WEST JEFFERSON NORTH SITE DOSE ASSESSMENT

Revision 1
January 2008

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RECEIVED JAN 1 0 2008

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Table of Contents

1.0 Introduction 1
2.0 Site Layout 1
3.0 Radionuclide Concentrations 3
4.0 Site Ground Water Model 13
5.0 Exposure Scenario 15
6.0 Results 16
7.0 Summary 21
8.0 References 22

APPENDIX A. RECREATIONAL SCENARIO 23
APPENDIX B. CONTAMINATED WOUND SCENARIO 25

Tables

Table 1. West Jefferson North Site Areas 1
Table 2. Cs-137 Surrogate Radionuclide Ratios at the WJN Site 3
Table 3. Cs-137 Concentrations at the WJN Site 4
Table 4. Cs-137 Concentrations at the WJN Site Upper Areas 8
Table 5. Cs-137 Concentrations at the WJN Site Filter Bed Areas 11
Table 6. Radionuclide Concentrations Used in WJN Site Dose Assessment 13
Table 7. Radionuclide Concentrations in JN-4 Drainpipe Area 13
Table 8. Distribution Coefficients Used in the WJN Site Dose Assessment 17
Table 9. WJN Site Parameter Values 17

Figures

Figure 1. West Jefferson North Site Layout 2
Figure 2. Idealized Site Geology at the West Jefferson North Site 14
Figure 3. Exposure Pathways at the West Jefferson North Site 16
Figure 4. Resident Farmer Radiation Dose at the WJN Site 19
Figure 5. Resident Farmer Radiation Doses Illustrating Water Independent and Water Dependent Pathways 20
Figure 6. Resident Farmer Radiation Doses By Area 20

Attachments

Attachment 1. Combined Filter Bed and Upper Areas Resident Farmer Scenario (Summary File) 27
Attachment 2. JN-4 Drainpipe Area Resident Farmer Scenario (Summary File) 52
Attachment 3. Combined Filter Bed and Upper Areas Resident Farmer Scenario Concentration File 72
Attachment 4. Combined Upper and Filter Bed Areas Recreational Scenario (No Aquatic Pathways) (Summary File) 85

Attachment 5. Combined Upper and Filter Bed Areas Recreational Scenario (With Aquatic Pathways) (Summary File) 112
Attachment 6. Combined Upper and Filter Bed Areas Recreational Scenario Concentration File 139
Attachment 7. JN-4 Drainpipe Area Recreational Scenario (No Aquatic Pathways) (Summary File) 155
Attachment 8. JN-4 Drainpipe Area Recreational Scenario (With Aquatic Pathways) (Summary File) 176
Attachment 9. JN-4 Drainpipe Area Recreational Scenario Concentration File 198
Attachment 10. Swimming Dose Assessment for Combined Upper Areas and Filter Bed Areas 211
Attachment 11. Swimming Dose Assessment for JN-4 Drainpipe Area 212

1.0 Introduction

The purpose of this dose assessment was to determine the radiation dose from residual radioactivity at the West Jefferson North (WJN) Site. The WJN Site was divided into three areas for the purposes of the assessment: 1) the Upper Area, 2) the Filter Bed Area, and 3) the JN-4 Drainpipe Area. The Upper Area and the Filter Bed Area were separated because they are each surrounded by unaffected areas and separated by an access road. The JN-4 Drainpipe Area was kept separate because it contained different radionuclides than the Upper Area and the Filter Bed Area. Radionuclide concentrations in each of these areas were determined using data from Final Status Survey reports that document the radiological conditions at the WJN Site after remediation. Radiation doses were estimated for a resident farmer who was assumed to live on the WJN Site after closure.

Radiation doses were also estimated for a person who uses the Big Darby Creek for recreational purposes (Appendix A) and for a person who is exposed to radioactive material through a contaminated wound while using the Big Darby Creek for recreational purposes (Appendix B).

2.0 Site Layout

Figure 1 illustrates the layout of the WJN Site. The total area of the WJN Site is about 32 acres (Table 1). The Filter Bed Area has an area of about 2.75 acres and the Upper Area has an area of about 10.9 acres. The unaffected areas around the Filter Bed Area have an area of about 9.95 acres and the unaffected areas around the Upper Area have an area of about 8.7 acres. Within the Upper Area, there is a small area where the JN-4 Drainpipe Area is located. This area consisted of trenches from remediating the east section of the JN-3 cooling waste sewer line and removing the JN-4 drainpipe. The area associated with the JN-3 cooling waste sewer line was 37 m^2 (1 meter wide and 37 meters long) and the area associated with the JN-4 drainpipe was 27.9 m^2 (2 feet wide and 150 feet long). The total area of the JN-4 Drainpipe Area was 64.9 m^2 (37 + 27.9 = 64.9 m^2).

Table 1. West Jefferson North Site Areas

Location	Area (acres)	Area (m^2)
Upper Area (Affected Area)	10.9	44,100
Unaffected Areas around the Upper Area	8.7	35,200
Total Upper Area	19.6	79,300
Filter Bed Area (Affected Area)	2.75	11,100
Unaffected Areas around the Filter Bed Area	9.95	40,300
Total Filter Bed Area	12.7	51,400
JN-4 Drainpipe Area	0.016	64.9
Total—All Areas	**32.3**	**131,000**

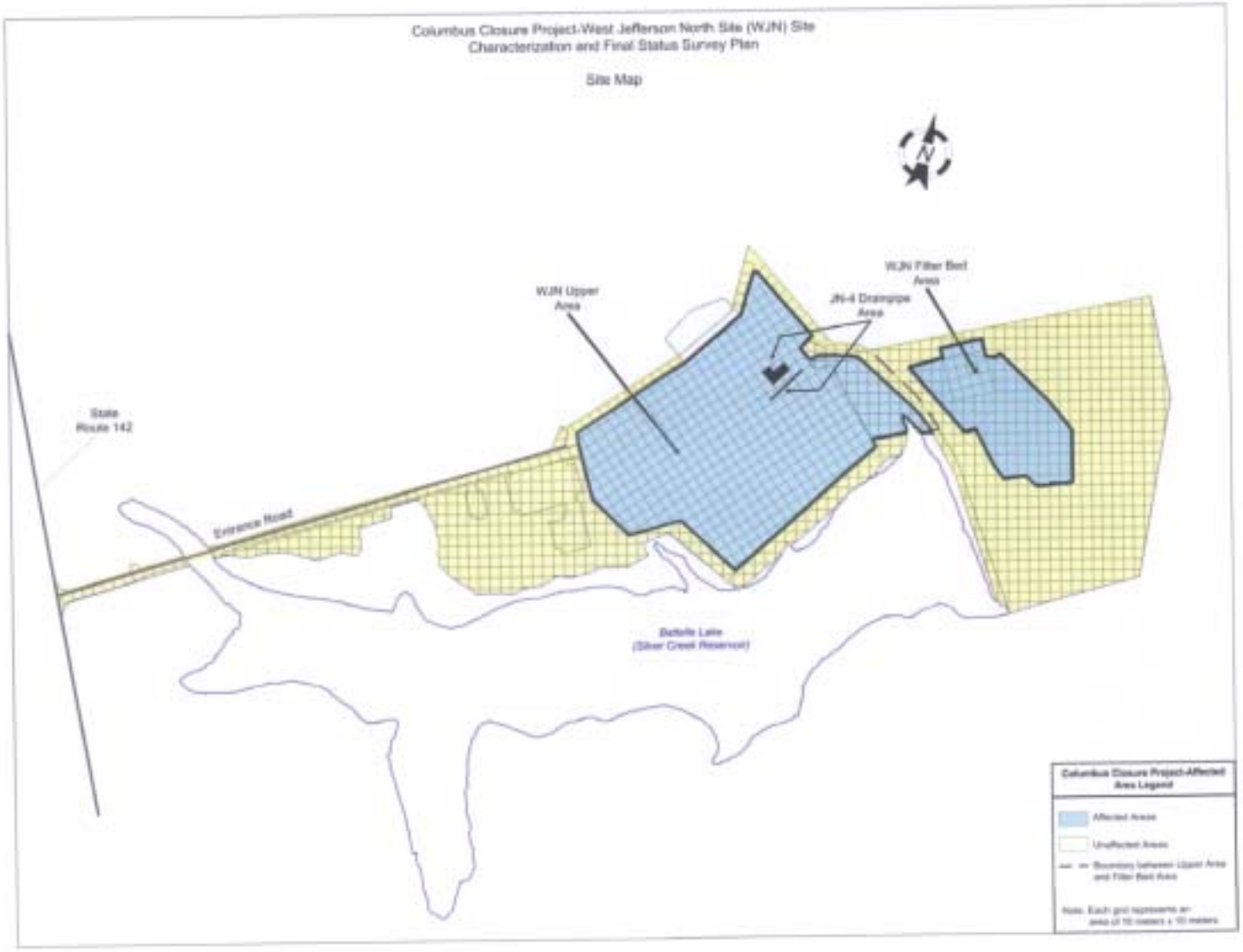

Figure 1. West Jefferson North Site Layout

3.0 Radionuclide Concentrations

The characterization of the WJN Site identified Cs-137 as the primary radionuclide present in soil samples. Other radionuclides typically present in soil samples included Co-60, Sr-90, Eu-152, Eu-154, Pu-238, Pu-239/240, and Am-241. Cesium-137 was used as a surrogate for the other radionuclides present in surface soil because it typically results in 64 percent of the total activity in surface soil samples. The surrogate relationship between Cs-137 and other radionuclides present in surface soil samples is presented in Table 2 based on data collected from March through September 2000.

Table 2. Cs-137 Surrogate Radionuclide Ratios at the WJN Site

Radionuclide	Cs-137/Surrogate Radionuclide Ratio
Co-60	381
Sr-90	46
Eu-152	17
Eu-154	182
Pu-238	800
Pu-239/240	25
Pu-241	2.8
Am-241	15

Note: The Cs-137/Pu-241 ratio was obtained from ORIGEN2.1 data.

Tables 3 through 5 list the concentrations of Cs-137 in surface soil used for the WJN Site dose assessment. Data are organized by Final Status Survey report and represent the average Cs-137 concentrations within the 10 meter × 10 meter grids assessed in each Final Status Survey report.

Over the WJN Site (Table 3), the average Cs-137 concentration in surface soil grids was 0.20 pCi/g and the maximum concentration in surface soil grids was 2.55 pCi/g. In the Upper Area (Table 4), the average Cs-137 concentration in surface soil grids was 0.14 pCi/g and the maximum concentration in surface soil grids was 1.21 pCi/g. In the Filter Bed Area, the average Cs-137 concentration in surface soil grids was 0.29 pCi/g and the maximum concentration in surface soil grids was 2.55 pCi/g. The maximum concentrations represent the maximum averages for grids in these areas and do not represent the maximum Cs-137 concentration reported in a single soil sample.

In the WJN Site dose assessment, the maximum Cs-137 concentrations in Tables 3 through 5 and the radionuclide ratios listed in Table 2 were used to determine radionuclide concentrations and estimate radiation doses for the Upper Area and the Filter Bed Area. The radionuclide concentrations are listed in Table 6.

For the JN-4 drainpipe area, Am-241, Pu-238, Pu-239/240, and Pu-241 were identified in surface soil samples. Table 7 lists the concentrations of these radionuclides in surface soil. In the WJN Site dose assessment, the maximum concentrations in Table 7 were used to estimate radiation doses for the JN-4 Drainpipe Area.

Table 3. Cs-137 Concentrations at the WJN Site

FSS File	Area	Title	Location	Cs-137 Concentration (pCi/g)
1	Upper	JN-4 North Area	2000-2001 Data	0.08
			2005 Data	0.07
2	Upper	JN-2 Above Grade		Building removed, no soil data
3	Upper	JN-3 Above Grade		Building removed, no soil data
4	Upper	JN-3 Foundation Area	Excavation Base	0.16
			Overburden	0.07
5	Upper	JN-6		Building removed, no soil data
6	Upper	JN-1B Fuel Pool and Transfer Canal	Average of concrete data	1.21
7	Filter Bed	Filter Beds Including WIDE System	Filter Beds and WIDE Grounds	0.278
8	Upper	JN-2 Sanitation Line Sections B and C	Sanitation Line Trench Base	0.0286
			Sanitation Line Trench Sidewalls	0.0220
			Sanitation Line Overburden A	0.0435
			Sanitation Line Overburden B	0.0332
9	Upper	JN-1/4 Sanitary Sewer Line	Excavation Base	0.0864
			Excavation Sidewalls	0.1
			Overburden (Random)	0.23
			Overburden A	0.0833
			Overburden B	0.0499
10	Filter Bed	Abandoned Middle Filter Bed	Trench Base	0.0900
			Trench Sidewalls	0.150
			AMFB Base	0.230
			Overburden A	0.200
			Overburden B	0.0200
11	Filter Bed	Manhole 7 to Manhole A Sewer Line	Excavation Base	1.10
			Excavation Sidewalls	0.240
			Overburden A	0.0800
			Overburden B	0.140

Table 3. Cs-137 Concentrations at the WJN Site

FSS File	Area	Title	Location	Cs-137 Concentration (pCi/g)
12	Filter Bed	Active North Filter Bed, North Subsurface Sand Filter	ANFB to MH-2 Sidewalls	0.02
			ANFB to MH-2 Excavation Base	0.04
			Dosing Chamber Excavation Base	0.02
			ANFB to MH-2 Overburden A	0.03
			ANFB to MH-2 Overburden B	0.05
13	Filter Bed	Active North Filter Bed, South Subsurface Sand Filter		Surface data only, no soil data
14	Filter Bed	Grids 33, 42, 50, 51, 52, and 61 of the Abandoned North Filter Bed		1.3
15	Filter Bed	Manhole 7 to Manhole 8 Sewer Line	Excavation Base	0.02
			Excavation Sidewalls	0.08
			Overburden A	0.04
			Overburden B	0.04
16	Filter Bed	Active North Filter Bed Discharge Line	Excavation Base, Section A	0.04
			Excavation Base, Section B	0.21
			Excavation Base, Section C	0.73
			Excavation Base, Section D	0.15
			Excavation Sidewall, Section A	0.14
			Excavation Sidewall, Section B	0.16
			Excavation Sidewall, Section C	0.22
			Excavation Sidewall, Section D	0.16
			Section A, Overburden A	0.09
			Section A, Overburden B	0.12
			Section B, Overburden A	0.28
			Section B, Overburden B	0.13
			Section C, Overburden A	0.18
			Section D, Overburden A	0.49

Table 3. Cs-137 Concentrations at the WJN Site

FSS File	Area	Title	Location	Cs-137 Concentration (pCi/g)
			Section D, Overburden B	0.22
17	Upper	Dam Line	Stabilized Pipe	1.0629
19	Upper	JN-2 Foundation Area and Sanitary Line	JN-2 Foundation	0.0669
			Sanitary Line Trench Base	0.0316
			Sanitary Line Trench Sidewalls	0.0384
			Sanitary Line Overburden A	0.0550
			Sanitary Line Overburden B	0.0373
20	Upper	JN-1 Well House	Roofing Materials	0.0228
				0.0214
22	Upper	Remaining Land Areas Inside WJN Fenceline	AA-1	0.17
			AA-2	0.1
			AA-3	0.05
			AA-4	0.08
			Section A	0.05
			Section B	0.03
			Section C	0.06
			Section D	0.04
			Section E	0.13
			Section F	0.13
			JN-2/3 Footprint	0.041
			JN-1 Footprint	0.17
23	Upper	Unaffected Land Areas Outside WJN Fenceline	SR 142 Access Road	0.0593
			Southwest of JN-10	0.121
			Outside WJN Perimeter Fence	0.146
			Filter Bed Access Road	0.043
			North Outside Filter Bed Fence	0.186
			South Outside Filter Bed Fence	0.144

Table 3. Cs-137 Concentrations at the WJN Site

FSS File	Area	Title	Location	Cs-137 Concentration (pCi/g)
24	Filter Bed	Areas Including and Surrounding the AMFB	Average of Table 7 data	2.55
25	Upper	JN-1-4 Bog Area and Outfall #6	Bog Area	0.353
			Average of Outfall #6 data	0.0619
26	Upper	JN-2 Sanitation Line Section A	Sanitation Line Trench Base Section A	0.03
			Sanitation Line Trench Sidewalls Section A	0.08
27	Upper	JN-1 South and East Grounds	JN-1 South and East Grounds and Excavation	0.4
28	Upper	JN-1 A and C Foundation Excavation	JN-1 South and West Grounds and Excavation	0.57
29	Upper	JN-1 B Foundation Excavation	JN-1 B Foundation	0.66
30	Upper	Chemical Waste Sewer Line, West Section	Excavation Base	0.00344
			Excavation Sidewalls	-0.00531
			Overburden A Soils	0.0201
			Overburden B Soils	-0.00335
31	Upper	Chemical Waste Sewer Line, East Section	Excavation Base	-0.00121
			Excavation Sidewalls	0.00897
			Overburden A Soils	0.0115
			Overburden B Soils	0.0141
32	Upper	TRU Waste Staging Pad	TRU Waste Pad Area	0.16
--[a]	Filter Bed	North Abandoned Discharge Pipe	Table 5	0.0835
			Table 11	0.975
			Average	**0.20**
			Maximum	**2.55**

a. FSS not assigned a number.

