB used for smaller areas (<1000 m^2); RESRAD Manual Section E.3.1
R014	Well pumping rate (m**3/yr)	2.500E+02	2.50E+02	---	UW	
R015	Number of unsaturated zone strata	0	1	---	NS	Contaminated zone is assumed to rest directly on the saturated zone
R015	Unsat. Zone 1, thickness (m)	4.573E+00	4.000E+00	---	H(1)	Depth to ground water is approximately 25 feet below ground surface; the burial pits floor is anticipated to be 10 feet below ground resulting a 15 feet (3.04 m) unsaturated zone beneath the pits, REF[d] Section 3.3.1.2 and 6.5.
R015	Unsat. Zone 1, soil density (g/cm**3)	1.431E+00	1.500E+00	---	DENSUZ (1)	NUREG-5512 Vol 2
R015	Unsat. Zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ (1)	
R015	Unsat. Zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)	
R015	Unsat. Zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ (1)	
R015	Unsat. Zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)	
R015	Unsat. Zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)	
R016	Distribution coefficients for ^3H					
R016	Contaminated zone (cm**3/g)	0.000E+00	0.00E+00	---	DCNUCC(1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Unsaturated zone (cm**3/g)	0.000E+00	0.00E+00	---	DCNUCC(1)	NUREG-5512 Vol 1 Table 6.7 Partition Coefficients for the Water-Use Model
R016	Saturated zone (cm**3/g)	0.000E+00	0.00E+00	---	DCNUCS(1)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	3.360E-01	ALEACH(1)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	not used	SOLUBK(1)	RESRAD code Computed
R017	Inhalation Rate (m**3/yr)	8.513E+03	8.40E+03	---	INHALR	Annual inhalation rate based on weighted fractional time on site for indoor and outdoor breathing rates using NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.91" or 0.9*8760*0.657
R017	Mass loading for inhalation (g/m**3)	4.000E-04	1.00E-04	---	MLINH	Mass loading in air describes the airborne dust conditions on the site. Value is the conservative value for gardening from NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.91"
R017	Exposure duration	3.000E+01	3.00E+01	---	ED	

ATTACHMENT B LEVEL 2 MODELING

BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name	Data Source
R017	Shielding factor, inhalation	2.500E-01	4.00E-01	---	SHF3	Median of the range (0.2-0.3) from study designed to investigate the fraction of indoor dust relative to outdoor dust (Rutz 1997, *Estimate of Contamination Levels in Indoor Dust Resulting From Contamination of Soils.)*
R017	Shielding factor, external gamma inhalation	5.512E-01	7.00E-01	---	SHF1	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R017	Fraction of time indoors	6.571E-01	5.00E-01	---	FIND	The fraction of total year (8760 hr) that is spent indoors on site. Equals 0.6571 x 8760 = 5756 hrs spent indoors on site or 15.75 hours/day. NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 an
R017	Fraction of time spent outdoors (on site)	1.101E-01	2.50E-01	---	FOTD	The fraction of total year (8760 hr) that is spent outdoors on site. Equals 0.1101 x 8760 = 964 hrs spent outdoors on site or 2.64 hours/day.
R017	Shape factor flag, external gamma	1.000E+00	1.00E+00	>0 shows circular AREA	FS	RESRAD Default
R018	Fruits, vegetables and grain consumption (kg/yr)	1.118E+02	1.60E+02	---	DIET(1)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61 (Sum of fruits, grain, roots)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.40E+01	---	DIET(2)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Milk consumption (L/yr)	2.330E+02	9.20E+01	---	DIET(3)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.30E+01	---	DIET(4)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Fish consumption (kg/yr)	2.060E+01	5.40E+00	---	DIET(5)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Other seafood consumption (kg/yr)	0.000E+00	9.00E-01	---	DIET(6)	Non ocean site; assumes no freshwater mollusks, frogs, and turtles in category
R018	Soil ingestion rate (g/yr)	1.826E+01	3.65E+01	---	SOIL	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Drinking water intake (L/yr)	4.785E+02	5.10E+02	---	DWI	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R018	Contamination fraction of drinking water	1.000E+00	1.00E+00	---	FDW	
R018	Contamination fraction of household water	not used	1.00E+00	---	FHHW	

ATTACHMENT B LEVEL 2 MODELING

BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name	Data Source
R018	Contamination fraction of livestock water	1.000E+00	1.00E+00	---	FLW	
R018	Contamination fraction of irrigation water	1.000E+00	1.00E+00	---	FIRW	
R018	Contamination fraction of aquatic food	5.000E-01	5.00E-01	---	FR9	RESRAD Default
R018	Contamination fraction of plant food	0.17	-1	1.000E+00	FPLANT	Set to one to allow for ingestion of 100% of homegrown produce
R018	Contamination fraction of meat	-1	-1	1.000E+00	FMEAT	Base contamination fraction on site land area fraction
R018	Contamination fraction of milk	0.17	-1	1.000E+00	FMILK	Base contamination fraction on site land area fraction
R019	Livestock fodder intake for meat (kg/day)	2.685E+01	6.80E+01	---	LFI5	NUREG 5512 Vol 4 Table 3 Beef Forage, grain, hay (8.13+2.42+16.3) = 26.85 kg/day
R019	Livestock fodder intake for milk (kg/day)	6.325E+01	5.50E+01	---	LFI6	NUREG 5512 Vol 4 Table 3 milk cow forage, grain, hay (35.2+1.95+26.1) = 63.25 kg/day
R019	Livestock water intake for meat (L/day)	5.000E+01	5.00E+01	---	LWI5	
R019	Livestock water intake for milk (L/day)	6.000E+01	1.60E+02	---	LWI6	NUREG 5512 Vol 4 Table 3 milk cow water intale = 60 L/day
R019	Livestock soil intake (kg/day)	2.000E-02	5.00E-01	---	LSI	NUREG 5512 Vol 4 Table 3 beef/milk cow soil intale = 0.02 kg/day
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.00E-04	---	MLFD	
R019	Depth of soil mixing layer (m)	1.500E-01	1.50E-01	---	DM	
R019	Depth of roots (m)	9.000E-01	9.00E-01	---	DROOT	
R019	Drinking water fraction from ground water	not used	1.00E+00	---	FGWDW	
R019	Household water fraction from ground water	1.000E+00	1.00E+00	---	FGWHH	
R019	Livestock water fraction from ground water	1.000E+00	1.00E+00	---	FGWLW	
R019	Irrigation fraction from ground water	1.000E+00	1.00E+00	---	FGWIR	
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	4.000E+00	7.00E-01	---	YV(1)	NUREG-5512 Vol 1 Table 6.14 Crop Yields for Food Crops, other vegetables
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.000E+00	1.50E+00	---	YV(2)	NUREG-5512 Vol 1 Table 6.14 Crop Yields for Food Crops
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.500E+00	1.10E+00	---	YV(3)	NUREG-5512 Vol 1 Table 6.13 Crop Yields for Animal Products, assume largest value of 1.5 for beef and milk
R19B	Growing Season for Non-Leafy (years)	2.500E-01	1.70E-01	---	TE(1)	NUREG-5512 Vol 1 Table 6.12 Minimum Crop-Growing Periods, assume other vegetables value of 90 days
R19B	Growing Season for Leafy (years)	2.500E-01	2.50E-01	---	TE(2)	
R19B	Growing Season for Fodder (years)	8.000E-02	8.00E-02	---	TE(3)	NUREG-5512 Vol 1 Table 6.12 Minimum Crop-Growing Periods, assume forage value of 30 days
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.00E-01	---	TIV(1)	
R19B	Translocation Factor for Leafy	1.000E+00	1.00E+00	---	TIV(2)	
R19B	Translocation Factor for Fodder	1.000E+00	1.00E+00	---	TIV(3)	
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.50E-01	---	RDRY(1)	
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.50E-01	---	RDRY(2)	
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.50E-01	---	RDRY(3)	
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.50E-01	---	RWET(1)	
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.50E-01	---	RWET(2)	
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.50E-01	---	RWET(3)	
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.00E+01	---	WLAM	