Table 4. Cs-137 Concentrations at the WJN Site Upper Areas

FSS File	Area	Title	Location	Cs-137 Concentration (pCi/g)
1	Upper	JN-4 North Area	2000-2001 Data	0.08
			2005 Data	0.07
2	Upper	JN-2 Above Grade		Building removed, no soil data
3	Upper	JN-3 Above Grade		Building removed, no soil data
4	Upper	JN-3 Foundation Area	Excavation Base	0.16
			Overburden	0.07
5	Upper	JN-6		Building removed, no soil data
6	Upper	JN-1B Fuel Pool and Transfer Canal	Average of concrete data	1.21
8	Upper	JN-2 Sanitation Line Sections B and C	Sanitation Line Trench Base	0.0286
			Sanitation Line Trench Sidewalls	0.0220
			Sanitation Line Overburden A	0.0435
			Sanitation Line Overburden B	0.0332
9	Upper	JN-1/4 Sanitary Sewer Line	Excavation Base	0.0864
			Excavation Sidewalls	0.1
			Overburden (Random)	0.23
			Overburden A	0.0833
			Overburden B	0.0499
17	Upper	Dam Line	Stabilized Pipe	1.0629
19	Upper	JN-2 Foundation Area and Sanitary Line	JN-2 Foundation	0.0669
			Sanitary Line Trench Base	0.0316
			Sanitary Line Trench Sidewalls	0.0384
			Sanitary Line Overburden A	0.0550
			Sanitary Line Overburden B	0.0373
20	Upper	JN-1 Well House	Roofing Materials	0.0228
				0.0214

Table 4. Cs-137 Concentrations at the WJN Site Upper Areas

FSS File	Area	Title	Location	Cs-137 Concentration (pCi/g)
22	Upper	Remaining Land Areas Inside WJN Fenceline	AA-1	0.17
			AA-2	0.1
			AA-3	0.05
			AA-4	0.08
			Section A	0.05
			Section B	0.03
			Section C	0.06
			Section D	0.04
			Section E	0.13
			Section F	0.13
			JN-2/3 Footprint	0.041
			JN-1 Footprint	0.17
23	Upper	Unaffected Land Areas Outside WJN Fenceline	SR 142 Access Road	0.0593
			Southwest of JN-10	0.121
			Outside WJN Perimeter Fence	0.146
			Filter Bed Access Road	0.043
			North Outside Filter Bed Fence	0.186
			South Outside Filter Bed Fence	0.144
25	Upper	JN-1-4 Bog Area and Outfall #6	Bog Area	0.353
			Average of Outfall #6 data	0.0619
26	Upper	JN-2 Sanitation Line Section A	Sanitation Line Trench Base Section A	0.03
			Sanitation Line Trench Sidewalls Section A	0.08
27	Upper	JN-1 South and East Grounds	JN-1 South and East Grounds and Excavation	0.4
28	Upper	JN-1 A and C Foundation Excavation	JN-1 South and West Grounds and Excavation	0.57
29	Upper	JN-1 B Foundation Excavation	JN-1 B Foundation	0.66

Table 4. Cs-137 Concentrations at the WJN Site Upper Areas

FSS File	Area	Title	Location	Cs-137 Concentration (pCi/g)
30	Upper	Chemical Waste Sewer Line, West Section	Excavation Base	0.00344
			Excavation Sidewalls	-0.00531
			Overburden A Soils	0.0201
			Overburden B Soils	-0.00335
31	Upper	Chemical Waste Sewer Line, East Section	Excavation Base	-0.00121
			Excavation Sidewalls	0.00897
			Overburden A Soils	0.0115
			Overburden B Soils	0.0141
32	Upper	TRU Waste Staging Pad	TRU Waste Pad Area	0.16
			Average	**0.14**
			Maximum	**1.21**

Table 5. Cs-137 Concentrations at the WJN Site Filter Bed Areas

FSS File	Area	Title	Location	Cs-137 Concentration (pCi/g)
7	Filter Bed	Filter Beds Including WIDE System	Filter Beds and WIDE Grounds	0.278
10	Filter Bed	Abandoned Middle Filter Bed	Trench Base	0.0900
			Trench Sidewalls	0.150
			AMFB Base	0.230
			Overburden A	0.200
			Overburden B	0.0200
11	Filter Bed	Manhole 7 to Manhole A Sewer Line	Excavation Base	1.10
			Excavation Sidewalls	0.240
			Overburden A	0.0800
			Overburden B	0.140
12	Filter Bed	Active North Filter Bed, North Subsurface Sand Filter	ANFB to MH-2 Sidewalls	0.02
			ANFB to MH-2 Excavation Base	0.04
			Dosing Chamber Excavation Base	0.02
			ANFB to MH-2 Overburden A	0.03
			ANFB to MH-2 Overburden B	0.05
13	Filter Bed	Active North Filter Bed, South Subsurface Sand Filter		Surface data only, no soil data
14	Filter Bed	Grids 33, 42, 50, 51, 52, and 61 of the Abandoned North Filter Bed		1.3
15	Filter Bed	Manhole 7 to Manhole 8 Sewer Line	Excavation Base	0.02
			Excavation Sidewalls	0.08
			Overburden A	0.04
			Overburden B	0.04

Table 5. Cs-137 Concentrations at the WJN Site Filter Bed Areas

FSS File	Area	Title	Location	Cs-137 Concentration (pCi/g)
16	Filter Bed	Active North Filter Bed Discharge Line	Excavation Base, Section A	0.04
			Excavation Base, Section B	0.21
			Excavation Base, Section C	0.73
			Excavation Base, Section D	0.15
			Excavation Sidewall, Section A	0.14
			Excavation Sidewall, Section B	0.16
			Excavation Sidewall, Section C	0.22
			Excavation Sidewall, Section D	0.16
			Section A, Overburden A	0.09
			Section A, Overburden B	0.12
			Section B, Overburden A	0.28
			Section B, Overburden B	0.13
			Section C, Overburden A	0.18
			Section D, Overburden A	0.49
			Section D, Overburden B	0.22
24	Filter Bed	Areas Including and Surrounding the AMFB	Average of Table 7 data	2.55
--[a]	Filter Bed	North Abandoned Discharge Pipe	Table 5	0.0835
			Table 11	0.975
			Average	**0.29**
			Maximum	**2.55**

a. FSS not assigned a number.

Table 6. Radionuclide Concentrations Used in WJN Site Dose Assessment

Radionuclide	Concentration in Upper Area (pCi/g)	Concentration in Filter Bed Area (pCi/g)
Cs-137	1.21	2.55
Co-60	0.00318	0.00669
Sr-90	0.0263	0.0554
Eu-152	0.0712	0.150
Eu-154	0.00665	0.0140
Pu-238	0.00151	0.00319
Pu-239/240	0.0484	0.102
Pu-241	0.432	0.911
Am-241	0.0807	0.170

Table 7. Radionuclide Concentrations in JN-4 Drainpipe Area

Location	Pu-238 Concentration (pCi/g)	Pu-239/240 Concentration (pCi/g)	Pu-241 Concentration (pCi/g)	Am-241 Concentration (pCi/g)
Excavation Sidewalls[a]	0.033	0.900	0.720	0.396
Excavation East/West Base[a]	0.012	0.159	0.126	0.106
Excavation North/South Base[a]	0.015	0.483	0.385	0.308
Overburden East/West Trench[a]	0.012	0.389	0.312	0.234
Overburden North/South Trench[a]	0.035	1.21	0.970	0.400
Base of Trench[b]	0.074	3.14	2.52	3.7
Average	0.030	1.047	0.839	0.857
Maximum	0.074	3.14	2.52	3.7

a. Source: Final Status Survey Report for JN-4 Yard and Drainpipe Removal.
b. Source: Investigatory Survey Report, JN-3 Cooling Waste Sewer Line, East Section.

4.0 Site Ground Water Model

The unconsolidated glacial deposits underlying the WJN Site are approximately 100 feet thick. These deposits overlie the regional limestone aquifer. Based on Madison County, Ohio soil surveys (Gerken and Scherzinger 1981), the surface soil at the WJN Site is Miamian silt loam, eroded Miamian silt loam, and Lewisburg-Celina silt loam. From the land surface to the limestone, the geologic deposits are very dense, over compacted glacial till consisting mostly of clay (Jacobsen 2006). Within the glacial till overburden, there are three zones that are dominated by sand. These sand-dominated zones have been referred to as the 885-foot, 855-foot, and 805-

foot zones (see Figure 2) based on their approximate elevation (for reference, land surface elevation in the upland area is approximately 910 ft amsl). Based on geologic boring data from the site, the middle sand zone (855-foot) is laterally continuous beneath much of the site and may intersect the Big Darby Creek to the east. In contrast, the upper sand zone (885-foot) appears to consist of a few isolated lenses of sand that are not laterally continuous or connected beneath the site. The lower sand zone (805-foot) also has been interpreted to be discontinuous, but this may be due to the limited amount of data for this zone (i.e., fewer borings penetrated to this depth compared to the upper zones) which makes interpretation more uncertain.

Ground water is encountered at a depth of less than 10 feet below ground surface (bgs) in the upland area and in the Filter Bed Area. Below this depth, the glacial till deposits are continuously saturated; however, ground water occurs primarily in the sand deposits between dense low-permeability clay that yields little water. The 885-foot sand zone is not sufficiently productive to serve as a source of drinking water or irrigation water; however, the 855-foot and 805-foot sand zones may be suitable aquifers for these purposes.

In the WJN Site dose assessment, it was assumed the 885-foot sand zone could provide a conduit for ground water to migrate to Battelle Lake (Silver Creek Reservoir), resulting in a potential aquatic food pathway, even though this zone is highly discontinuous. The 855-foot and 805-foot zones were not modeled in this way because the radionuclide travel times from the residual radioactivity in surface soil to the 855-foot and 805-foot zones would be longer than for the 885-foot zone, resulting in lower radiation doses.

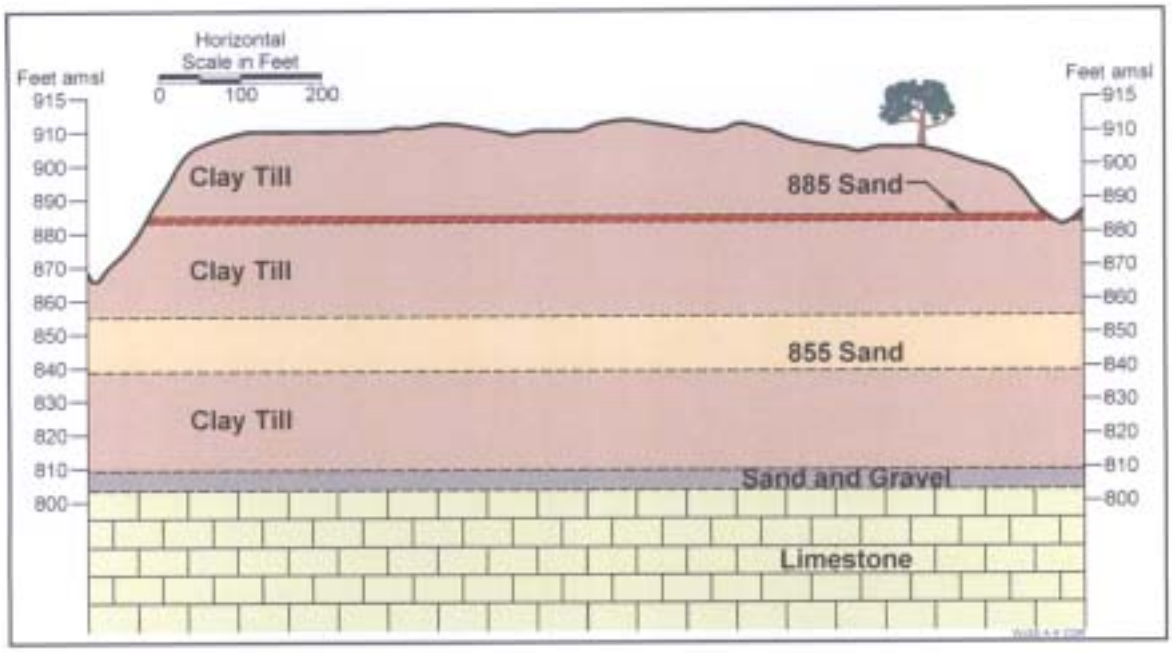

Figure 2. Idealized Site Geology at the West Jefferson North Site

Ground water from the 855-foot sand zone was assumed to be a drinking water supply, and a source of water for irrigating crops and watering stock. Radiation doses were estimated for these pathways based on measured concentrations of radionuclides in wells in the 855-foot sand zone and leaching of residual radionuclides in surface soil. The 805-foot sand zone was not modeled as a ground water source because the radionuclide travel times from the residual radioactivity in surface soil to the 805-foot zone would be longer than for the 855-foot zone, resulting in lower radiation doses.

In 2006, ground water samples were collected at various onsite locations in the 855-foot zone. The only radionuclide detected in excess of the minimum detectable concentration that was not naturally occurring was Sr-90. The maximum Sr-90 concentration detected in these samples was 1 pCi/L.

5.0 Exposure Scenario

Because the goal of the WJN Site dose assessment was an unrestricted release of the WJN Site, a residential farmer scenario was used to estimate radiation doses from the residual radioactivity present in surface soil at the WJN Site. In addition, no cover was assumed to exist over the surface soil. The following pathways were considered:

- External gamma
- Inhalation
- Plant ingestion
- Meat ingestion
- Aquatic foods
- Drinking water
- Soil ingestion

The residential farmer was assumed to live on the WJN Site and grow a significant portion of their food on the site. The farmer was also assumed to use water from the 855-foot zone for drinking water, irrigating crops, and watering stock. For the aquatic foods pathway, water was assumed to leach through the WJN Site to the 885-foot zone and then discharge to Battelle Lake. Battelle Lake was assumed to be the location of the aquatic food pathway because the watershed area associated with Battelle Lake, about 2.1 square miles or 1,344 acres (Ohio DNR 1987), is much less than the Big Darby Creek sub-watershed areas north of the WJN Site, and would therefore result in larger radiation doses. For example, the Upper Big Darby Creek sub-watershed has an area of about 113,000 acres and the Upper Middle Big Darby Creek sub-watershed has an area of about 40,000 acres (Ohio EPA 2006). Figure 3 illustrates the exposure pathways at the WJN Site.