ATTACHMENT B LEVEL 2 MODELING

BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name	Data Source
C14	C-12 concentration in water (g/cm**3)	2.00E-05	2.00E-05	---	C12WTR	
C14	C-12 concentration in contaminated soil (g/g)	3.00E-02	3.00E-02	---	C12CZ	
C14	Fraction of vegetation carbon from soil	2.00E-02	2.00E-02	---	CSOIL	
C14	Fraction of vegetation carbon from air	9.80E-01	9.80E-01	---	CAIR	
C14	C-14 evasion layer thickness in soil (m)	3.00E-01	3.00E-01	---	DMC	
C14	C-14 evasion flux rate from soil (1/sec)	7.00E-07	7.00E-07	---	EVSN	
C14	C-12 evasion flux rate from soil (1/sec)	1.00E-10	1.00E-10	---	REVSN	
C14	Fraction of grain in beef cattle feed	8.00E-01	8.00E-01	---	AVFG4	
C14	Fraction of grain in milk cow feed	2.00E-01	2.00E-01	---	AVFG5	
C14	DCF Correction Factor for gaseous forms of C14	8.89E+01	0.00E+00	---	CO2F	
STOR	Storage times of contaminated foodstuffs (days):					
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.40E+01	---	STOR_T(1)	
STOR	Leafy vegetables	1.000E+00	1.00E+00	---	STOR_T(2)	
STOR	Milk	1.000E+00	1.00E+00	---	STOR_T(3)	
STOR	Meat and poultry	2.000E+01	2.00E+01	---	STOR_T(4)	NUREG-5512 Vol 1 Table 6.11 Holdup Time for Food Consumption, assume beef value of 20 days
STOR	Fish	7.000E+00	7.00E+00	---	STOR_T(5)	
STOR	Crustacea and mollusks	7.000E+00	7.00E+00	---	STOR_T(6)	
STOR	Well water	0.000E+00	1.00E+00	---	STOR_T(7)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
STOR	Surface water	0.000E+00	1.00E+00	---	STOR_T(8)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
STOR	Livestock fodder	0.000E+00	4.50E+01	---	STOR_T(9)	NUREG-5512 Vol 4 Table 4 "Comparison of the Basic Residential Farmer Scenario Default Parameters of DandD 1.0 and RESRAD 5.61
R021	Thickness of building foundation (m)	not used	1.50E-01	---	FLOOR1	
R021	Bulk density of building foundation (g/cm**3)	not used	2.40E+00	---	DENSFL	
R021	Total porosity of the cover material	not used	4.00E-01	---	TPCV	
R021	Total porosity of the building foundation	not used	1.00E-01	---	TPFL	
R021	Volumetric water content of the cover material	not used	5.00E-02	---	PH2OCV	
R021	Volumetric water content of the foundation	not used	3.00E-02	---	PH2OFL	
R021	Diffusion coefficient for radon gas (m/sec):					
R021	in cover material	not used	2.00E-06	---	DIFCV	
R021	in foundation material	not used	3.00E-07	---	DIFFL	
R021	in contaminated zone soil	not used	2.00E-06	---	DIFCZ	
R021	Radon vertical dimension of mixing (m)	not used	2.00E+00	---	HMIX	
R021	Average building air exchange rate (1/hr)	not used	5.00E-01	---	REXG	
R021	Height of the building (room) (m)	not used	2.50E+00	---	HRM	
R021	Building interior area factor	not used	0.00E+00	Code Computed	FAI	

ATTACHMENT B LEVEL 2 MODELING

BELTSVILLE RESIDENT FARMER, ADULT, MB model[a,b,c]

				Used by RESRAD		
Menu	Parameter	User Input	Default	(If different from user input)	Parameter Name	Data Source
R021	Building depth below ground surface (m)	not used	-1.00E+00	Code Computed	DMFL	
R021	Emanating power of Rn-222 gas	not used	2.50E-01	---	EMANA(1)	
R021	Emanating power of Rn-220 gas	not used	1.50E-01	---	EMANA(2)	
TITL	Number of graphical time points	1024	---	---	NPTS	
TITL	Maximum number of integration points for dose	17	---	---	LYMAX	
TITL	Maximum number of integration points for risk	257	---	---	KYMAX	

Notes:

[a] Dose Conversion factors used in these RESRAD runs are RESRAD default and follow Heast 2001 Morbidity except as shown on Attachment C

[b] Times for calculations are RESRAD default values; values are not shown in table

[c] Radii of shape factor array and fractions of annular areas within AREA are not used since default shape circular is used

[d] Characterization Survey Work Plan, USDA Low Level Radioisotope Burial Site, Beltsville Agricultural Research Center, Beltsville, MD Cabrera Services Inc, Nov 2004

ATTACHMENT C

Isotope	Bioaccumulation Factor							
	fish DandD (L/kg	fish RESRAD (L/kg)	soil to plant DandD	soil to plant RESRAD	plant to animal DandD milk	plant to animal RESRAD milk	plant to animal DandD beef	plant to animal RESRAD beef
^{14}C	4600	50000	.7 max	5.5	0	1.20E-02	0	3.10E-02
^{36}Cl	50	1000	1000 grain, 160 leafy[a]	20	1.50E-02	2.00E-02	8.00E-02	6.00E-02
^{137}Cs	2000	2000	.14 max	0.04	7.00E-03	8.00E-03	2.00E-02	3.00E-02
^{55}Fe	2000	200	5.6e-3 max	1.00E-03	2.50E-04	3.00E-04	2.00E-02	2.00E-02
^{3}H	1	1	0	4.8	0	0.01	0	1.20E-02
^{22}Na	100	20	7.4e-2 max	5.00E-02	3.50E-02	4.00E-02	5.50E-02	8.00E-02
^{63}Ni	100	100	2.5 max	5.00E-02	1.00E-03	2.00E-02	6.00E-03	5.00E-02
^{210}Pb	100	300	4.5e-2 max	0.01	2.50E-04	3.00E-04	3.00E-04	8.00E-04
^{226}Ra	70	50	1.5e-2 max	4.00E-02	4.50E-04	1.00E-03	2.50E-04	1.00E-03
^{90}Sr	50	60	64 leafy, 0.46 roots, 0.085 grain[b,c]	0.3	1.50E-03	2.00E-03	3.00E-04	8.00E-03

[a] wt'd soil to plant bioaccum factor for beef meat based on 2.42/26.85 = .09 grain + (8.13+16.3)/26.85 = .91hay (leafy) or .09*1000+.91*160 = 236

wt'd soil to plant bioaccum factor for milk based on 1.95/63.25 = .03 grain + (35.2+26.1)/63.25 = .97hay (leafy) or .03*1000+.97*160 = 185

use average 211 soil to plant factor

[b] wt'd soil to plant bioaccum factor for beef meat based on 2.42/26.85 = .09 grain + (8.13+16.3)/26.85 = .91hay (leafy) or .09*0.085+.91*64 = 58

wt'd soil to plant bioaccum factor for milk based on 1.95/63.25 = .03 grain + (35.2+26.1)/63.25 = .97hay (leafy) or .03*0.085+.97*64 = 62

use average 60 soil to plant factor

[c] wt'd soil to plant bioaccum factor for fruits, vegetables, and grain based on (52.8+44.6+14.4)/(111.8+21.4) = .84*roots factor + (21.4)/(111.8+21.4) = .16*leafy factor or .84*0.46+.16*64 = 10.6

Summary : Beltsville w/RESRAD NRC and Site Spcific Parameters Resident Farmer Scenario
File : Beltsville Res farmrev1.RAD

Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines

Dose Conversion Factor (and Related) Parameter Summary
File: DANDD DEFAULT SELECTED ISO

Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	C-14	2.090E-06	2.090E-06	DCF2(1)
B-1	Cl-36	2.190E-05	2.190E-05	DCF2(2)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(3)
B-1	Fe-55	2.690E-06	2.690E-06	DCF2(4)
B-1	Na-22	7.660E-06	7.660E-06	DCF2(5)
B-1	Ni-63	6.290E-06	6.290E-06	DCF2(6)
B-1	Pb-210+D	1.380E-02	1.360E-02	DCF2(7)
B-1	Po-210	9.400E-03	9.400E-03	DCF2(8)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(10)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	C-14	2.090E-06	2.090E-06	DCF3(1)
D-1	Cl-36	3.030E-06	3.030E-06	DCF3(2)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(3)
D-1	Fe-55	6.070E-07	6.070E-07	DCF3(4)
D-1	Na-22	1.150E-05	1.150E-05	DCF3(5)
D-1	Ni-63	5.770E-07	5.770E-07	DCF3(6)
D-1	Pb-210+D	5.376E-03	5.370E-03	DCF3(7)
D-1	Po-210	1.900E-03	1.900E-03	DCF3(8)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(10)
D-34	Food transfer factors:			
D-34	C-14 , plant/soil concentration ratio, dimensionless	7.000E-01	5.500E+00	RTF(1,1)
D-34	C-14 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	0.000E+00	3.100E-02	RTF(1,2)
D-34	C-14 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	0.000E+00	1.200E-02	RTF(1,3)
D-34				
D-34	Cl-36 , plant/soil concentration ratio, dimensionless	2.110E+02	2.000E+01	RTF(2,1)
D-34	Cl-36 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-02	6.000E-02	RTF(2,2)
D-34	Cl-36 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.500E-02	2.000E-02	RTF(2,3)
D-34				
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	1.400E-01	4.000E-02	RTF(3,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	3.000E-02	RTF(3,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	7.000E-03	8.000E-03	RTF(3,3)
D-34				
D-34	Fe-55 , plant/soil concentration ratio, dimensionless	5.600E-03	1.000E-03	RTF(4,1)
D-34	Fe-55 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(4,2)
D-34	Fe-55 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.500E-04	3.000E-04	RTF(4,3)
D-34				
D-34	Na-22 , plant/soil concentration ratio, dimensionless	7.400E-02	5.000E-02	RTF(5,1)
D-34	Na-22 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.500E-02	8.000E-02	RTF(5,2)
D-34	Na-22 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.500E-02	4.000E-02	RTF(5,3)
D-34				
D-34	Ni-63 , plant/soil concentration ratio, dimensionless	2.500E+00	5.000E-02	RTF(6,1)
D-34	Ni-63 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	6.000E-03	5.000E-03	RTF(6,2)
D-34	Ni-63 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	2.000E-02	RTF(6,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: DANDD DEFAULT SELECTED ISO

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.500E-02	1.000E-02	RTF(7,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-04	8.000E-04	RTF(7,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.500E-04	3.000E-04	RTF(7,3)
D-34				
D-34	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
D-34	Po-210 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(8,2)
D-34	Po-210 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	1.500E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.500E-04	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.500E-04	1.000E-03	RTF(9,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	1.060E+01	3.000E-01	RTF(10,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-04	8.000E-03	RTF(10,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.500E-03	2.000E-03	RTF(10,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	C-14 , fish	4.600E+03	5.000E+04	BIOFAC(1,1)
D-5	C-14 , crustacea and mollusks	9.100E+03	9.100E+03	BIOFAC(1,2)
D-5				
D-5	Cl-36 , fish	5.000E+01	1.000E+03	BIOFAC(2,1)
D-5	Cl-36 , crustacea and mollusks	1.900E+02	1.900E+02	BIOFAC(2,2)
D-5				
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(3,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	Fe-55 , fish	2.000E+03	2.000E+02	BIOFAC(4,1)
D-5	Fe-55 , crustacea and mollusks	3.200E+03	3.200E+03	BIOFAC(4,2)
D-5				
D-5	Na-22 , fish	1.000E+02	2.000E+01	BIOFAC(5,1)
D-5	Na-22 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(5,2)
D-5				
D-5	Ni-63 , fish	1.000E+02	1.000E+02	BIOFAC(6,1)
D-5	Ni-63 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pb-210+D , fish	1.000E+02	3.000E+02	BIOFAC(7,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Po-210 , fish	1.000E+02	1.000E+02	BIOFAC(8,1)
D-5	Po-210 , crustacea and mollusks	2.000E+04	2.000E+04	BIOFAC(8,2)
D-5				
D-5	Ra-226+D , fish	7.000E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Sr-90+D , fish	5.000E+01	6.000E+01	BIOFAC(10,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(10,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.130E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.524E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.270E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): C-14	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Cl-36	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Cs-137	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Fe-55	1.000E+00	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Na-22	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Ni-63	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(9)
R012	Initial principal radionuclide (pCi/g): Sr-90	1.000E+00	0.000E+00	---	S1(10)
R012	Concentration in groundwater (pCi/L): C-14	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Cl-36	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Fe-55	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Na-22	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): Ni-63	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(9)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(10)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	0.000E+00	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.812E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.573E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.431E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for C-14				
R016	Contaminated zone (cm**3/g)	6.700E+00	0.000E+00	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	6.700E+00	0.000E+00	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.261E-01	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Cl-36				
R016	Contaminated zone (cm**3/g)	1.700E+00	1.000E-01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	1.700E+00	1.000E-01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.000E-01	1.000E-01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.174E+00	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	2.700E+02	4.600E+03	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.700E+02	4.600E+03	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	4.600E+03	4.600E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.356E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Fe-55				
R016	Contaminated zone (cm**3/g)	1.600E+02	1.000E+03	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	1.600E+02	1.000E+03	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.409E-02	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Na-22				
R016	Contaminated zone (cm**3/g)	7.600E+01	1.000E+01	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	7.600E+01	1.000E+01	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.962E-02	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for Ni-63				
R016	Contaminated zone (cm**3/g)	4.000E+02	1.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	4.000E+02	1.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.642E-03	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.356E-03	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.514E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	1.500E+01	3.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	3.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.483E-01	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Po-210				
R016	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.208E-01	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R017	Inhalation rate (m**3/yr)	8.513E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	4.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	2.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	5.512E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.101E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.118E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	0.000E+00	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.685E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	6.325E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	2.000E-02	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	4.000E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.000E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.500E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.500E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	2.000E-05	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	3.000E-02	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	2.000E-02	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	9.800E-01	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	3.000E-01	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	7.000E-07	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	1.000E-10	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	8.000E-01	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	2.000E-01	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	1.234E+02	0.000E+00	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	0.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	0.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	0.000E+00	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	1024	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Beltsville w/RESRAD NRC and Site Spcific Parameters Resident Farmer Scenario
File : Beltsville Res farmrev1.RAD