The radiation doses through the exposure pathways illustrated in Figure 3 were estimated using the RESRAD computer code (Version 6.3) (Yu et al. 2001). Radiation doses were estimated from the time of site closure (0 years) to 1,000 years after site closure.

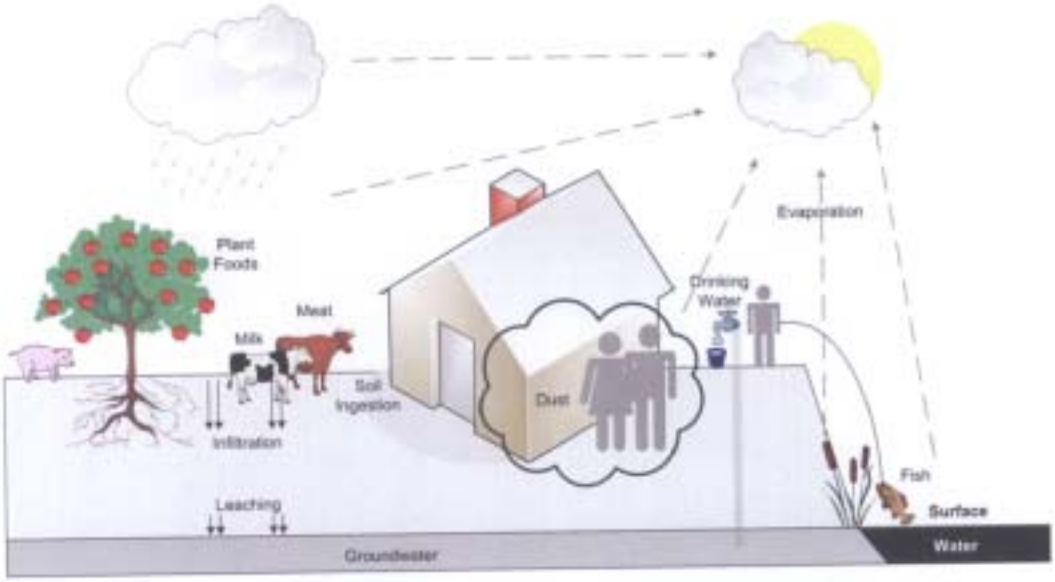

Figure 3. Exposure Pathways at the West Jefferson North Site

As discussed in Section 4.0, the soil at the WJN Site consists of silt loam and clay. Therefore, leaching from the contaminated zone was estimated using distribution coefficients for loam or clay (Sheppard and Thibault 1990). Transport through the unsaturated zone was also estimated using the distribution coefficients for loam or clay from Sheppard and Thibault (1990). The choice of loam or clay was based on the distribution coefficient that resulted in the fastest transport from the contaminated zone to the saturated zone. Transport through the saturated zone was estimated using distribution coefficients for sand. These distribution coefficients are listed in Table 8 (Sheppard and Thibault 1990).

The conceptual model of the WJN Site consists of a contaminated zone, an unsaturated zone, and a saturated zone. The contaminated zone is either the Upper Area and Filter Bed Area or the JN-4 Drainpipe Area. Default parameters for the residential farmer scenario were used, except for cases where changes were necessary to model soil and hydrogeologic conditions at the WJN Site. These changes are listed in Table 9. In addition, the fraction of aquatic food and plant food grown on the WJN Site was assumed to be 1.0.

6.0 Results

Figure 4 presents the radiation dose from residual radioactivity at the WJN Site for the resident farmer. The maximum radiation dose was estimated to be 9.6 mrem/yr and occurred at the time of site closure. The radiation dose includes the radiation dose from the combined Filter Bed and Upper Areas and the JN-4 drainpipe area. The radiation dose includes the radiation dose from residing on contaminated site and from consuming contaminated ground water from a well located onsite. The radiation dose also includes consuming well water with a measured concentration of 1 pCi/L of Sr-90. The majority of the radiation dose was from external exposure to Cs-137 in surface soil. The RESRAD summary files for the Filter Bed and Upper Areas and the JN-4 Drainpipe Area are contained in Attachments 1 and 2, respectively.

Table 8. Distribution Coefficients Used in the WJN Site Dose Assessment

Element	Contaminated Zone[b]	Unsaturated Zone[b]	Saturated Zone[c]
Ac	1500	1500	450
Am	8400	8400	1900
Np	25	25	5
Pa	1800	1800	550
Pb	550	550	270
Pu	1200	1200	550
Ra	9100	9100	500
Th	3300	3300	3200
U	15	15	35
Co	550	550	60
Cs	1900	1900	280
Eu[a]	800	800	245
Gd[a]	800	800	245
Sr	20	20	15

a. Distribution coefficient based on the distribution coefficient for Sm.
b. The distribution coefficient for the contaminated zone and unsaturated zone was based on the distribution coefficient for loam or clay from Sheppard and Thibault (1990).
c. The distribution coefficient for the saturated zone was based on the distribution coefficient for sand from Sheppard and Thibault (1990).

Table 9. WJN Site Parameter Values

Parameter	WJN Site Value	Comment
Parameters Used for the Upper Area and Filter Bed Area Contaminated Zone		
Area of contaminated zone (m^2)	131,000	Site geometry
Thickness of contaminated zone (m)	6.1	Site geometry
Length parallel to aquifer flow (m)	362	Site geometry $\left(\sqrt{131,000}\right)$
Cover depth (m)	0	Unrestricted release
Erosion rate (m/yr)	0	
Total porosity	0.40	Representative of silt (Yu et al. 1993)
Field capacity	0.20	Representative of silt (Yu et al. 1993)
Saturated hydraulic conductivity (m/yr)	227	Representative of silt-loam (Yu et al. 1993)
b parameter	5.3	Representative of silt-loam (Yu et al. 1993)
Watershed area for nearby stream or pond (m^2)	5,440,000	Area of Battelle Lake watershed
Precipitation (m/yr)	0.97	Local conditions
Contamination fraction of plant food	1.0	Conservative assumption

Table 9. WJN Site Parameter Values

Parameter	WJN Site Value	Comment
Contamination fraction of aquatic food	1.0	Conservative assumption
Parameters Used for the JN-4 Drainpipe Area Contaminated Zone		
Area of contaminated zone (m^2)	64.9	Site geometry
Thickness of contaminated zone (m)	0.1524	Site geometry
Length parallel to aquifer flow (m)	8.1	Site geometry $\left(\sqrt{64.9}\right)$
Cover depth (m)	0	Unrestricted release
Erosion rate (m/yr)	0	
Total porosity	0.40	Representative of silt (Yu et al. 1993)
Field capacity	0.20	Representative of silt (Yu et al. 1993)
Saturated hydraulic conductivity (m/yr)	227	Representative of silt-loam (Yu et al. 1993)
b parameter	5.3	Representative of silt-loam (Yu et al. 1993)
Watershed area for nearby stream or pond (m^2)	5,440,000	Area of Battelle Lake watershed
Precipitation (m/yr)	0.97	Local conditions
Contamination fraction of plant food	1.0	Conservative assumption
Contamination fraction of aquatic food	1.0	Conservative assumption
Parameters Used for Unsaturated Zone		
Thickness of unsaturated zone (m)	3.05	Site geometry
Total porosity	0.40	RESRAD default
Effective porosity	0.20	RESRAD default
Field capacity	0.20	RESRAD default
b parameter	5.3	Representative of silt-loam (Yu et al. 1993)
Saturated hydraulic conductivity (m/yr)	227	Representative of silt-loam (Yu et al. 1993)
Parameters Used for Saturated Zone (855-foot Zone)		
Total porosity	0.43	Representative of sand (Yu et al. 1993)
Effective porosity	0.33	Representative of sand (Yu et al. 1993)
Field capacity	0.10	Representative of sand (Yu et al. 1993)
Saturated hydraulic conductivity (m/yr)	61	Geometric mean of hydraulic conductivity in 855-foot zone (Kelley 2007)
Hydraulic gradient	0.02	RESRAD default
b parameter	4.05	Representative of sand (Yu et al. 1993)
Well intake depth below water table (m)	9.14	Intake at top of 855-foot zone, 30 feet below the water table
Water table drop rate (m/yr)	0	Yields higher radiation doses
Nondispersion or mass balance model	Mass Balance	Yields higher radiation doses

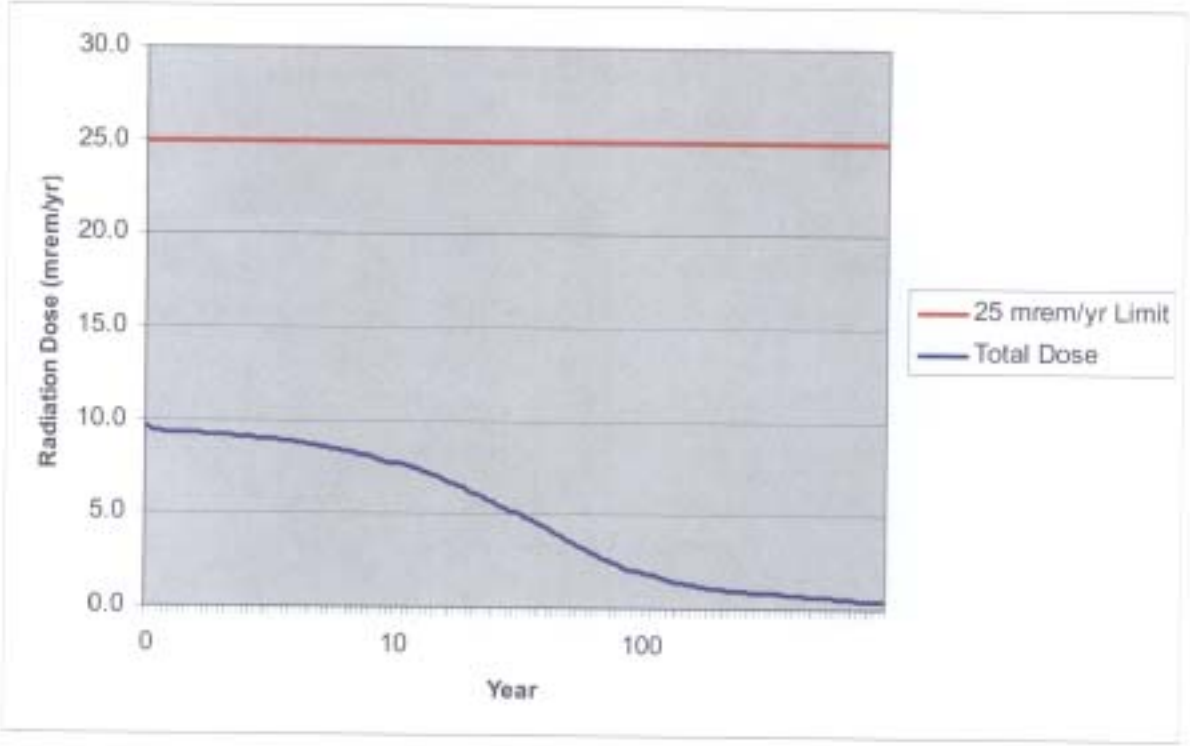

Figure 4. Resident Farmer Radiation Dose at the WJN Site

In RESRAD, pathways may be water independent or water dependent. The external gamma, inhalation, ingestion of food grown in contaminated soil, and soil ingestion pathways are water independent pathways. The drinking water ingestion, aquatic food ingestion, and ingestion of food irrigated with contaminated water are water dependent pathways. Figure 5 presents the radiation doses for the water independent and dependent pathways. The majority of the radiation dose was from the water independent pathways. The water dependent pathways did not contribute significantly to the radiation dose.

Figure 6 presents the radiation doses for the Filter Bed and Upper Areas, the JN-4 Drainpipe Area, and from Sr-90 in groundwater. The majority of the radiation dose was from the Filter Bed and Upper Areas.

As discussed in Section 4, the 855-foot zone was estimated to have a Sr-90 concentration of 1 pCi/L. This radionuclide concentration cannot be used directly by RESRAD to estimate radiation doses through the ground water pathway. Therefore, the following equation was used to estimate the radiation dose:

$$\text{Sr-90 Radiation Dose (mrem/yr)} = \text{Measured Sr-90 Concentration (pCi/L)} \times \frac{\text{Sr-90 Radiation Dose from RESRAD (mrem/yr)}}{\text{Sr-90 Well Water Concentration from RESRAD (pCi/L)}}$$

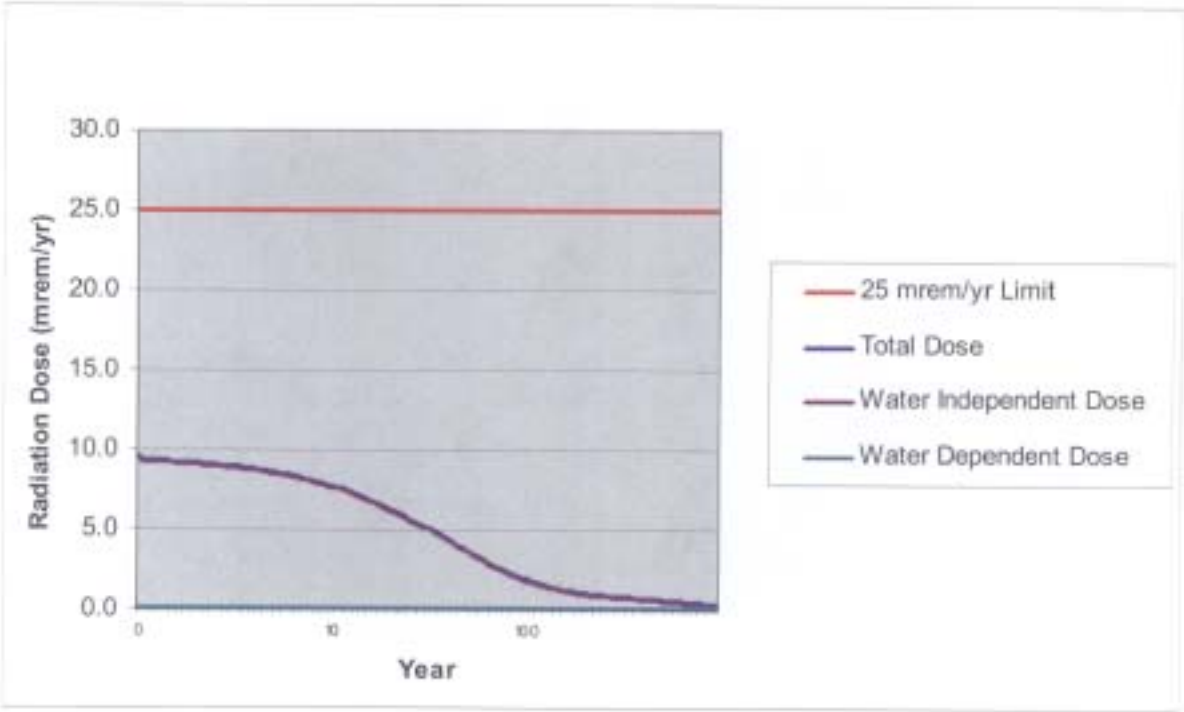

Figure 5. Resident Farmer Radiation Doses Illustrating Water Independent and Water Dependent Pathways