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	513.00 square meters	C-14	1.000E+00
Thickness:	0.15 meters	Cl-36	1.000E+00
Cover Depth:	0.00 meters	Cs-137	1.000E+00
		Fe-55	1.000E+00
		Na-22	1.000E+00
		Ni-63	1.000E+00
		Pb-210	1.000E+00
		Ra-226	1.000E+00
		Sr-90	1.000E+00

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	8.829E+01	5.841E+01	3.794E+01	1.815E+01	9.454E+00	6.036E+00	2.211E+00	6.927E-02
M(t):	3.532E+00	2.336E+00	1.518E+00	7.260E-01	3.782E-01	2.414E-01	8.845E-02	2.771E-03

Maximum TDOSE(t): 8.829E+01 mrem/yr at t = 0.000E+00 years

Summary : Beltsville w/RESRAD NRC and Site Spcific Parameters Resident Farmer Scenario
File : Beltsville Res farmrev1.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	2.610E-07	0.0000	2.178E-06	0.0000	0.000E+00	0.0000	1.269E-02	0.0001	5.748E-03	0.0001	2.700E-03	0.0000	6.808E-07	0.0000
Cl-36	5.845E-04	0.0000	1.497E-06	0.0000	0.000E+00	0.0000	8.808E+00	0.0998	9.481E+00	0.1074	1.413E+01	0.1600	1.282E-05	0.0000
Cs-137	1.280E+00	0.0145	3.647E-06	0.0000	0.000E+00	0.0000	1.555E-01	0.0018	4.210E-02	0.0005	1.220E-01	0.0014	3.537E-04	0.0000
Fe-55	0.000E+00	0.0000	2.737E-07	0.0000	0.000E+00	0.0000	6.723E-05	0.0000	3.155E-05	0.0000	2.482E-06	0.0000	3.822E-06	0.0000
Na-22	4.392E+00	0.0497	7.700E-07	0.0000	0.000E+00	0.0000	1.663E-02	0.0002	1.273E-02	0.0001	6.598E-02	0.0007	7.154E-05	0.0000
Ni-63	0.000E+00	0.0000	7.258E-07	0.0000	0.000E+00	0.0000	3.233E-02	0.0004	2.551E-03	0.0000	3.579E-03	0.0000	4.120E-06	0.0000
Pb-210	2.507E-03	0.0000	2.123E-03	0.0000	0.000E+00	0.0000	5.479E+00	0.0621	3.029E-02	0.0003	1.568E-01	0.0018	4.479E-02	0.0005
Ra-226	4.002E+00	0.0453	1.027E-03	0.0000	0.000E+00	0.0000	5.278E-01	0.0060	2.311E-03	0.0000	2.742E-02	0.0003	1.014E-02	0.0001
Sr-90	9.080E-03	0.0001	1.396E-04	0.0000	0.000E+00	0.0000	3.372E+01	0.3819	1.332E-01	0.0015	5.573E+00	0.0631	1.009E-03	0.0000
Total	9.686E+00	0.1097	3.298E-03	0.0000	0.000E+00	0.0000	4.875E+01	0.5522	9.710E+00	0.1100	2.008E+01	0.2275	5.639E-02	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.114E-02	0.0002
Cl-36	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.242E+01	0.3672
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.600E+00	0.0181
Fe-55	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.054E-04	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.487E+00	0.0508
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.847E-02	0.0004
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.715E+00	0.0647
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.571E+00	0.0518
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.944E+01	0.4467
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.829E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	4.660E-17	0.0000	3.889E-16	0.0000	0.000E+00	0.0000	3.066E-12	0.0000	1.521E-12	0.0000	4.969E-13	0.0000	1.215E-16	0.0000
Cl-36	1.808E-04	0.0000	4.630E-07	0.0000	0.000E+00	0.0000	2.728E+00	0.0467	2.939E+00	0.0503	4.370E+00	0.0748	3.964E-06	0.0000
Cs-137	1.240E+00	0.0212	3.534E-06	0.0000	0.000E+00	0.0000	1.507E-01	0.0026	4.079E-02	0.0007	1.182E-01	0.0020	3.428E-04	0.0000
Fe-55	0.000E+00	0.0000	2.087E-07	0.0000	0.000E+00	0.0000	5.128E-05	0.0000	2.406E-05	0.0000	1.894E-06	0.0000	2.915E-06	0.0000
Na-22	3.267E+00	0.0559	5.727E-07	0.0000	0.000E+00	0.0000	1.237E-02	0.0002	9.466E-03	0.0002	4.907E-02	0.0008	5.321E-05	0.0000
Ni-63	0.000E+00	0.0000	7.165E-07	0.0000	0.000E+00	0.0000	3.192E-02	0.0005	2.518E-03	0.0000	3.534E-03	0.0001	4.067E-06	0.0000
Pb-210	2.416E-03	0.0000	2.392E-03	0.0000	0.000E+00	0.0000	5.283E+00	0.0904	3.407E-02	0.0006	1.522E-01	0.0026	4.745E-02	0.0008
Ra-226	3.982E+00	0.0682	1.093E-03	0.0000	0.000E+00	0.0000	6.920E-01	0.0118	3.322E-03	0.0001	3.208E-02	0.0005	1.155E-02	0.0002
Sr-90	7.644E-03	0.0001	1.175E-04	0.0000	0.000E+00	0.0000	2.839E+01	0.4861	1.122E-01	0.0019	4.692E+00	0.0803	8.493E-04	0.0000
Total	8.499E+00	0.1455	3.609E-03	0.0001	0.000E+00	0.0000	3.729E+01	0.6384	3.141E+00	0.0538	9.417E+00	0.1612	6.025E-02	0.0010

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.084E-12	0.0000
Cl-36	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.004E+01	0.1718
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.550E+00	0.0265
Fe-55	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.036E-05	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.338E+00	0.0571
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.798E-02	0.0007
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.522E+00	0.0945
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.722E+00	0.0808
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.320E+01	0.5685
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.841E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	1.729E-05	0.0000	4.428E-08	0.0000	0.000E+00	0.0000	2.609E-01	0.0069	2.811E-01	0.0074	4.180E-01	0.0110	3.791E-07	0.0000
Cs-137	1.164E+00	0.0307	3.319E-06	0.0000	0.000E+00	0.0000	1.415E-01	0.0037	3.831E-02	0.0010	1.110E-01	0.0029	3.219E-04	0.0000
Fe-55	0.000E+00	0.0000	1.214E-07	0.0000	0.000E+00	0.0000	2.984E-05	0.0000	1.400E-05	0.0000	1.102E-06	0.0000	1.696E-06	0.0000
Na-22	1.807E+00	0.0476	3.168E-07	0.0000	0.000E+00	0.0000	6.843E-03	0.0002	5.237E-03	0.0001	2.715E-02	0.0007	2.943E-05	0.0000
Ni-63	0.000E+00	0.0000	6.983E-07	0.0000	0.000E+00	0.0000	3.111E-02	0.0008	2.454E-03	0.0001	3.444E-03	0.0001	3.964E-06	0.0000
Pb-210	2.234E-03	0.0001	2.260E-03	0.0001	0.000E+00	0.0000	4.884E+00	0.1287	3.218E-02	0.0008	1.409E-01	0.0037	4.447E-02	0.0012
Ra-226	3.943E+00	0.1039	1.227E-03	0.0000	0.000E+00	0.0000	9.995E-01	0.0263	5.350E-03	0.0001	4.083E-02	0.0011	1.428E-02	0.0004
Sr-90	5.418E-03	0.0001	8.330E-05	0.0000	0.000E+00	0.0000	2.012E+01	0.5303	7.951E-02	0.0021	3.325E+00	0.0876	6.020E-04	0.0000
Total	6.922E+00	0.1824	3.575E-03	0.0001	0.000E+00	0.0000	2.645E+01	0.6970	4.441E-01	0.0117	4.067E+00	0.1072	5.971E-02	0.0016

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.600E-01	0.0253
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.455E+00	0.0384
Fe-55	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.675E-05	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.846E+00	0.0487
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.701E-02	0.0010
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.106E+00	0.1346
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.005E+00	0.1319
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.353E+01	0.6202
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.794E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	4.679E-09	0.0000	1.198E-11	0.0000	0.000E+00	0.0000	7.060E-05	0.0000	7.606E-05	0.0000	1.131E-04	0.0000	1.026E-10	0.0000
Cs-137	9.342E-01	0.0515	2.663E-06	0.0000	0.000E+00	0.0000	1.135E-01	0.0063	3.073E-02	0.0017	8.907E-02	0.0049	2.583E-04	0.0000
Fe-55	0.000E+00	0.0000	1.824E-08	0.0000	0.000E+00	0.0000	4.482E-06	0.0000	2.103E-06	0.0000	1.655E-07	0.0000	2.547E-07	0.0000
Na-22	2.276E-01	0.0125	3.990E-08	0.0000	0.000E+00	0.0000	8.617E-04	0.0000	6.594E-04	0.0000	3.419E-03	0.0002	3.707E-06	0.0000
Ni-63	0.000E+00	0.0000	6.382E-07	0.0000	0.000E+00	0.0000	2.843E-02	0.0016	2.243E-03	0.0001	3.147E-03	0.0002	3.623E-06	0.0000
Pb-210	1.695E-03	0.0001	1.715E-03	0.0001	0.000E+00	0.0000	3.706E+00	0.2042	2.443E-02	0.0013	1.069E-01	0.0059	3.375E-02	0.0019
Ra-226	3.810E+00	0.2099	1.608E-03	0.0001	0.000E+00	0.0000	1.878E+00	0.1034	1.118E-02	0.0006	6.575E-02	0.0036	2.210E-02	0.0012
Sr-90	1.624E-03	0.0001	2.497E-05	0.0000	0.000E+00	0.0000	6.032E+00	0.3323	2.383E-02	0.0013	9.968E-01	0.0549	1.804E-04	0.0000
Total	4.975E+00	0.2741	3.352E-03	0.0002	0.000E+00	0.0000	1.176E+01	0.6478	9.315E-02	0.0051	1.265E+00	0.0697	5.630E-02	0.0031

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.598E-04	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.168E+00	0.0643
Fe-55	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.023E-06	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.325E-01	0.0128
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.383E-02	0.0019
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.875E+00	0.2135
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.788E+00	0.3189
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.054E+00	0.3886
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.815E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	2.997E-19	0.0000	7.677E-22	0.0000	0.000E+00	0.0000	4.523E-15	0.0000	4.873E-15	0.0000	7.247E-15	0.0000	6.573E-21	0.0000
Cs-137	4.979E-01	0.0527	1.419E-06	0.0000	0.000E+00	0.0000	6.050E-02	0.0064	1.638E-02	0.0017	4.747E-02	0.0050	1.377E-04	0.0000
Fe-55	0.000E+00	0.0000	8.107E-11	0.0000	0.000E+00	0.0000	1.992E-08	0.0000	9.345E-09	0.0000	7.354E-10	0.0000	1.132E-09	0.0000
Na-22	6.109E-04	0.0001	1.071E-10	0.0000	0.000E+00	0.0000	2.313E-06	0.0000	1.770E-06	0.0000	9.177E-06	0.0000	9.950E-09	0.0000
Ni-63	0.000E+00	0.0000	4.934E-07	0.0000	0.000E+00	0.0000	2.198E-02	0.0023	1.734E-03	0.0002	2.434E-03	0.0003	2.801E-06	0.0000
Pb-210	7.702E-04	0.0001	7.795E-04	0.0001	0.000E+00	0.0000	1.684E+00	0.1781	1.110E-02	0.0012	4.858E-02	0.0051	1.534E-02	0.0016
Ra-226	3.451E+00	0.3651	2.154E-03	0.0002	0.000E+00	0.0000	3.208E+00	0.3393	2.006E-02	0.0021	1.030E-01	0.0109	3.375E-02	0.0036
Sr-90	5.196E-05	0.0000	7.988E-07	0.0000	0.000E+00	0.0000	1.930E-01	0.0204	7.625E-04	0.0001	3.189E-02	0.0034	5.772E-06	0.0000
Total	3.951E+00	0.4179	2.936E-03	0.0003	0.000E+00	0.0000	5.168E+00	0.5466	5.004E-02	0.0053	2.334E-01	0.0247	4.923E-02	0.0052

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	8.035E-10	0.0000	9.075E-13	0.0000	0.000E+00	0.0000	7.141E-09	0.0000	3.489E-09	0.0000	4.849E-09	0.0000	1.628E-08	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.224E-01	0.0658
Fe-55	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.121E-08	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.242E-04	0.0001
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.615E-02	0.0028
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.761E+00	0.1862
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.819E+00	0.7212
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.257E-01	0.0239
Total	8.035E-10	0.0000	9.075E-13	0.0000	0.000E+00	0.0000	7.141E-09	0.0000	3.489E-09	0.0000	4.849E-09	0.0000	9.454E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	5.505E-02	0.0091	1.569E-07	0.0000	0.000E+00	0.0000	6.689E-03	0.0011	1.811E-03	0.0003	5.249E-03	0.0009	1.522E-05	0.0000
Fe-55	0.000E+00	0.0000	4.742E-19	0.0000	0.000E+00	0.0000	1.165E-16	0.0000	5.466E-17	0.0000	4.301E-18	0.0000	6.622E-18	0.0000
Na-22	6.124E-13	0.0000	1.074E-19	0.0000	0.000E+00	0.0000	2.319E-15	0.0000	1.775E-15	0.0000	9.200E-15	0.0000	9.975E-18	0.0000
Ni-63	0.000E+00	0.0000	2.006E-07	0.0000	0.000E+00	0.0000	8.934E-03	0.0015	7.048E-04	0.0001	9.891E-04	0.0002	1.138E-06	0.0000
Pb-210	4.871E-05	0.0000	4.930E-05	0.0000	0.000E+00	0.0000	1.065E-01	0.0176	7.020E-04	0.0001	3.073E-03	0.0005	9.700E-04	0.0002
Ra-226	2.442E+00	0.4045	1.976E-03	0.0003	0.000E+00	0.0000	3.247E+00	0.5379	2.063E-02	0.0034	1.011E-01	0.0167	3.277E-02	0.0054
Sr-90	3.043E-10	0.0000	4.678E-12	0.0000	0.000E+00	0.0000	1.130E-06	0.0000	4.465E-09	0.0000	1.867E-07	0.0000	3.380E-11	0.0000
Total	2.497E+00	0.4137	2.026E-03	0.0003	0.000E+00	0.0000	3.369E+00	0.5582	2.385E-02	0.0040	1.104E-01	0.0183	3.376E-02	0.0056