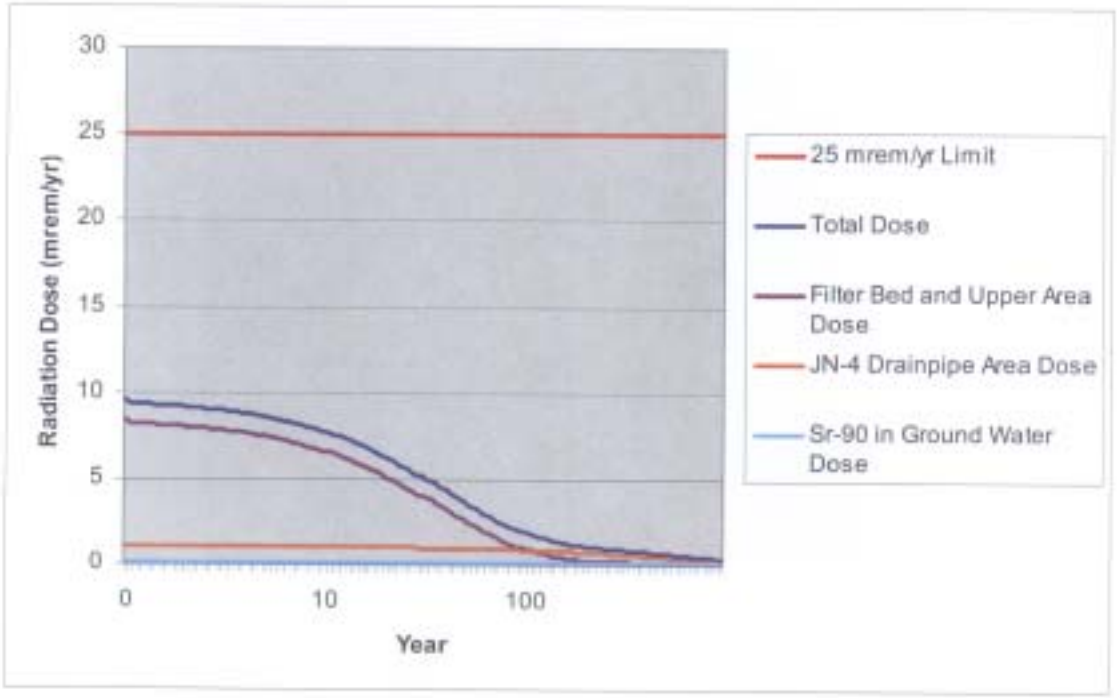

Figure 6. Resident Farmer Radiation Doses By Area

The Sr-90 radiation dose from RESRAD was from Attachment 1 (year 100), and is the sum of the radiation doses through the water dependent drinking water, plant, meat, and milk pathways. The Sr-90 well water concentration from RESRAD is contained in Attachment 3 (year 100). The Sr-90 radiation dose through the ground water pathway was estimated to be 0.1102 mrem/yr:

$$1.927\text{E-2 (drinking water)} + 3.194\text{E-3 (plants)} + 3.322\text{E-3 (meat)} + 1.812\text{E-3 (milk)}$$

$$= 2.760\text{E-2 mrem/yr}$$

$$1\ \text{pCi/L} \times \frac{2.760\text{E-2 mrem/yr}}{2.505\text{E-1 pCi/L}} = 0.1102\ \text{mrem/yr}$$

7.0 Summary

A dose assessment was conducted for the residual radioactivity at the WJN Site. Using maximum radionuclide concentrations in conjunction with a resident farmer scenario and the RESRAD computer code yielded a radiation dose of 9.6 mrem/yr through all exposure pathways. This radiation dose is below the 25 mrem/yr unrestricted release standard from 10 CFR Part 20.

The radiation dose of 9.6 mrem/yr represents a conservative estimate for several reasons:

- Maximum surface soil concentrations were used to estimate radionuclide concentrations. Using average concentrations would reduce the radiation doses by a factor of about 10, to about 1 mrem/yr.

- The entire WJN Site was assumed to contain residual radioactivity at the maximum radionuclide concentrations. In reality, a substantial portion of the WJN Site would not contain residual radioactivity at these levels. In addition, the resident farmer was assumed to be exposed to the Upper Area and Filter Bed Area and the JN-4 Drainpipe simultaneously, which is not likely to occur.

- A resident farmer scenario was used to estimate radiation doses. Although agricultural activities are common near the WJN Site, agricultural activities are not likely to occur in the Filter Bed Area because of topography. In addition, the resident farmer was assumed to get a substantial portion of their food from the WJN Site. This is also not likely to occur.

- The Upper Area and Filter Bed Area were assumed to contain residual radioactivity to a depth of 20 feet. In reality, residual radioactivity is not present to this depth over the entire Upper Area and Filter Bed Area.

- All residual radioactivity was assumed to be present at the surface with no cover. In reality, much of this residual radioactivity is present below the surface and is covered by clean soil or by soil with lower radionuclide concentrations.

- The radiation doses from Sr-90 in the 855-foot zone were assumed to be constant over the assessment period, which was 1,000 years. Given the half-life of Sr-90, 28.6 years, this is not likely to occur.

Based on these considerations, the actual radiation to a person who occupied the WJN Site would likely be less than 9.6 mrem/yr.

8.0 References

Gerken, J.C. and R.J. Scherzinger. 1981. *Soil Survey of Madison County*. U.S. Department of Agriculture, Soil Conservation Service. June.

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Yu, C., C. Loureiro, J.-J. Cheng, L.G. Jones, Y.Y. Wang, Y.P. Chia, and E. Faillace. 1993. *Data Collection Handbook to Support Modeling Impacts of Radioactive Material in Soil*. Report Number ANL/EAIS-8, Argonne National Laboratory, Argonne, Illinois. April.

APPENDIX A. RECREATIONAL SCENARIO

The purpose of this analysis was to estimate the radiation dose for a person who uses the Big Darby Creek for recreational purposes. The person was assumed to be located at the Ken Jockety Girl Scout Camp, which is located about 0.4 miles from the WJN Site.

Assumptions for Recreational Exposure Scenario

1. The Ken Jockety Girl Scout Camp has 1 week sessions during the summer, so the exposure time was 1 week, or 0.0192 of a year (7 days ÷ 365 days = 0.0192). All of this time was assumed to be outdoors.

2. The exposure was based on a person getting all their drinking water and aquatic food from the Big Darby Creek, which runs in front of the Ken Jockety Girl Scout Camp, for the 1 week period they are exposed.

3. The exposure also included external exposure, soil ingestion exposure, and inhalation exposure based on standing on the West Jefferson North (WJN) Site for 1 week. This was done to provide a conservative estimate of the radiation dose from radioactive material that might be blown from the WJN Site and expose people at the Ken Jockety Girl Scout Camp.

4. The inhalation rate was 14,000 m^3/yr (see Table 2.3 in Yu et al. 2001).

5. Radiation doses through the plant, milk, and meat pathways were not estimated.

6. The watershed area was 619,000,000 m^2 (153,000 acres). This was based on the drainage areas of the Upper Big Darby Creek sub-watershed (113,000 acres) and Upper Middle Big Darby Creek sub-watershed (40,000 acres), which are north of the WJN Site.

7. Water was assumed to move through the WJN Site to the 885-foot zone and then discharge to the Big Darby Creek. All water used by the person at the Ken Jockety Girl Scout Camp was assumed to be surface water from the Big Darby Creek.

8. Swimming is not evaluated in RESRAD, so a separate dose assessment for swimming was performed. The concentration of radioactive material in surface water was obtained from the RESRAD concentration file. The person was assumed to swim for 60 minutes per day for the 7 days they spent at the Ken Jockety Girl Scout Camp. The swimming time was obtained from the U.S. Environmental Protection Agency Exposure Factors Handbook, Section 15.4.1 (EPA 1999). External dose conversion factors were obtained from Federal Guidance Report No. 12, Table III.2, for immersion in contaminated water (Eckerman and Ryman 1993). Incidental ingestion of water during swimming was included using an ingestion rate of 50 mL/hr of swimming (EPA 2003). Ingestion dose conversion factors were obtained from Yu et al. (2001).

9. Initial soil concentrations and other site parameters were the same as were used in the resident farmer dose assessment (see Tables 6 through 9).

10. The peak radiation dose from the combined Upper and Filter Bed Areas and the JN-4 Drainpipe Area was estimated to be 0.19 mrem per week of exposure at the Ken Jockety Girl Scout Camp and the peak radiation dose from the JN-4 drainpipe area was estimated to be 0.012 mrem per week of exposure Ken Jockety Girl Scout Camp. The total radiation dose was estimated to be 0.20 mrem per week of exposure at the Ken Jockety Girl Scout Camp. The majority of this radiation dose was external exposure from Cs-137, which assumed that the person was standing on the WJN Site, which provides a conservative upper bound on potential radiation doses.

    The peak radiation dose from swimming was estimated to be 3.26E-9 mrem per week of exposure (i.e., swimming). The peak swimming radiation dose occurred 94.76 years after site closure.

11. Attachments 4 through 9 contain the RESRAD summary files used to estimate these radiation doses. Attachments 10 and 11 contain the Excel spreadsheet used to estimate the radiation doses.

References:

Eckerman, K.F. and J.C. Ryman. 1993. *External Exposure to Radionuclides in Air, Water, and Soil.* Federal Guidance Report No. 12. Washington, DC.

EPA (U.S. Environmental Protection Agency). 1999. *Exposure Factors Handbook.* Report No. EPA/600/C-99/001. Washington, DC.

EPA (U.S. Environmental Protection Agency). 2003. *User's Manual, Swimmer Exposure Assessment Model (SWIMODEL) Version 3.0.* Washington, DC.

Yu, C., A.J. Zielen, J.-J. Cheng, D.J. LePoire, E. Gnanapragasam, S. Kamboj, J. Arnish, A. Wallo III, W.A. Williams, and H. Peterson. 2001. *User's Manual for RESRAD Version 6.* Report Number ANL/EAD-4, Argonne National Laboratory, Argonne, Illinois. July.

APPENDIX B. CONTAMINATED WOUND SCENARIO

The purpose of this analysis was to estimate the radiation dose for a person who is exposed to radioactive material through a contaminated wound while using the Big Darby Creek for recreational purposes.

Radiation Dose from a Contaminated Wound

In 2007, the National Council on Radiation Protection and Measurements (NCRP) completed NCRP Report No. 156, *Development of a Biokinetic Model for Radionuclide-Contaminated Wounds and Procedures for Their Assessment, Dosimetry, and Treatment.* However, NCRP Report No. 156 does not contain systemic dose coefficients developed using the wound model.

Therefore, the radiation dose from the contaminated wound scenario was evaluated by treating the intake through the contaminated wound as a direct injection of radioactive material into the blood, using the direct injection dose coefficients from the DCAL computer code (Eckerman et al. 2006). For Cs-137, this dose coefficient is 1.36E-8 Sv/Bq for adults. This dose coefficient includes the contribution from the Ba-137m progeny radionuclide.

The maximum measured Cs-137 concentration in sediment was 3.3 pCi/g. The radiation dose from a wound contaminated with this sediment was evaluated by assuming that 1 gram of the sediment was injected into the bloodstream. This yielded an intake of 3.3 pCi. Based on the Cs-137 dose coefficient for direct injection, the resulting radiation dose was estimated to be 0.00017 mrem:

$$1.36\text{E-}8\frac{\text{Sv}}{\text{Bq}}\times 100\frac{\text{rem}}{\text{Sv}}\times 1{,}000\frac{\text{mrem}}{\text{rem}}\times\frac{3.7\text{E+}10\ \text{Bq}}{1.0\text{E+}12\ \text{pCi}}\times 3.3\ \text{pCi} = 0.00017\ \text{mrem}$$

Reference:

Eckerman, K.F., R.W. Leggett, M. Cristy, C.B. Nelson, J.C. Ryman, A.L. Sjoreen, and R.C. Ward. 2006. *User's Guide to the DCAL System.* Report No. ORNL/TM-2001/190, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

ATTACHMENTS

Attachment 1. Combined Filter Bed and Upper Areas Resident Farmer Scenario (Summary File)

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 1
Summary : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.rad

Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines

Dose Conversion Factor (and Related) Parameter Summary ... 2
Site-Specific Parameter Summary ... 6
Summary of Pathway Selections ... 13
Contaminated Zone and Total Dose Summary ... 14
Total Dose Components
Time = 0.000E+00 ... 15
Time = 1.000E+00 ... 16
Time = 3.000E+00 ... 17
Time = 1.000E+01 ... 18
Time = 3.000E+01 ... 19
Time = 1.000E+02 ... 20
Time = 3.000E+02 ... 21
Time = 1.000E+03 ... 22
Dose/Source Ratios Summed Over All Pathways ... 23
Single Radionuclide Soil Guidelines ... 24
Dose Per Nuclide Summed Over All Pathways ... 25
Soil Concentration Per Nuclide ... 27

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 2
Summary : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.rad

Dose Conversion Factor (and Related) Parameter Summary
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Co-60	2.190E-04	2.190E-04	DCF2(3)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(4)
B-1	Eu-152	2.210E-04	2.210E-04	DCF2(5)
B-1	Eu-154	2.860E-04	2.860E-04	DCF2(7)
B-1	Gd-152	2.430E-01	2.430E-01	DCF2(8)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(9)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(10)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(11)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(12)

B-1	Pu-239	4.290E-01	4.290E-01	DCF2(14)
B-1	Pu-241	8.250E-03	8.250E-03	DCF2(15)
B-1	Pu-241+D	8.254E-03	8.250E-03	DCF2(16)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(17)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(18)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(19)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(20)
B-1	U-233	1.350E-01	1.350E-01	DCF2(21)
B-1	U-234	1.320E-01	1.320E-01	DCF2(22)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(23)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Co-60	2.690E-05	2.690E-05	DCF3(3)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(4)
D-1	Eu-152	6.480E-06	6.480E-06	DCF3(5)
D-1	Eu-154	9.550E-06	9.550E-06	DCF3(7)
D-1	Gd-152	1.610E-04	1.610E-04	DCF3(8)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(9)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(10)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(11)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(12)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(14)
D-1	Pu-241	6.840E-05	6.840E-05	DCF3(15)
D-1	Pu-241+D	7.157E-05	6.840E-05	DCF3(16)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(17)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(18)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(19)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(20)
D-1	U-233	2.890E-04	2.890E-04	DCF3(21)
D-1	U-234	2.830E-04	2.830E-04	DCF3(22)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(23)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				

D-34	Co-60	, plant/soil concentration ratio, dimensionless	8.000E-02	8.000E-02	RTF(3,1)
D-34	Co-60	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(3,2)
D-34	Co-60	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(3,3)
D-34					
D-34	Cs-137+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Cs-137+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(4,2)
D-34	Cs-137+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(4,3)
D-34					
D-34	Eu-152	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(5,1)
D-34	Eu-152	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(5,2)
D-34	Eu-152	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(5,3)
D-34					
D-34	Eu-154	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(7,1)
D-34	Eu-154	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(7,2)
D-34	Eu-154	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(7,3)
D-34					
D-34	Gd-152	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	Gd-152	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(8,2)
D-34	Gd-152	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(8,3)
D-34					
D-34	Np-237+D	, plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(9,1)
D-34	Np-237+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Np-237+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(9,3)
D-34					
D-34	Pa-231	, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(10,1)
D-34	Pa-231	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(10,2)
D-34	Pa-231	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(10,3)
D-34					
D-34	Pb-210+D	, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(11,1)
D-34	Pb-210+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(11,2)
D-34	Pb-210+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(11,3)
D-34					
D-34	Pu-238	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(12,1)
D-34	Pu-238	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(12,2)
D-34	Pu-238	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(12,3)
D-34					
D-34	Pu-239	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(14,1)
D-34	Pu-239	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(14,2)
D-34	Pu-239	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(14,3)
D-34					
D-34	Pu-241	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(15,1)
D-34	Pu-241	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(15,2)
D-34	Pu-241	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(15,3)
D-34					