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.881E-02	0.0114
Fe-55	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.826E-16	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.257E-13	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.063E-02	0.0018
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.114E-01	0.0184
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.845E+00	0.9684
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.322E-06	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.036E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	1.019E-04	0.0000	2.904E-10	0.0000	0.000E+00	0.0000	1.238E-05	0.0000	3.352E-06	0.0000	9.714E-06	0.0000	2.817E-08	0.0000
Fe-55	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	1.531E-08	0.0000	0.000E+00	0.0000	6.822E-04	0.0003	5.381E-05	0.0000	7.552E-05	0.0000	8.693E-08	0.0000
Pb-210	1.828E-08	0.0000	1.850E-08	0.0000	0.000E+00	0.0000	3.998E-05	0.0000	2.635E-07	0.0000	1.153E-06	0.0000	3.641E-07	0.0000
Ra-226	9.078E-01	0.4105	7.512E-04	0.0003	0.000E+00	0.0000	1.243E+00	0.5620	7.906E-03	0.0036	3.861E-02	0.0175	1.251E-02	0.0057
Sr-90	3.416E-25	0.0000	5.252E-27	0.0000	0.000E+00	0.0000	1.269E-21	0.0000	5.014E-24	0.0000	2.097E-22	0.0000	3.796E-26	0.0000
Total	9.079E-01	0.4106	7.512E-04	0.0003	0.000E+00	0.0000	1.243E+00	0.5623	7.963E-03	0.0036	3.870E-02	0.0175	1.251E-02	0.0057

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.274E-04	0.0001
Fe-55	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.116E-04	0.0004
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.180E-05	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.210E+00	0.9996
Sr-90	3.874E-15	0.0000	4.290E-18	0.0000	0.000E+00	0.0000	2.151E-15	0.0000	1.607E-17	0.0000	5.086E-16	0.0000	6.554E-15	0.0000
Total	3.874E-15	0.0000	4.290E-18	0.0000	0.000E+00	0.0000	2.151E-15	0.0000	1.607E-17	0.0000	5.086E-16	0.0000	2.211E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	2.779E-14	0.0000	7.921E-20	0.0000	0.000E+00	0.0000	3.377E-15	0.0000	9.144E-16	0.0000	2.650E-15	0.0000	7.683E-18	0.0000
Fe-55	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	1.884E-12	0.0000	0.000E+00	0.0000	8.391E-08	0.0000	6.619E-09	0.0000	9.289E-09	0.0000	1.069E-11	0.0000
Pb-210	1.873E-20	0.0000	1.896E-20	0.0000	0.000E+00	0.0000	4.095E-17	0.0000	2.699E-19	0.0000	1.181E-18	0.0000	3.729E-19	0.0000
Ra-226	2.845E-02	0.4107	2.354E-05	0.0003	0.000E+00	0.0000	3.895E-02	0.5622	2.478E-04	0.0036	1.210E-03	0.0175	3.921E-04	0.0057
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.845E-02	0.4107	2.354E-05	0.0003	0.000E+00	0.0000	3.895E-02	0.5623	2.478E-04	0.0036	1.210E-03	0.0175	3.921E-04	0.0057

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cl-36	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.474E-14	0.0000
Fe-55	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.983E-08	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.281E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.927E-02	1.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.927E-02	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
C-14	C-14	1.000E+00	2.114E-02	5.084E-12	1.621E-31	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cl-36	Cl-36	1.000E+00	3.242E+01	1.004E+01	9.600E-01	2.598E-04	1.628E-08	2.803E-45	0.000E+00	0.000E+00
Cs-137+D	Cs-137+D	1.000E+00	1.600E+00	1.550E+00	1.455E+00	1.168E+00	6.224E-01	6.881E-02	1.274E-04	3.474E-14
Fe-55	Fe-55	1.000E+00	1.054E-04	8.036E-05	4.675E-05	7.023E-06	3.121E-08	1.826E-16	5.481E-40	0.000E+00
Na-22	Na-22	1.000E+00	4.487E+00	3.338E+00	1.846E+00	2.325E-01	6.242E-04	6.257E-13	1.216E-38	0.000E+00
Ni-63	Ni-63	1.000E+00	3.847E-02	3.798E-02	3.701E-02	3.383E-02	2.615E-02	1.063E-02	8.116E-04	9.983E-08
Pb-210+D	Pb-210+D	1.000E+00	5.572E+00	5.356E+00	4.950E+00	3.756E+00	1.707E+00	1.079E-01	4.052E-05	4.150E-17
Pb-210+D	Po-210	1.000E+00	1.435E-01	1.653E-01	1.563E-01	1.186E-01	5.390E-02	3.409E-03	1.279E-06	1.311E-18
Pb-210+D	∑DSR(j)		5.715E+00	5.522E+00	5.106E+00	3.875E+00	1.761E+00	1.114E-01	4.180E-05	4.281E-17
Ra-226+D	Ra-226+D	1.000E+00	4.485E+00	4.463E+00	4.419E+00	4.269E+00	3.867E+00	2.735E+00	1.017E+00	3.187E-02
Ra-226+D	Pb-210+D	1.000E+00	8.339E-02	2.523E-01	5.684E-01	1.473E+00	2.862E+00	3.015E+00	1.157E+00	3.627E-02
Ra-226+D	Po-210	1.000E+00	2.025E-03	6.964E-03	1.690E-02	4.551E-02	8.947E-02	9.457E-02	3.630E-02	1.138E-03
Ra-226+D	∑DSR(j)		4.571E+00	4.722E+00	5.005E+00	5.788E+00	6.819E+00	5.845E+00	2.210E+00	6.927E-02
Sr-90+D	Sr-90+D	1.000E+00	3.944E+01	3.320E+01	2.353E+01	7.054E+00	2.257E-01	1.322E-06	6.554E-15	0.000E+00

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
C-14	1.182E+03	*4.455E+12	*4.455E+12	*4.455E+12	*4.455E+12	*4.455E+12	*4.455E+12	*4.455E+12
Cl-36	7.711E-01	2.491E+00	2.604E+01	9.624E+04	1.535E+09	*3.302E+10	*3.302E+10	*3.302E+10
Cs-137	1.563E+01	1.613E+01	1.718E+01	2.141E+01	4.016E+01	3.633E+02	1.963E+05	*8.704E+13
Fe-55	2.373E+05	3.111E+05	5.347E+05	3.560E+06	8.011E+08	*2.410E+15	*2.410E+15	*2.410E+15
Na-22	5.571E+00	7.491E+00	1.354E+01	1.075E+02	4.005E+04	3.996E+13	*6.247E+15	*6.247E+15
Ni-63	6.499E+02	6.583E+02	6.754E+02	7.391E+02	9.559E+02	2.352E+03	3.080E+04	2.504E+08
Pb-210	4.374E+00	4.528E+00	4.896E+00	6.452E+00	1.420E+01	2.245E+02	5.982E+05	*7.634E+13
Ra-226	5.470E+00	5.294E+00	4.995E+00	4.319E+00	3.666E+00	4.277E+00	1.131E+01	3.609E+02
Sr-90	6.339E-01	7.529E-01	1.062E+00	3.544E+00	1.108E+02	1.892E+07	*1.365E+14	*1.365E+14

*At specific activity limit

Summary : Beltsville w/RESRAD NRC and Site Spcific Parameters Resident Farmer Scenario
File : Beltsville Res farmrev1.RAD

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
C-14	1.000E+00	0.000E+00	2.114E-02	1.182E+03	2.114E-02	1.182E+03
Cl-36	1.000E+00	0.000E+00	3.242E+01	7.711E-01	3.242E+01	7.711E-01
Cs-137	1.000E+00	0.000E+00	1.600E+00	1.563E+01	1.600E+00	1.563E+01
Fe-55	1.000E+00	0.000E+00	1.054E-04	2.373E+05	1.054E-04	2.373E+05
Na-22	1.000E+00	0.000E+00	4.487E+00	5.571E+00	4.487E+00	5.571E+00
Ni-63	1.000E+00	0.000E+00	3.847E-02	6.499E+02	3.847E-02	6.499E+02
Pb-210	1.000E+00	0.000E+00	5.715E+00	4.374E+00	5.715E+00	4.374E+00
Ra-226	1.000E+00	41.85 ± 0.08	6.932E+00	3.606E+00	4.571E+00	5.470E+00
Sr-90	1.000E+00	0.000E+00	3.944E+01	6.339E-01	3.944E+01	6.339E-01

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
C-14	C-14	1.000E+00	2.114E-02	5.084E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cl-36	Cl-36	1.000E+00	3.242E+01	1.004E+01	9.600E-01	2.598E-04	1.628E-08	0.000E+00	0.000E+00	0.000E+00
Cs-137	Cs-137	1.000E+00	1.600E+00	1.550E+00	1.455E+00	1.168E+00	6.224E-01	6.881E-02	1.274E-04	3.474E-14
Fe-55	Fe-55	1.000E+00	1.054E-04	8.036E-05	4.675E-05	7.023E-06	3.121E-08	1.826E-16	0.000E+00	0.000E+00
Na-22	Na-22	1.000E+00	4.487E+00	3.338E+00	1.846E+00	2.325E-01	6.242E-04	6.257E-13	0.000E+00	0.000E+00
Ni-63	Ni-63	1.000E+00	3.847E-02	3.798E-02	3.701E-02	3.383E-02	2.615E-02	1.063E-02	8.116E-04	9.983E-08
Pb-210	Pb-210	1.000E+00	5.572E+00	5.356E+00	4.950E+00	3.756E+00	1.707E+00	1.079E-01	4.052E-05	4.150E-17
Pb-210	Ra-226	1.000E+00	8.339E-02	2.523E-01	5.684E-01	1.473E+00	2.862E+00	3.015E+00	1.157E+00	3.627E-02
Pb-210	∑DOSE(j)		5.655E+00	5.609E+00	5.519E+00	5.229E+00	4.569E+00	3.123E+00	1.157E+00	3.627E-02
Po-210	Pb-210	1.000E+00	1.435E-01	1.653E-01	1.563E-01	1.186E-01	5.390E-02	3.409E-03	1.279E-06	1.311E-18
Po-210	Ra-226	1.000E+00	2.025E-03	6.964E-03	1.690E-02	4.551E-02	8.947E-02	9.457E-02	3.630E-02	1.138E-03
Po-210	∑DOSE(j)		1.455E-01	1.722E-01	1.732E-01	1.641E-01	1.434E-01	9.797E-02	3.630E-02	1.138E-03
Ra-226	Ra-226	1.000E+00	4.485E+00	4.463E+00	4.419E+00	4.269E+00	3.867E+00	2.735E+00	1.017E+00	3.187E-02
Sr-90	Sr-90	1.000E+00	3.944E+01	3.320E+01	2.353E+01	7.054E+00	2.257E-01	1.322E-06	6.554E-15	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
C-14	C-14	1.000E+00	1.000E+00	1.785E-10	5.691E-30	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cl-36	Cl-36	1.000E+00	1.000E+00	3.093E-01	2.958E-02	8.004E-06	5.128E-16	0.000E+00	0.000E+00	0.000E+00
Cs-137	Cs-137	1.000E+00	1.000E+00	9.690E-01	9.099E-01	7.301E-01	3.891E-01	4.302E-02	7.963E-05	2.172E-14
Fe-55	Fe-55	1.000E+00	1.000E+00	7.628E-01	4.438E-01	6.666E-02	2.962E-04	1.733E-12	5.202E-36	0.000E+00
Na-22	Na-22	1.000E+00	1.000E+00	7.438E-01	4.115E-01	5.181E-02	1.391E-04	1.394E-13	2.711E-39	0.000E+00
Ni-63	Ni-63	1.000E+00	1.000E+00	9.872E-01	9.621E-01	8.793E-01	6.799E-01	2.763E-01	2.110E-02	2.595E-06
Pb-210	Pb-210	1.000E+00	1.000E+00	9.613E-01	8.884E-01	6.741E-01	3.063E-01	1.937E-02	7.272E-06	7.449E-18
Pb-210	Ra-226	1.000E+00	0.000E+00	3.040E-02	8.728E-02	2.502E-01	5.008E-01	5.320E-01	2.043E-01	6.403E-03
Pb-210	∑S(j):		1.000E+00	9.917E-01	9.757E-01	9.243E-01	8.072E-01	5.514E-01	2.043E-01	6.403E-03
Po-210	Pb-210	1.000E+00	0.000E+00	7.575E-01	8.063E-01	6.133E-01	2.787E-01	1.763E-02	6.616E-06	6.777E-18
Po-210	Ra-226	1.000E+00	0.000E+00	1.568E-02	6.582E-02	2.145E-01	4.437E-01	4.756E-01	1.827E-01	5.727E-03
Po-210	∑S(j):		0.000E+00	7.732E-01	8.721E-01	8.278E-01	7.224E-01	4.932E-01	1.827E-01	5.727E-03
Ra-226	Ra-226	1.000E+00	1.000E+00	9.951E-01	9.853E-01	9.517E-01	8.621E-01	6.098E-01	2.267E-01	7.105E-03
Sr-90	Sr-90	1.000E+00	1.000E+00	8.419E-01	5.967E-01	1.789E-01	5.722E-03	3.351E-08	3.762E-23	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