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0		Current	Base	Parameter

Menu	Parameter	Value	Case*	Name
D-34	Pu-241+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(16,1)
D-34	Pu-241+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(16,2)
D-34	Pu-241+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(16,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(17,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(17,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(17,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(18,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(18,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(18,3)
D-34				
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(19,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(19,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(19,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(20,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(20,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(20,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(21,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(21,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(22,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(22,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(22,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(23,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(23,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(23,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Co-60 , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Co-60 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(3,2)
D-5				
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(4,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(4,2)
D-5				
D-5	Eu-152 , fish	5.000E+01	5.000E+01	BIOFAC(5,1)
D-5	Eu-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(5,2)
D-5				
D-5	Eu-154 , fish	5.000E+01	5.000E+01	BIOFAC(7,1)

D-5	Eu-154 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(7,2)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(8,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(8,2)
D-5				
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(9,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(9,2)
D-5				
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(10,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(10,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(11,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(11,2)
D-5				
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(12,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(12,2)
D-5				
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(14,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(14,2)
D-5				
D-5	Pu-241 , fish	3.000E+01	3.000E+01	BIOFAC(15,1)
D-5	Pu-241 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(15,2)
D-5				
D-5	Pu-241+D , fish	3.000E+01	3.000E+01	BIOFAC(16,1)
D-5	Pu-241+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(16,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(17,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(17,2)
D-5				
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(18,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(18,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(19,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(19,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(20,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(20,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(21,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(22,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(22,2)

D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(23,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(23,2)

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

Site-Specific Parameter Summary

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.310E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.100E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	3.620E+02	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): Am-241	1.700E-01	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Co-60	6.690E-03	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Cs-137	2.550E+00	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Eu-152	1.500E-01	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Eu-154	1.400E-02	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Pu-238	3.190E-03	0.000E+00	---	S1(12)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.020E-01	0.000E+00	---	S1(14)
R012	Initial principal radionuclide (pCi/g): Pu-241	9.110E-01	0.000E+00	---	S1(15)
R012	Initial principal radionuclide (pCi/g): Sr-90	5.540E-02	0.000E+00	---	S1(18)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Co-60	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Eu-152	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): Eu-154	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(12)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(14)
R012	Concentration in groundwater (pCi/L): Pu-241	not used	0.000E+00	---	W1(15)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(18)
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)	1.500E+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)	2.270E+02	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)	9.700E-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)

0 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)	5.440E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	Romberg failures occurred	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.300E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	6.100E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	9.140E+00	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)	3.050E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+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)	2.270E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.349E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)

R016	Distribution coefficients for Co-60				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+03	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+03	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	6.000E+01	1.000E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.694E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	1.900E+03	4.600E+03	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	1.900E+03	4.600E+03	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	2.800E+02	4.600E+03	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.807E-05	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for Eu-152				
R016	Contaminated zone (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	2.450E+02	-1.000E+00	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.665E-05	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Eu-154				
R016	Contaminated zone (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	2.450E+02	-1.000E+00	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.665E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for Pu-241				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(15)

R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	2.000E+01	3.000E+01	---	DCNUCC(18)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	3.000E+01	---	DCNUCU(18,1)
R016	Saturated zone (cm**3/g)	1.500E+01	3.000E+01	---	DCNUCS(18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.644E-03	ALEACH(18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(18)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	1.500E+03	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+03	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	4.500E+02	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.555E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Gd-152				
R016	Contaminated zone (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	2.450E+02	-1.000E+00	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.665E-05	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+00	-1.000E+00	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.119E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.963E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(11)

R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.694E-05	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(17)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(17,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.861E-06	ALEACH(17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(17)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.200E+03	6.000E+04	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.616E-05	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(20)
R016	Unsaturated zone 1 (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCU(20,1)
R016	Saturated zone (cm**3/g)	3.200E+03	6.000E+04	---	DCNUCS(20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.616E-05	ALEACH(20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(20)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(21)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(21,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(21)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.516E-03	ALEACH(21)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(21)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(22)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(22,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(22)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.516E-03	ALEACH(22)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(22)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(23)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(23,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(23)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.516E-03	ALEACH(23)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(23)

R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-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)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)

R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+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)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+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)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	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)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-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

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name

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
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	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	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	128	---	---	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

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 14
Summary : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.rad

Contaminated Zone Dimensions

Area: 131000.00 square meters
Thickness: 6.10 meters
Cover Depth: 0.00 meters

Initial Soil Concentrations, pCi/g

Am-241	1.700E-01
Co-60	6.690E-03
Cs-137	2.550E+00
Eu-152	1.500E-01
Eu-154	1.400E-02
Pu-238	3.190E-03
Pu-239	1.020E-01
Pu-241	9.110E-01
Sr-90	5.540E-02

0

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):	8.466E+00	8.250E+00	7.838E+00	6.578E+00	4.089E+00	9.746E-01	1.842E-01	1.060E-01
M(t):	3.387E-01	3.300E-01	3.135E-01	2.631E-01	1.636E-01	3.898E-02	7.370E-03	4.240E-03

0Maximum TDOSE(t): 8.466E+00 mrem/yr at t = 0.000E+00 years
1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 15
Summary : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.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
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	4.451E-03	0.0005	6.255E-03	0.0007	0.000E+00	0.0000	1.078E-01	0.0127	1.107E-03	0.0001	6.318E-05	0.0000	1.693E-02	0.0020

Co-60	5.978E-02	0.0071	1.139E-07	0.0000	0.000E+00	0.0000	2.347E-03	0.0003	1.262E-03	0.0001	1.520E-04	0.0000	4.616E-06	0.0000
Cs-137	5.058E+00	0.5975	6.669E-06	0.0000	0.000E+00	0.0000	8.772E-01	0.1036	7.671E-01	0.0906	2.505E-01	0.0296	3.450E-03	0.0004
Eu-152	6.031E-01	0.0712	2.679E-06	0.0000	0.000E+00	0.0000	4.123E-04	0.0000	8.001E-05	0.0000	2.779E-06	0.0000	2.593E-05	0.0000
Eu-154	6.083E-02	0.0072	3.193E-07	0.0000	0.000E+00	0.0000	5.596E-05	0.0000	1.086E-05	0.0000	3.772E-07	0.0000	3.519E-06	0.0000
Pu-238	2.884E-07	0.0000	1.033E-04	0.0000	0.000E+00	0.0000	1.772E-03	0.0002	3.641E-05	0.0000	5.195E-07	0.0000	2.783E-04	0.0000
Pu-239	1.789E-05	0.0000	3.629E-03	0.0004	0.000E+00	0.0000	6.292E-02	0.0074	1.293E-03	0.0002	1.845E-05	0.0000	9.884E-03	0.0012
Pu-241	2.884E-05	0.0000	6.350E-04	0.0001	0.000E+00	0.0000	1.106E-02	0.0013	2.230E-04	0.0000	3.375E-06	0.0000	1.737E-03	0.0002
Sr-90	7.926E-04	0.0001	5.933E-06	0.0000	0.000E+00	0.0000	4.361E-01	0.0515	8.804E-02	0.0104	2.614E-02	0.0031	2.287E-04	0.0000
Total	5.787E+00	0.6836	1.064E-02	0.0013	0.000E+00	0.0000	1.500E+00	0.1771	8.592E-01	0.1015	2.769E-01	0.0327	3.254E-02	0.0038

0

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

0
0

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.
Am-241	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	1.366E-01	0.0161
Co-60	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	6.355E-02	0.0075
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	6.957E+00	0.8217
Eu-152	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	6.037E-01	0.0713
Eu-154	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	6.090E-02	0.0072
Pu-238	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	2.191E-03	0.0003
Pu-239	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	7.777E-02	0.0092
Pu-241	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	1.368E-02	0.0016
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	5.513E-01	0.0651
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	8.466E+00	1.0000

0*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)

0
0

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.
Am-241	4.444E-03	0.0005	6.245E-03	0.0008	0.000E+00	0.0000	1.076E-01	0.0130	1.105E-03	0.0001	6.308E-05	0.0000	1.690E-02	0.0020
Co-60	5.241E-02	0.0064	9.982E-08	0.0000	0.000E+00	0.0000	2.058E-03	0.0002	1.107E-03	0.0001	1.333E-04	0.0000	4.047E-06	0.0000
Cs-137	4.943E+00	0.5991	6.517E-06	0.0000	0.000E+00	0.0000	8.572E-01	0.1039	7.496E-01	0.0909	2.448E-01	0.0297	3.371E-03	0.0004
Eu-152	5.725E-01	0.0694	2.543E-06	0.0000	0.000E+00	0.0000	3.913E-04	0.0000	7.595E-05	0.0000	2.638E-06	0.0000	2.461E-05	0.0000
Eu-154	5.622E-02	0.0068	2.951E-07	0.0000	0.000E+00	0.0000	5.172E-05	0.0000	1.004E-05	0.0000	3.486E-07	0.0000	3.253E-06	0.0000
Pu-238	2.861E-07	0.0000	1.025E-04	0.0000	0.000E+00	0.0000	1.758E-03	0.0002	3.612E-05	0.0000	5.155E-07	0.0000	2.761E-04	0.0000
Pu-239	1.789E-05	0.0000	3.629E-03	0.0004	0.000E+00	0.0000	6.292E-02	0.0076	1.293E-03	0.0002	1.845E-05	0.0000	9.883E-03	0.0012
Pu-241	6.480E-05	0.0000	6.576E-04	0.0001	0.000E+00	0.0000	1.144E-02	0.0014	2.218E-04	0.0000	3.746E-06	0.0000	1.797E-03	0.0002
Sr-90	7.719E-04	0.0001	5.779E-06	0.0000	0.000E+00	0.0000	4.247E-01	0.0515	8.574E-02	0.0104	2.546E-02	0.0031	2.227E-04	0.0000

Total	5.629E+00	0.6823	1.065E-02	0.0013	0.000E+00	0.0000	1.468E+00	0.1780	8.392E-01	0.1017	2.704E-01	0.0328	3.248E-02	0.0039

0

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

0

Water Dependent Pathways

0

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.
Am-241	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	1.363E-01	0.0165
Co-60	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	5.571E-02	0.0068
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	6.798E+00	0.8239
Eu-152	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	5.730E-01	0.0695
Eu-154	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	5.628E-02	0.0068
Pu-238	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	2.173E-03	0.0003
Pu-239	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	7.776E-02	0.0094
Pu-241	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	1.419E-02	0.0017
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	5.370E-01	0.0651
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	8.250E+00	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 17
Summary : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.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 = 3.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

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.
Am-241	4.430E-03	0.0006	6.225E-03	0.0008	0.000E+00	0.0000	1.072E-01	0.0137	1.102E-03	0.0001	6.288E-05	0.0000	1.684E-02	0.0021
Co-60	4.028E-02	0.0051	7.672E-08	0.0000	0.000E+00	0.0000	1.582E-03	0.0002	8.505E-04	0.0001	1.024E-04	0.0000	3.110E-06	0.0000
Cs-137	4.719E+00	0.6021	6.222E-06	0.0000	0.000E+00	0.0000	8.184E-01	0.1044	7.157E-01	0.0913	2.337E-01	0.0298	3.219E-03	0.0004
Eu-152	5.159E-01	0.0658	2.292E-06	0.0000	0.000E+00	0.0000	3.526E-04	0.0000	6.844E-05	0.0000	2.377E-06	0.0000	2.218E-05	0.0000
Eu-154	4.802E-02	0.0061	2.521E-07	0.0000	0.000E+00	0.0000	4.418E-05	0.0000	8.573E-06	0.0000	2.978E-07	0.0000	2.778E-06	0.0000
Pu-238	2.816E-07	0.0000	1.009E-04	0.0000	0.000E+00	0.0000	1.730E-03	0.0002	3.555E-05	0.0000	5.076E-07	0.0000	2.718E-04	0.0000
Pu-239	1.789E-05	0.0000	3.628E-03	0.0005	0.000E+00	0.0000	6.291E-02	0.0080	1.293E-03	0.0002	1.844E-05	0.0000	9.882E-03	0.0013
Pu-241	1.315E-04	0.0000	6.994E-04	0.0001	0.000E+00	0.0000	1.215E-02	0.0016	2.195E-04	0.0000	4.433E-06	0.0000	1.909E-03	0.0002
Sr-90	7.322E-04	0.0001	5.481E-06	0.0000	0.000E+00	0.0000	4.029E-01	0.0514	8.133E-02	0.0104	2.415E-02	0.0031	2.113E-04	0.0000
Total	5.329E+00	0.6799	1.067E-02	0.0014	0.000E+00	0.0000	1.407E+00	0.1796	8.006E-01	0.1021	2.580E-01	0.0329	3.237E-02	0.0041

0

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

0

Water Dependent Pathways

0

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.

Am-241	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	1.359E-01	0.0173
Co-60	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	4.282E-02	0.0055
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	6.490E+00	0.8281
Eu-152	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	5.164E-01	0.0659
Eu-154	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	4.807E-02	0.0061
Pu-238	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	2.139E-03	0.0003
Pu-239	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	7.775E-02	0.0099
Pu-241	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	1.511E-02	0.0019
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	5.093E-01	0.0650
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	7.838E+00	1.0000

0*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

0
0 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.
Am-241	4.380E-03	0.0007	6.155E-03	0.0009	0.000E+00	0.0000	1.060E-01	0.0161	1.090E-03	0.0002	6.217E-05	0.0000	1.666E-02	0.0025
Co-60	1.603E-02	0.0024	3.054E-08	0.0000	0.000E+00	0.0000	6.296E-04	0.0001	3.385E-04	0.0001	4.078E-05	0.0000	1.238E-06	0.0000
Cs-137	4.014E+00	0.6101	5.292E-06	0.0000	0.000E+00	0.0000	6.961E-01	0.1058	6.087E-01	0.0925	1.988E-01	0.0302	2.738E-03	0.0004
Eu-152	3.583E-01	0.0545	1.592E-06	0.0000	0.000E+00	0.0000	2.449E-04	0.0000	4.754E-05	0.0000	1.651E-06	0.0000	1.540E-05	0.0000
Eu-154	2.765E-02	0.0042	1.452E-07	0.0000	0.000E+00	0.0000	2.544E-05	0.0000	4.937E-06	0.0000	1.715E-07	0.0000	1.600E-06	0.0000
Pu-238	2.664E-07	0.0000	9.542E-05	0.0000	0.000E+00	0.0000	1.637E-03	0.0002	3.363E-05	0.0000	4.807E-07	0.0000	2.571E-04	0.0000
Pu-239	1.788E-05	0.0000	3.627E-03	0.0006	0.000E+00	0.0000	6.288E-02	0.0096	1.292E-03	0.0002	1.843E-05	0.0000	9.877E-03	0.0015
Pu-241	3.187E-04	0.0000	8.152E-04	0.0001	0.000E+00	0.0000	1.412E-02	0.0021	2.126E-04	0.0000	6.356E-06	0.0000	2.217E-03	0.0003
Sr-90	6.084E-04	0.0001	4.555E-06	0.0000	0.000E+00	0.0000	3.348E-01	0.0509	6.758E-02	0.0103	2.007E-02	0.0031	1.755E-04	0.0000
Total	4.421E+00	0.6721	1.070E-02	0.0016	0.000E+00	0.0000	1.216E+00	0.1849	6.793E-01	0.1033	2.190E-01	0.0333	3.194E-02	0.0049