RESCALC.EXE execution time = 195.64 seconds

Summary : Beltsville tritium 15 feet thick w/RESRAD NRC & Site Specific Parameters Reside
File : Beltsville Res farm with 15 ft tritium.RAD

Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines

Dose Conversion Factor (and Related) Parameter Summary
File: DANDD DEFAULT SELECTED ISO

Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	H-3	6.400E-08	6.400E-08	DCF2(1)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	H-3	6.400E-08	6.400E-08	DCF3(1)
D-34	Food transfer factors:			
D-34	H-3 , plant/soil concentration ratio, dimensionless	0.000E+00	4.800E+00	RTF(1,1)
D-34	H-3 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	0.000E+00	1.200E-02	RTF(1,2)
D-34	H-3 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	0.000E+00	1.000E-02	RTF(1,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	H-3 , fish	1.000E+00	1.000E+00	BIOFAC(1,1)
D-5	H-3 , crustacea and mollusks	1.000E+00	1.000E+00	BIOFAC(1,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.577E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	4.573E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	7.500E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): H-3	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): H-3	not used	0.000E+00	---	W1(1)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	8.000E+00	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.812E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	0	1	---	NS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for H-3				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.360E-01	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R017	Inhalation rate (m**3/yr)	8.513E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	4.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	2.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	5.512E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.101E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.118E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	0.000E+00	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.685E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	6.325E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	2.000E-02	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	4.000E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.000E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.500E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.500E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	not used	0.000E+00	---	CO2F

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	0.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	0.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	0.000E+00	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	1024	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Beltsville tritium 15 feet thick w/RESRAD NRC & Site Specific Parameters Reside
File : Beltsville Res farm with 15 ft tritium.RAD

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	5577.00 square meters	H-3	1.000E+00
Thickness:	4.57 meters		
Cover Depth:	0.00 meters		

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.894E-01	9.766E-02	2.273E-02	1.375E-04	6.073E-11	0.000E+00	0.000E+00	0.000E+00
M(t):	7.575E-03	3.906E-03	9.091E-04	5.501E-06	2.429E-12	0.000E+00	0.000E+00	0.000E+00

Maximum TDOSE(t): 1.894E-01 mrem/yr at t = 0.000E+00 years

Summary : Beltsville tritium 15 feet thick w/RESRAD NRC & Site Specific Parameters Reside
File : Beltsville Res farm with 15 ft tritium.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	2.897E-04	0.0015	0.000E+00	0.0000	2.207E-02	0.1165	2.466E-03	0.0130	1.905E-02	0.1006	6.367E-07	0.0000
Total	0.000E+00	0.0000	2.897E-04	0.0015	0.000E+00	0.0000	2.207E-02	0.1165	2.466E-03	0.0130	1.905E-02	0.1006	6.367E-07	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	9.317E-02	0.4920	2.213E-05	0.0001	0.000E+00	0.0000	1.924E-02	0.1016	5.741E-03	0.0303	2.734E-02	0.1444	1.894E-01	1.0000
Total	9.317E-02	0.4920	2.213E-05	0.0001	0.000E+00	0.0000	1.924E-02	0.1016	5.741E-03	0.0303	2.734E-02	0.1444	1.894E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	1.398E-04	0.0014	0.000E+00	0.0000	1.065E-02	0.1091	1.191E-03	0.0122	9.193E-03	0.0941	3.072E-07	0.0000
Total	0.000E+00	0.0000	1.398E-04	0.0014	0.000E+00	0.0000	1.065E-02	0.1091	1.191E-03	0.0122	9.193E-03	0.0941	3.072E-07	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	4.846E-02	0.4962	1.179E-05	0.0001	0.000E+00	0.0000	1.049E-02	0.1074	3.257E-03	0.0333	1.426E-02	0.1461	9.766E-02	1.0000
Total	4.846E-02	0.4962	1.179E-05	0.0001	0.000E+00	0.0000	1.049E-02	0.1074	3.257E-03	0.0333	1.426E-02	0.1461	9.766E-02	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	3.253E-05	0.0014	0.000E+00	0.0000	2.479E-03	0.1091	2.772E-04	0.0122	2.139E-03	0.0941	7.149E-08	0.0000
Total	0.000E+00	0.0000	3.253E-05	0.0014	0.000E+00	0.0000	2.479E-03	0.1091	2.772E-04	0.0122	2.139E-03	0.0941	7.149E-08	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	1.128E-02	0.4962	2.743E-06	0.0001	0.000E+00	0.0000	2.441E-03	0.1074	7.579E-04	0.0333	3.319E-03	0.1461	2.273E-02	1.0000
Total	1.128E-02	0.4962	2.743E-06	0.0001	0.000E+00	0.0000	2.441E-03	0.1074	7.579E-04	0.0333	3.319E-03	0.1461	2.273E-02	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	1.969E-07	0.0014	0.000E+00	0.0000	1.501E-05	0.1091	1.678E-06	0.0122	1.295E-05	0.0941	4.327E-10	0.0000
Total	0.000E+00	0.0000	1.969E-07	0.0014	0.000E+00	0.0000	1.501E-05	0.1091	1.678E-06	0.0122	1.295E-05	0.0941	4.327E-10	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	6.824E-05	0.4962	1.660E-08	0.0001	0.000E+00	0.0000	1.477E-05	0.1074	4.586E-06	0.0333	2.009E-05	0.1461	1.375E-04	1.0000
Total	6.824E-05	0.4962	1.660E-08	0.0001	0.000E+00	0.0000	1.477E-05	0.1074	4.586E-06	0.0333	2.009E-05	0.1461	1.375E-04	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	8.695E-14	0.0014	0.000E+00	0.0000	6.628E-12	0.1092	7.412E-13	0.0122	5.718E-12	0.0942	1.911E-16	0.0000
Total	0.000E+00	0.0000	8.695E-14	0.0014	0.000E+00	0.0000	6.628E-12	0.1092	7.412E-13	0.0122	5.718E-12	0.0942	1.911E-16	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	3.013E-11	0.4961	7.328E-15	0.0001	0.000E+00	0.0000	6.521E-12	0.1074	2.025E-12	0.0333	8.868E-12	0.1460	6.073E-11	1.0000
Total	3.013E-11	0.4961	7.328E-15	0.0001	0.000E+00	0.0000	6.521E-12	0.1074	2.025E-12	0.0333	8.868E-12	0.1460	6.073E-11	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Beltsville tritium 15 feet thick w/RESRAD NRC & Site Specific Parameters Reside
File : Beltsville Res farm with 15 ft tritium.RAD

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
H-3	H-3	1.000E+00	1.894E-01	9.766E-02	2.273E-02	1.375E-04	6.073E-11	2.154E-33	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
H-3	1.320E+02	2.560E+02	1.100E+03	1.818E+05	4.117E+11	*9.597E+15	*9.597E+15	*9.597E+15

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
H-3	1.000E+00	0.000E+00	1.894E-01	1.320E+02	1.894E-01	1.320E+02

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
H-3	H-3	1.000E+00	1.894E-01	9.766E-02	2.273E-02	1.375E-04	6.073E-11	0.000E+00	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
H-3	H-3	1.000E+00	1.000E+00	4.825E-01	1.123E-01	6.800E-04	3.007E-10	1.072E-32	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

RESCALC.EXE execution time = 6.42 seconds

Appendix B

Final Status Survey Plan