0

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

0
0 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.
Am-241	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	1.344E-01	0.0204
Co-60	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	1.704E-02	0.0026
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	5.520E+00	0.8391
Eu-152	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	3.587E-01	0.0545
Eu-154	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	2.768E-02	0.0042
Pu-238	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	2.023E-03	0.0003
Pu-239	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	7.771E-02	0.0118
Pu-241	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	1.769E-02	0.0027
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	4.232E-01	0.0643

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	6.578E+00	1.0000

0*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
0
Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	4.242E-03	0.0010	5.960E-03	0.0015	0.000E+00	0.0000	1.027E-01	0.0251	1.056E-03	0.0003	6.021E-05	0.0000	1.613E-02	0.0039
Co-60	1.153E-03	0.0003	2.197E-09	0.0000	0.000E+00	0.0000	4.529E-05	0.0000	2.435E-05	0.0000	2.933E-06	0.0000	8.906E-08	0.0000
Cs-137	2.527E+00	0.6180	3.332E-06	0.0000	0.000E+00	0.0000	4.383E-01	0.1072	3.832E-01	0.0937	1.251E-01	0.0306	1.724E-03	0.0004
Eu-152	1.265E-01	0.0309	5.619E-07	0.0000	0.000E+00	0.0000	8.646E-05	0.0000	1.678E-05	0.0000	5.828E-07	0.0000	5.438E-06	0.0000
Eu-154	5.715E-03	0.0014	3.000E-08	0.0000	0.000E+00	0.0000	5.258E-06	0.0000	1.020E-06	0.0000	3.544E-08	0.0000	3.307E-07	0.0000
Pu-238	2.273E-07	0.0000	8.140E-05	0.0000	0.000E+00	0.0000	1.396E-03	0.0003	2.869E-05	0.0000	4.116E-07	0.0000	2.193E-04	0.0001
Pu-239	1.786E-05	0.0000	3.621E-03	0.0009	0.000E+00	0.0000	6.279E-02	0.0154	1.290E-03	0.0003	1.841E-05	0.0000	9.863E-03	0.0024
Pu-241	5.960E-04	0.0001	9.776E-04	0.0002	0.000E+00	0.0000	1.687E-02	0.0041	1.992E-04	0.0000	9.158E-06	0.0000	2.650E-03	0.0006
Sr-90	3.585E-04	0.0001	2.684E-06	0.0000	0.000E+00	0.0000	1.973E-01	0.0482	3.982E-02	0.0097	1.182E-02	0.0029	1.034E-04	0.0000
Total	2.666E+00	0.6519	1.065E-02	0.0026	0.000E+00	0.0000	8.194E-01	0.2004	4.257E-01	0.1041	1.371E-01	0.0335	3.069E-02	0.0075

0

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
0
Water Dependent Pathways
0

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.
Am-241	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	1.301E-01	0.0318
Co-60	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	1.226E-03	0.0003
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	3.475E+00	0.8499
Eu-152	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	1.266E-01	0.0310
Eu-154	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	5.721E-03	0.0014
Pu-238	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	1.726E-03	0.0004
Pu-239	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	7.760E-02	0.0190
Pu-241	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	2.130E-02	0.0052
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	2.494E-01	0.0610
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	4.089E+00	1.0000

0*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

0 Water Independent Pathways (Inhalation excludes radon)

0 Radio-Nuclide	Ground mrem/yr	Ground fract.	Inhalation mrem/yr	Inhalation fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	Soil mrem/yr	Soil fract.
Am-241	3.792E-03	0.0039	5.325E-03	0.0055	0.000E+00	0.0000	9.180E-02	0.0942	9.448E-04	0.0010	5.380E-05	0.0001	1.441E-02	0.0148
Co-60	1.152E-07	0.0000	2.193E-13	0.0000	0.000E+00	0.0000	4.522E-09	0.0000	2.431E-09	0.0000	2.929E-10	0.0000	8.892E-12	0.0000
Cs-137	5.004E-01	0.5135	6.598E-07	0.0000	0.000E+00	0.0000	8.679E-02	0.0891	7.590E-02	0.0779	2.478E-02	0.0254	3.413E-04	0.0004
Eu-152	3.305E-03	0.0034	1.468E-08	0.0000	0.000E+00	0.0000	2.259E-06	0.0000	4.385E-07	0.0000	1.523E-08	0.0000	1.421E-07	0.0000
Eu-154	2.293E-05	0.0000	1.204E-10	0.0000	0.000E+00	0.0000	2.110E-08	0.0000	4.094E-09	0.0000	1.422E-10	0.0000	1.327E-09	0.0000
Pu-238	1.304E-07	0.0000	4.668E-05	0.0000	0.000E+00	0.0000	8.007E-04	0.0008	1.645E-05	0.0000	2.399E-07	0.0000	1.258E-04	0.0001
Pu-239	1.777E-05	0.0000	3.603E-03	0.0037	0.000E+00	0.0000	6.246E-02	0.0641	1.284E-03	0.0013	1.831E-05	0.0000	9.812E-03	0.0101
Pu-241	6.933E-04	0.0007	9.785E-04	0.0010	0.000E+00	0.0000	1.687E-02	0.0173	1.744E-04	0.0002	9.861E-06	0.0000	2.648E-03	0.0027
Sr-90	5.629E-05	0.0001	4.214E-07	0.0000	0.000E+00	0.0000	3.098E-02	0.0318	6.253E-03	0.0064	1.857E-03	0.0019	1.624E-05	0.0000
Total	5.083E-01	0.5216	9.954E-03	0.0102	0.000E+00	0.0000	2.897E-01	0.2972	8.457E-02	0.0868	2.672E-02	0.0274	2.735E-02	0.0281

0

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

0 Water Dependent Pathways

0 Radio-Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.
Am-241	2.355E-09	0.0000	1.200E-11	0.0000	0.000E+00	0.0000	3.617E-10	0.0000	1.699E-11	0.0000	6.600E-11	0.0000	1.163E-01	0.1194
Co-60	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	1.224E-07	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	6.883E-01	0.7062
Eu-152	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	3.308E-03	0.0034
Eu-154	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	2.296E-05	0.0000
Pu-238	2.160E-06	0.0000	1.101E-08	0.0000	0.000E+00	0.0000	3.320E-07	0.0000	1.566E-08	0.0000	6.064E-08	0.0000	9.925E-04	0.0010
Pu-239	2.548E-08	0.0000	1.300E-10	0.0000	0.000E+00	0.0000	3.917E-09	0.0000	1.853E-10	0.0000	7.151E-10	0.0000	7.720E-02	0.0792
Pu-241	1.452E-10	0.0000	7.393E-13	0.0000	0.000E+00	0.0000	2.228E-11	0.0000	1.043E-12	0.0000	4.063E-12	0.0000	2.137E-02	0.0219
Sr-90	1.927E-02	0.0198	3.766E-04	0.0004	0.000E+00	0.0000	3.194E-03	0.0033	3.322E-03	0.0034	1.812E-03	0.0019	6.713E-02	0.0689
Total	1.927E-02	0.0198	3.767E-04	0.0004	0.000E+00	0.0000	3.195E-03	0.0033	3.322E-03	0.0034	1.812E-03	0.0019	9.746E-01	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 21
Summary : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.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 = 3.000E+02 years

0 Water Independent Pathways (Inhalation excludes radon)

0 Radio-Nuclide	Ground mrem/yr	Ground fract.	Inhalation mrem/yr	Inhalation fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	Soil mrem/yr	Soil fract.
Am-241	2.752E-03	0.0149	3.859E-03	0.0209	0.000E+00	0.0000	6.662E-02	0.3616	6.879E-04	0.0037	3.901E-05	0.0002	1.044E-02	0.0567
Co-60	4.273E-19	0.0000	8.139E-25	0.0000	0.000E+00	0.0000	1.678E-20	0.0000	9.022E-21	0.0000	1.087E-21	0.0000	3.300E-23	0.0000
Cs-137	4.898E-03	0.0266	6.458E-09	0.0000	0.000E+00	0.0000	8.495E-04	0.0046	7.429E-04	0.0040	2.426E-04	0.0013	3.341E-06	0.0000
Eu-152	9.928E-08	0.0000	4.411E-13	0.0000	0.000E+00	0.0000	6.786E-11	0.0000	1.317E-11	0.0000	4.574E-13	0.0000	4.268E-12	0.0000

Eu-154	3.259E-12	0.0000	1.711E-17	0.0000	0.000E+00	0.0000	2.998E-15	0.0000	5.818E-16	0.0000	2.021E-17	0.0000	1.885E-16	0.0000
Pu-238	2.719E-08	0.0000	9.535E-06	0.0001	0.000E+00	0.0000	1.635E-04	0.0009	3.361E-06	0.0000	5.316E-08	0.0000	2.568E-05	0.0001
Pu-239	1.751E-05	0.0001	3.550E-03	0.0193	0.000E+00	0.0000	6.156E-02	0.3341	1.265E-03	0.0069	1.805E-05	0.0001	9.669E-03	0.0525
Pu-241	5.078E-04	0.0028	7.122E-04	0.0039	0.000E+00	0.0000	1.229E-02	0.0667	1.269E-04	0.0007	7.198E-06	0.0000	1.927E-03	0.0105
Sr-90	2.840E-07	0.0000	2.126E-09	0.0000	0.000E+00	0.0000	1.563E-04	0.0008	3.154E-05	0.0002	9.366E-06	0.0001	8.194E-08	0.0000
Total	8.176E-03	0.0444	8.131E-03	0.0441	0.000E+00	0.0000	1.416E-01	0.7688	2.857E-03	0.0155	3.162E-04	0.0017	2.207E-02	0.1198

0

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

0
Water Dependent Pathways

0

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.
Am-241	6.460E-04	0.0035	1.592E-05	0.0001	0.000E+00	0.0000	9.983E-05	0.0005	1.383E-05	0.0001	1.530E-07	0.0000	8.518E-02	0.4623
Co-60	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	4.543E-19	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	6.737E-03	0.0366
Eu-152	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	9.937E-08	0.0000
Eu-154	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	3.262E-12	0.0000
Pu-238	5.570E-06	0.0000	2.841E-08	0.0000	0.000E+00	0.0000	8.570E-07	0.0000	4.056E-08	0.0000	1.566E-07	0.0000	2.088E-04	0.0011
Pu-239	1.437E-07	0.0000	7.411E-10	0.0000	0.000E+00	0.0000	2.211E-08	0.0000	1.060E-09	0.0000	4.031E-09	0.0000	7.608E-02	0.4129
Pu-241	1.060E-04	0.0006	2.612E-06	0.0000	0.000E+00	0.0000	1.638E-05	0.0001	2.269E-06	0.0000	2.509E-08	0.0000	1.570E-02	0.0852
Sr-90	9.720E-05	0.0005	1.900E-06	0.0000	0.000E+00	0.0000	1.611E-05	0.0001	1.676E-05	0.0001	9.141E-06	0.0000	3.386E-04	0.0018
Total	8.549E-04	0.0046	2.046E-05	0.0001	0.000E+00	0.0000	1.332E-04	0.0007	3.290E-05	0.0002	9.480E-06	0.0001	1.842E-01	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 22
Summary : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.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 = 1.000E+03 years

0
Water Independent Pathways (Inhalation excludes radon)

0

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.
Am-241	8.952E-04	0.0084	1.251E-03	0.0118	0.000E+00	0.0000	2.167E-02	0.2044	2.258E-04	0.0021	1.266E-05	0.0001	3.384E-03	0.0319
Co-60	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	4.544E-10	0.0000	5.992E-16	0.0000	0.000E+00	0.0000	7.881E-11	0.0000	6.892E-11	0.0000	2.250E-11	0.0000	3.100E-13	0.0000
Eu-152	1.474E-23	0.0000	9.746E-17	0.0000	0.000E+00	0.0000	3.389E-16	0.0000	6.577E-17	0.0000	9.137E-19	0.0000	2.131E-17	0.0000
Eu-154	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
Pu-238	4.392E-09	0.0000	3.736E-08	0.0000	0.000E+00	0.0000	6.498E-07	0.0000	1.361E-08	0.0000	1.124E-09	0.0000	9.936E-08	0.0000
Pu-239	1.664E-05	0.0002	3.373E-03	0.0318	0.000E+00	0.0000	5.848E-02	0.5518	1.202E-03	0.0113	1.714E-05	0.0002	9.186E-03	0.0867
Pu-241	1.652E-04	0.0016	2.308E-04	0.0022	0.000E+00	0.0000	3.999E-03	0.0377	4.165E-05	0.0004	2.335E-06	0.0000	6.245E-04	0.0059
Sr-90	2.589E-15	0.0000	1.938E-17	0.0000	0.000E+00	0.0000	1.425E-12	0.0000	2.876E-13	0.0000	8.538E-14	0.0000	7.470E-16	0.0000
Total	1.077E-03	0.0102	4.854E-03	0.0458	0.000E+00	0.0000	8.415E-02	0.7939	1.469E-03	0.0139	3.214E-05	0.0003	1.319E-02	0.1245

0

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

0
0 Water Dependent Pathways

Radio-Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.
Am-241	8.541E-04	0.0081	2.105E-05	0.0002	0.000E+00	0.0000	1.320E-04	0.0012	1.830E-05	0.0002	2.041E-07	0.0000	2.846E-02	0.2686
Co-60	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	6.250E-10	0.0000
Eu-152	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	5.243E-16	0.0000
Eu-154	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
Pu-238	7.310E-07	0.0000	3.975E-09	0.0000	0.000E+00	0.0000	1.125E-07	0.0000	5.352E-09	0.0000	2.050E-08	0.0000	1.679E-06	0.0000
Pu-239	2.484E-07	0.0000	1.351E-09	0.0000	0.000E+00	0.0000	3.822E-08	0.0000	1.917E-09	0.0000	6.894E-09	0.0000	7.227E-02	0.6819
Pu-241	1.547E-04	0.0015	3.811E-06	0.0000	0.000E+00	0.0000	2.390E-05	0.0002	3.313E-06	0.0000	3.695E-08	0.0000	5.249E-03	0.0495
Sr-90	8.864E-13	0.0000	1.733E-14	0.0000	0.000E+00	0.0000	1.470E-13	0.0000	1.528E-13	0.0000	8.334E-14	0.0000	3.088E-12	0.0000
Total	1.010E-03	0.0095	2.487E-05	0.0002	0.000E+00	0.0000	1.561E-04	0.0015	2.162E-05	0.0002	2.685E-07	0.0000	1.060E-01	1.0000

0*Sum of all water independent and dependent pathways.

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

0 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
Am-241	Am-241	1.000E+00	8.033E-01	8.020E-01	7.994E-01	7.904E-01	7.654E-01	6.838E-01	4.955E-01	1.605E-01
Am-241	Np-237+D	1.000E+00	2.554E-06	7.951E-06	1.874E-05	5.587E-05	1.567E-04	4.535E-04	5.498E-03	6.885E-03
Am-241	U-233	1.000E+00	6.010E-14	3.363E-13	1.559E-12	1.271E-11	9.944E-11	1.744E-08	4.118E-07	1.004E-06
Am-241	Th-229+D	1.000E+00	1.230E-17	1.708E-16	1.929E-15	4.985E-14	1.171E-12	3.734E-11	8.949E-10	1.157E-08
Am-241	ΣDSR(j)		8.033E-01	8.020E-01	7.994E-01	7.905E-01	7.655E-01	6.843E-01	5.010E-01	1.674E-01
0Co-60	Co-60	1.000E+00	9.499E+00	8.328E+00	6.401E+00	2.548E+00	1.833E-01	1.830E-05	6.790E-17	0.000E+00
0Cs-137+D	Cs-137+D	1.000E+00	2.728E+00	2.666E+00	2.545E+00	2.165E+00	1.363E+00	2.699E-01	2.642E-03	2.451E-10
0Eu-152	Eu-152	7.208E-01	2.901E+00	2.754E+00	2.481E+00	1.723E+00	6.084E-01	1.590E-02	4.775E-07	7.090E-23
0Eu-152	Eu-152	2.792E-01	1.124E+00	1.067E+00	9.611E-01	6.676E-01	2.356E-01	6.158E-03	1.850E-07	2.746E-23
Eu-152	Gd-152	2.792E-01	9.548E-17	2.800E-16	6.213E-16	1.571E-15	2.965E-15	3.692E-15	3.662E-15	3.496E-15
Eu-152	ΣDSR(j)		1.124E+00	1.067E+00	9.611E-01	6.676E-01	2.356E-01	6.158E-03	1.850E-07	3.496E-15
0Eu-154	Eu-154	1.000E+00	4.350E+00	4.020E+00	3.434E+00	1.977E+00	4.087E-01	1.640E-03	2.330E-10	2.521E-34
0Pu-238	Pu-238	1.840E-09	1.264E-09	1.254E-09	1.234E-09	1.167E-09	9.957E-10	5.710E-10	1.166E-10	4.481E-13
0Pu-238	Pu-238	1.000E+00	6.868E-01	6.813E-01	6.706E-01	6.343E-01	5.411E-01	3.103E-01	6.335E-02	2.435E-04
Pu-238	U-234	1.000E+00	2.132E-07	6.496E-07	1.510E-06	4.369E-06	1.134E-05	8.337E-04	2.111E-03	2.753E-04
Pu-238	Th-230	1.000E+00	6.590E-13	4.357E-12	2.227E-11	1.912E-10	1.488E-09	1.352E-08	8.670E-08	2.031E-07
Pu-238	Ra-226+D	1.000E+00	6.887E-15	1.080E-13	1.283E-12	3.377E-11	7.823E-10	2.295E-08	3.645E-07	3.353E-06
Pu-238	Pb-210+D	1.000E+00	5.578E-17	1.476E-15	3.293E-14	2.257E-12	1.323E-10	9.226E-09	2.502E-07	3.878E-06
Pu-238	ΣDSR(j)		6.868E-01	6.813E-01	6.706E-01	6.343E-01	5.411E-01	3.111E-01	6.546E-02	5.263E-04
0Pu-239	Pu-239	1.000E+00	7.624E-01	7.624E-01	7.623E-01	7.619E-01	7.607E-01	7.569E-01	7.458E-01	7.086E-01
Pu-239	U-235+D	1.000E+00	2.915E-10	8.774E-10	2.044E-09	6.061E-09	1.700E-08	3.479E-07	1.787E-06	3.025E-06
Pu-239	Pa-231	1.000E+00	7.088E-14	5.282E-13	2.865E-12	2.580E-11	2.135E-10	2.192E-09	1.715E-08	1.086E-07
Pu-239	Ac-227+D	1.000E+00	3.282E-16	4.232E-15	4.432E-14	1.045E-12	2.127E-11	5.051E-10	7.135E-09	5.733E-08
Pu-239	ΣDSR(j)		7.624E-01	7.624E-01	7.623E-01	7.619E-01	7.607E-01	7.569E-01	7.459E-01	7.086E-01

0Pu-241	Pu-241	1.000E+00	1.438E-02	1.370E-02	1.244E-02	8.882E-03	3.389E-03	1.162E-04	7.594E-09	1.712E-23
Pu-241	Am-241	1.000E+00	6.345E-04	1.861E-03	4.139E-03	1.053E-02	1.999E-02	2.333E-02	1.707E-02	5.529E-03
Pu-241	Np-237+D	1.000E+00	1.296E-09	9.472E-09	4.969E-08	4.016E-07	2.518E-06	1.236E-05	1.697E-04	2.327E-04
Pu-241	U-233	1.000E+00	2.634E-17	3.079E-16	2.981E-15	6.474E-14	1.189E-12	2.108E-10	1.227E-08	3.355E-08
Pu-241	Th-229+D	1.000E+00	4.084E-21	1.136E-19	2.692E-18	1.917E-16	1.107E-14	7.364E-13	2.485E-11	3.732E-10
Pu-241	ΣDSR(j)		1.501E-02	1.556E-02	1.658E-02	1.941E-02	2.338E-02	2.346E-02	1.723E-02	5.761E-03
0Pu-241+D	Pu-241+D	2.450E-05	7.921E-06	7.548E-06	6.855E-06	4.892E-06	1.867E-06	6.402E-08	4.183E-12	9.432E-27
Pu-241+D	Np-237+D	2.450E-05	6.167E-11	1.881E-10	4.237E-10	1.083E-09	2.047E-09	2.317E-09	1.418E-08	3.217E-09
Pu-241+D	U-233	2.450E-05	1.454E-18	8.020E-18	3.608E-17	2.654E-16	1.590E-15	2.799E-13	1.367E-12	7.216E-13
Pu-241+D	Th-229+D	2.450E-05	2.984E-22	4.104E-21	4.535E-20	1.085E-18	2.081E-17	3.914E-16	4.250E-15	1.800E-14
Pu-241+D	ΣDSR(j)		7.921E-06	7.548E-06	6.855E-06	4.893E-06	1.869E-06	6.634E-08	1.419E-08	3.218E-09

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

0 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
Sr-90+D	Sr-90+D	1.000E+00	9.952E+00	9.692E+00	9.193E+00	7.639E+00	4.501E+00	1.212E+00	6.113E-03	5.573E-11

The DSR includes contributions from associated (half-life ó 180 days) daughters.
0

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

0Nuclide (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
Am-241	3.112E+01	3.117E+01	3.127E+01	3.163E+01	3.266E+01	3.654E+01	4.990E+01	1.493E+02
Co-60	2.632E+00	3.002E+00	3.906E+00	9.812E+00	1.364E+02	1.366E+06	*1.132E+15	*1.132E+15
Cs-137	9.164E+00	9.378E+00	9.822E+00	1.155E+01	1.834E+01	9.263E+01	9.463E+03	1.020E+11
Eu-152	6.212E+00	6.544E+00	7.262E+00	1.046E+01	2.962E+01	1.134E+03	3.774E+07	*1.765E+14
Eu-154	5.747E+00	6.219E+00	7.281E+00	1.264E+01	6.117E+01	1.525E+04	1.073E+11	*2.639E+14
Pu-238	3.640E+01	3.669E+01	3.728E+01	3.941E+01	4.620E+01	8.035E+01	3.819E+02	4.750E+04
Pu-239	3.279E+01	3.279E+01	3.280E+01	3.281E+01	3.286E+01	3.303E+01	3.352E+01	3.528E+01
Pu-241	1.664E+03	1.605E+03	1.507E+03	1.288E+03	1.069E+03	1.066E+03	1.451E+03	4.339E+03
Sr-90	2.512E+00	2.579E+00	2.719E+00	3.273E+00	5.554E+00	2.063E+01	4.090E+03	4.486E+11

*At specific activity limit
0

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

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.700E-01	0.000E+00	8.033E-01	3.112E+01	8.033E-01	3.112E+01
Co-60	6.690E-03	0.000E+00	9.499E+00	2.632E+00	9.499E+00	2.632E+00
Cs-137	2.550E+00	0.000E+00	2.728E+00	9.164E+00	2.728E+00	9.164E+00

Eu-152	1.500E-01	0.000E+00	4.024E+00	6.212E+00	4.024E+00	6.212E+00
Eu-154	1.400E-02	0.000E+00	4.350E+00	5.747E+00	4.350E+00	5.747E+00
Pu-238	3.190E-03	0.000E+00	6.868E-01	3.640E+01	6.868E-01	3.640E+01
Pu-239	1.020E-01	0.000E+00	7.624E-01	3.279E+01	7.624E-01	3.279E+01
Pu-241	9.110E-01	56.2 ± 0.1	2.443E-02	1.023E+03	1.502E-02	1.664E+03
Sr-90	5.540E-02	0.000E+00	9.952E+00	2.512E+00	9.952E+00	2.512E+00

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

0Nuclide (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
Am-241	Am-241	1.000E+00	1.366E-01	1.363E-01	1.359E-01	1.344E-01	1.301E-01	1.162E-01	8.424E-02	2.729E-02
Am-241	Pu-241	1.000E+00	5.781E-04	1.696E-03	3.770E-03	9.589E-03	1.821E-02	2.125E-02	1.555E-02	5.037E-03
Am-241	ΣDOSE(j)		1.371E-01	1.380E-01	1.397E-01	1.440E-01	1.483E-01	1.375E-01	9.979E-02	3.233E-02
0Np-237	Am-241	1.000E+00	4.343E-07	1.352E-06	3.186E-06	9.497E-06	2.664E-05	7.710E-05	9.346E-04	1.170E-03
Np-237	Pu-241	1.000E+00	1.180E-09	8.629E-09	4.527E-08	3.659E-07	2.294E-06	1.126E-05	1.546E-04	2.120E-04
Np-237	Pu-241	2.450E-05	5.618E-11	1.713E-10	3.860E-10	9.866E-10	1.865E-09	2.111E-09	1.292E-08	2.931E-09
Np-237	ΣDOSE(j)		4.355E-07	1.360E-06	3.231E-06	9.864E-06	2.893E-05	8.836E-05	1.089E-03	1.382E-03
0U-233	Am-241	1.000E+00	1.022E-14	5.717E-14	2.650E-13	2.161E-12	1.690E-11	2.965E-09	7.001E-08	1.706E-07
U-233	Pu-241	1.000E+00	2.399E-17	2.805E-16	2.715E-15	5.898E-14	1.083E-12	1.920E-10	1.118E-08	3.057E-08
U-233	Pu-241	2.450E-05	1.324E-18	7.306E-18	3.287E-17	2.418E-16	1.449E-15	2.550E-13	1.245E-12	6.574E-13
U-233	ΣDOSE(j)		1.024E-14	5.746E-14	2.678E-13	2.220E-12	1.799E-11	3.158E-09	8.119E-08	2.012E-07
0Th-229	Am-241	1.000E+00	2.091E-18	2.903E-17	3.280E-16	8.474E-15	1.990E-13	6.347E-12	1.521E-10	1.967E-09
Th-229	Pu-241	1.000E+00	3.721E-21	1.035E-19	2.452E-18	1.747E-16	1.008E-14	6.708E-13	2.264E-11	3.400E-10
Th-229	Pu-241	2.450E-05	2.718E-22	3.738E-21	4.132E-20	9.883E-19	1.896E-17	3.566E-16	3.872E-15	1.640E-14
Th-229	ΣDOSE(j)		2.095E-18	2.914E-17	3.305E-16	8.649E-15	2.091E-13	7.019E-12	1.748E-10	2.307E-09
0Co-60	Co-60	1.000E+00	6.355E-02	5.571E-02	4.282E-02	1.704E-02	1.226E-03	1.224E-07	4.543E-19	0.000E+00
0Cs-137	Cs-137	1.000E+00	6.957E+00	6.798E+00	6.490E+00	5.520E+00	3.475E+00	6.883E-01	6.737E-03	6.250E-10
0Eu-152	Eu-152	7.208E-01	4.351E-01	4.130E-01	3.722E-01	2.585E-01	9.125E-02	2.385E-03	7.162E-08	1.064E-23
Eu-152	Eu-152	2.792E-01	1.685E-01	1.600E-01	1.442E-01	1.001E-01	3.535E-02	9.237E-04	2.774E-08	4.120E-24
Eu-152	ΣDOSE(j)		6.037E-01	5.730E-01	5.164E-01	3.587E-01	1.266E-01	3.308E-03	9.937E-08	1.476E-23
0Gd-152	Eu-152	2.792E-01	1.432E-17	4.199E-17	9.319E-17	2.356E-16	4.448E-16	5.537E-16	5.494E-16	5.243E-16
0Eu-154	Eu-154	1.000E+00	6.090E-02	5.628E-02	4.807E-02	2.768E-02	5.721E-03	2.296E-05	3.262E-12	0.000E+00
0Pu-238	Pu-238	1.840E-09	4.031E-12	3.999E-12	3.936E-12	3.723E-12	3.176E-12	1.821E-12	3.718E-13	1.430E-15
Pu-238	Pu-238	1.000E+00	2.191E-03	2.173E-03	2.139E-03	2.023E-03	1.726E-03	9.899E-04	2.021E-04	7.769E-07
Pu-238	ΣDOSE(j)		2.191E-03	2.173E-03	2.139E-03	2.023E-03	1.726E-03	9.899E-04	2.021E-04	7.769E-07
0U-234	Pu-238	1.000E+00	6.800E-10	2.072E-09	4.817E-09	1.394E-08	3.617E-08	2.660E-06	6.734E-06	8.783E-07
0Th-230	Pu-238	1.000E+00	2.102E-15	1.390E-14	7.103E-14	6.100E-13	4.747E-12	4.314E-11	2.766E-10	6.478E-10
0Ra-226	Pu-238	1.000E+00	2.197E-17	3.445E-16	4.092E-15	1.077E-13	2.495E-12	7.321E-11	1.163E-09	1.070E-08
0Pb-210	Pu-238	1.000E+00	1.779E-19	4.709E-18	1.050E-16	7.201E-15	4.222E-13	2.943E-11	7.982E-10	1.237E-08
0Pu-239	Pu-239	1.000E+00	7.777E-02	7.776E-02	7.775E-02	7.771E-02	7.760E-02	7.720E-02	7.608E-02	7.227E-02
0U-235	Pu-239	1.000E+00	2.973E-11	8.949E-11	2.085E-10	6.182E-10	1.734E-09	3.548E-08	1.822E-07	3.085E-07
0Pa-231	Pu-239	1.000E+00	7.230E-15	5.388E-14	2.923E-13	2.632E-12	2.177E-11	2.236E-10	1.750E-09	1.108E-08
0Ac-227	Pu-239	1.000E+00	3.348E-17	4.316E-16	4.521E-15	1.066E-13	2.169E-12	5.152E-11	7.278E-10	5.848E-09

Summary : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.rad

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

0Nuclide (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
Pu-241	Pu-241	1.000E+00	1.310E-02	1.248E-02	1.134E-02	8.091E-03	3.087E-03	1.059E-04	6.918E-09	1.560E-23
Pu-241	Pu-241	2.450E-05	7.216E-06	6.876E-06	6.245E-06	4.457E-06	1.700E-06	5.833E-08	3.811E-12	8.592E-27
Pu-241	ΣDOSE(j)		1.311E-02	1.249E-02	1.134E-02	8.096E-03	3.089E-03	1.059E-04	6.922E-09	1.561E-23
0Sr-90	Sr-90	1.000E+00	5.513E-01	5.370E-01	5.093E-01	4.232E-01	2.494E-01	6.713E-02	3.386E-04	3.088E-12

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

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 27
Summary : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.rad

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

0Nuclide (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
Am-241	Am-241	1.000E+00	1.700E-01	1.697E-01	1.692E-01	1.673E-01	1.620E-01	1.447E-01	1.049E-01	3.398E-02
Am-241	Pu-241	1.000E+00	0.000E+00	1.425E-03	4.071E-03	1.149E-02	2.250E-02	2.645E-02	1.935E-02	6.270E-03
Am-241	ΣS(j):		1.700E-01	1.712E-01	1.733E-01	1.788E-01	1.845E-01	1.712E-01	1.242E-01	4.025E-02
0Np-237	Am-241	1.000E+00	0.000E+00	5.496E-08	1.643E-07	5.405E-07	1.562E-06	4.570E-06	9.451E-06	8.624E-06
Np-237	Pu-241	1.000E+00	0.000E+00	2.326E-10	2.023E-09	2.002E-08	1.332E-07	6.667E-07	1.627E-06	1.565E-06
Np-237	Pu-241	2.450E-05	0.000E+00	7.050E-12	2.013E-11	5.672E-11	1.103E-10	1.257E-10	8.311E-11	1.885E-11
Np-237	ΣS(j):		0.000E+00	5.520E-08	1.663E-07	5.605E-07	1.695E-06	5.237E-06	1.108E-05	1.019E-05
0U-233	Am-241	1.000E+00	0.000E+00	1.201E-13	1.076E-12	1.175E-11	1.008E-10	9.463E-10	5.286E-09	1.160E-08
U-233	Pu-241	1.000E+00	0.000E+00	3.402E-16	8.936E-15	3.014E-13	6.350E-12	1.168E-10	8.579E-10	2.079E-09
U-233	Pu-241	2.450E-05	0.000E+00	1.553E-17	1.349E-16	1.329E-15	8.716E-15	4.113E-14	8.368E-14	4.390E-14
U-233	ΣS(j):		0.000E+00	1.205E-13	1.085E-12	1.206E-11	1.071E-10	1.063E-09	6.144E-09	1.368E-08
0Th-229	Am-241	1.000E+00	0.000E+00	3.783E-18	1.018E-16	3.721E-15	9.685E-14	3.158E-12	5.972E-11	6.986E-10
Th-229	Pu-241	1.000E+00	0.000E+00	8.053E-21	6.381E-19	7.307E-17	4.841E-15	3.351E-13	8.991E-12	1.208E-10
Th-229	Pu-241	2.450E-05	0.000E+00	4.909E-22	1.291E-20	4.365E-19	9.271E-18	1.762E-16	1.444E-15	5.767E-15
Th-229	ΣS(j):		0.000E+00	3.792E-18	1.024E-16	3.794E-15	1.017E-13	3.493E-12	6.871E-11	8.194E-10
0Co-60	Co-60	1.000E+00	6.690E-03	5.865E-03	4.508E-03	1.794E-03	1.291E-04	1.289E-08	4.782E-20	0.000E+00
0Cs-137	Cs-137	1.000E+00	2.550E+00	2.492E+00	2.379E+00	2.023E+00	1.274E+00	2.523E-01	2.469E-03	2.291E-10
0Eu-152	Eu-152	7.208E-01	1.081E-01	1.026E-01	9.248E-02	6.424E-02	2.268E-02	5.925E-04	1.780E-08	2.643E-24
Eu-152	Eu-152	2.792E-01	4.188E-02	3.976E-02	3.582E-02	2.488E-02	8.783E-03	2.295E-04	6.894E-09	1.024E-24
Eu-152	ΣS(j):		1.500E-01	1.424E-01	1.283E-01	8.912E-02	3.146E-02	8.221E-04	2.469E-08	3.666E-24
0Gd-152	Eu-152	2.792E-01	0.000E+00	2.619E-16	7.465E-16	2.095E-15	4.075E-15	5.106E-15	5.067E-15	4.836E-15
0Eu-154	Eu-154	1.000E+00	1.400E-02	1.294E-02	1.105E-02	6.364E-03	1.315E-03	5.278E-06	7.500E-13	8.114E-37
0Pu-238	Pu-238	1.840E-09	5.870E-12	5.823E-12	5.731E-12	5.421E-12	4.625E-12	2.652E-12	5.414E-13	2.082E-15
Pu-238	Pu-238	1.000E+00	3.190E-03	3.165E-03	3.115E-03	2.946E-03	2.514E-03	1.441E-03	2.943E-04	1.131E-06
Pu-238	ΣS(j):		3.190E-03	3.165E-03	3.115E-03	2.946E-03	2.514E-03	1.441E-03	2.943E-04	1.131E-06
0U-234	Pu-238	1.000E+00	0.000E+00	8.992E-09	2.667E-08	8.540E-08	2.286E-07	5.140E-07	5.226E-07	5.984E-08
0Th-230	Pu-238	1.000E+00	0.000E+00	4.055E-14	3.622E-13	3.918E-12	3.270E-11	2.812E-10	1.302E-09	2.714E-09
0Ra-226	Pu-238	1.000E+00	0.000E+00	5.860E-18	1.573E-16	5.706E-15	1.453E-13	4.405E-12	7.056E-11	6.488E-10

0Pb-210	Pu-238	1.000E+00	0.000E+00	4.528E-20	3.606E-18	4.195E-16	2.884E-14	2.127E-12	5.526E-11	6.181E-10
0Pu-239	Pu-239	1.000E+00	1.020E-01	1.020E-01	1.020E-01	1.019E-01	1.018E-01	1.013E-01	9.978E-02	9.480E-02
0U-235	Pu-239	1.000E+00	0.000E+00	1.003E-10	2.998E-10	9.867E-10	2.857E-09	8.437E-09	1.838E-08	2.625E-08
0Pa-231	Pu-239	1.000E+00	0.000E+00	1.061E-15	9.530E-15	1.050E-13	9.226E-13	9.444E-12	6.838E-11	4.162E-10
0Ac-227	Pu-239	1.000E+00	0.000E+00	1.118E-17	2.965E-16	1.034E-14	2.369E-13	5.394E-12	5.699E-11	3.990E-10

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

0Nuclide (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
Pu-241	Pu-241	1.000E+00	9.110E-01	8.681E-01	7.884E-01	5.627E-01	2.147E-01	7.364E-03	4.811E-07	1.085E-21
Pu-241	Pu-241	2.450E-05	2.232E-05	2.127E-05	1.932E-05	1.379E-05	5.260E-06	1.804E-07	1.179E-11	2.658E-26
Pu-241	ΣS(j):		9.110E-01	8.681E-01	7.884E-01	5.627E-01	2.147E-01	7.364E-03	4.811E-07	1.085E-21
0Sr-90	Sr-90	1.000E+00	5.540E-02	5.395E-02	5.117E-02	4.253E-02	2.506E-02	3.935E-03	1.985E-05	1.810E-13

THF(i) is the thread fraction of the parent nuclide.
0RESCALC.EXE execution time = 304.31 seconds
Total water/soil iteration failures = 4.900E+02.

Attachment 2. JN-4 Drainpipe Area Resident Farmer Scenario (Summary File)

Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines

Dose Conversion Factor (and Related) Parameter Summary ... 2
Site-Specific Parameter Summary 5
Summary of Pathway Selections 11
Contaminated Zone and Total Dose Summary 12
Total Dose Components
Time = 0.000E+00 13
Time = 1.000E+00 14
Time = 3.000E+00 15
Time = 1.000E+01 16
Time = 3.000E+01 17
Time = 1.000E+02 18
Time = 3.000E+02 19
Time = 1.000E+03 20
Dose/Source Ratios Summed Over All Pathways 21
Single Radionuclide Soil Guidelines 22
Dose Per Nuclide Summed Over All Pathways 23
Soil Concentration Per Nuclide 24

Dose Conversion Factor (and Related) Parameter Summary
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(6)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(8)
B-1	Pu-241	8.250E-03	8.250E-03	DCF2(9)
B-1	Pu-241+D	8.254E-03	8.250E-03	DCF2(10)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(11)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(12)

B-1	Th-230	3.260E-01	3.260E-01	DCF2(13)
B-1	U-233	1.350E-01	1.350E-01	DCF2(14)
B-1	U-234	1.320E-01	1.320E-01	DCF2(15)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(16)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(6)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(8)
D-1	Pu-241	6.840E-05	6.840E-05	DCF3(9)
D-1	Pu-241+D	7.157E-05	6.840E-05	DCF3(10)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(11)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(12)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(13)
D-1	U-233	2.890E-04	2.890E-04	DCF3(14)
D-1	U-234	2.830E-04	2.830E-04	DCF3(15)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(16)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(4,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				

D-34	Pu-238 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(8,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(8,3)
D-34				
D-34	Pu-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(9,1)
D-34	Pu-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(9,2)
D-34	Pu-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(9,3)
D-34				
D-34	Pu-241+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(10,1)
D-34	Pu-241+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(10,2)
D-34	Pu-241+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(10,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(11,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(12,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(12,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(12,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(13,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(13,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(13,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(14,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(14,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(15,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(15,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(15,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(16,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(16,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)

Dose Conversion Factor (and Related) Parameter Summary (continued)

File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(8,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(8,2)
D-5				
D-5	Pu-241 , fish	3.000E+01	3.000E+01	BIOFAC(9,1)
D-5	Pu-241 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(9,2)
D-5				
D-5	Pu-241+D , fish	3.000E+01	3.000E+01	BIOFAC(10,1)
D-5	Pu-241+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(10,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(11,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(11,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(14,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(14,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(15,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(15,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(16,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)

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

Site-Specific Parameter Summary

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name

R011	Area of contaminated zone (m**2)	6.490E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.524E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	8.100E+00	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): Am-241	3.700E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Pu-238	7.400E-02	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-239	3.140E+00	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): Pu-241	2.520E+00	0.000E+00	---	S1(9)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): Pu-241	not used	0.000E+00	---	W1(9)
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)	1.500E+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)	2.270E+02	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)	9.700E-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)	5.440E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	Romberg failures occurred	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.300E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	6.100E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	9.140E+00	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)	3.050E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+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)	2.270E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.541E-04	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.779E-03	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.779E-03	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for Pu-241				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.779E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ac-227				

R016	Contaminated zone (cm**3/g)	1.500E+03	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+03	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	4.500E+02	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.423E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.000E+00	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.481E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.186E-03	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.880E-03	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.346E-04	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	3.200E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.469E-04	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCU(13,1)

R016	Saturated zone (cm**3/g)	3.200E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.469E-04	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.407E-01	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.407E-01	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.407E-01	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-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)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+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)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+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)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	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)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-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

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
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
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	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	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	128	---	---	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

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	64.90 square meters	Am-241	3.700E+00

```
  Thickness:       0.15 meters                        Pu-238      7.400E-02
 Cover Depth:      0.00 meters                        Pu-239      3.140E+00
                                                      Pu-241      2.520E+00
0
                                  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):	1.035E+00	1.034E+00	1.030E+00	1.018E+00	9.826E-01	8.627E-01	5.958E-01	1.646E-01
M(t):	4.141E-02	4.135E-02	4.121E-02	4.073E-02	3.930E-02	3.451E-02	2.383E-02	6.585E-03

```
0Maximum TDOSE(t):  1.035E+00 mrem/yr   at t = 0.000E+00 years
1RESRAD, Version 6.3      T½ Limit = 180 days        11/19/2007  22:46  Page  13
 Summary : JN-4 Drainpipe Resident Farmer Scenario (all pathways)
 File    : JN-4_drainpipe_all_pathways.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
0                               Water Independent Pathways (Inhalation excludes radon)
0
```

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.
Am-241	7.645E-02	0.0738	6.190E-02	0.0598	0.000E+00	0.0000	3.981E-01	0.3845	2.169E-02	0.0209	1.261E-03	0.0012	2.391E-02	0.0231
Pu-238	5.805E-06	0.0000	1.089E-03	0.0011	0.000E+00	0.0000	6.973E-03	0.0067	7.598E-04	0.0007	1.105E-05	0.0000	4.187E-04	0.0004
Pu-239	4.190E-04	0.0004	5.075E-02	0.0490	0.000E+00	0.0000	3.286E-01	0.3174	3.580E-02	0.0346	5.205E-04	0.0005	1.973E-02	0.0191
Pu-241	6.227E-05	0.0001	7.980E-04	0.0008	0.000E+00	0.0000	5.189E-03	0.0050	5.548E-04	0.0005	8.557E-06	0.0000	3.116E-04	0.0003
Total	7.694E-02	0.0743	1.145E-01	0.1106	0.000E+00	0.0000	7.389E-01	0.7137	5.881E-02	0.0568	1.801E-03	0.0017	4.437E-02	0.0429

```
0
                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
0                                          Water Dependent Pathways
0
```

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.
Am-241	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	5.833E-01	0.5634
Pu-238	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	9.257E-03	0.0089
Pu-239	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	4.358E-01	0.4210
Pu-241	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	6.924E-03	0.0067
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	1.035E+00	1.0000

```
0*Sum of all water independent and dependent pathways.
1RESRAD, Version 6.3      T½ Limit = 180 days        11/19/2007  22:46  Page  14
 Summary : JN-4 Drainpipe Resident Farmer Scenario (all pathways)
 File    : JN-4_drainpipe_all_pathways.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 = 1.000E+00 years
0                               Water Independent Pathways (Inhalation excludes radon)
```

0

Radio-Nuclide	Ground mrem/yr	Ground fract.	Inhalation mrem/yr	Inhalation fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	Soil mrem/yr	Soil fract.
Am-241	7.631E-02	0.0738	6.178E-02	0.0598	0.000E+00	0.0000	3.974E-01	0.3844	2.165E-02	0.0209	1.259E-03	0.0012	2.386E-02	0.0231
Pu-238	5.750E-06	0.0000	1.078E-03	0.0010	0.000E+00	0.0000	6.906E-03	0.0067	7.525E-04	0.0007	1.094E-05	0.0000	4.146E-04	0.0004
Pu-239	4.183E-04	0.0004	5.066E-02	0.0490	0.000E+00	0.0000	3.280E-01	0.3173	3.574E-02	0.0346	5.196E-04	0.0005	1.969E-02	0.0191
Pu-241	1.406E-04	0.0001	8.251E-04	0.0008	0.000E+00	0.0000	5.360E-03	0.0052	5.511E-04	0.0005	9.483E-06	0.0000	3.218E-04	0.0003
Total	7.687E-02	0.0744	1.143E-01	0.1106	0.000E+00	0.0000	7.377E-01	0.7136	5.869E-02	0.0568	1.799E-03	0.0017	4.429E-02	0.0428

0

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

0

Radio-Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.
Am-241	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	5.822E-01	0.5633
Pu-238	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	9.168E-03	0.0089
Pu-239	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	4.351E-01	0.4209
Pu-241	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	7.208E-03	0.0070
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	1.034E+00	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 22:46 Page 15
Summary : JN-4 Drainpipe Resident Farmer Scenario (all pathways)
File : JN-4_drainpipe_all_pathways.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 = 3.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

0

Radio-Nuclide	Ground mrem/yr	Ground fract.	Inhalation mrem/yr	Inhalation fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	Soil mrem/yr	Soil fract.
Am-241	7.603E-02	0.0738	6.155E-02	0.0597	0.000E+00	0.0000	3.959E-01	0.3843	2.157E-02	0.0209	1.254E-03	0.0012	2.377E-02	0.0231
Pu-238	5.639E-06	0.0000	1.058E-03	0.0010	0.000E+00	0.0000	6.773E-03	0.0066	7.380E-04	0.0007	1.073E-05	0.0000	4.067E-04	0.0004
Pu-239	4.168E-04	0.0004	5.048E-02	0.0490	0.000E+00	0.0000	3.268E-01	0.3172	3.561E-02	0.0346	5.177E-04	0.0005	1.962E-02	0.0190
Pu-241	2.856E-04	0.0003	8.749E-04	0.0008	0.000E+00	0.0000	5.676E-03	0.0055	5.436E-04	0.0005	1.119E-05	0.0000	3.408E-04	0.0003
Total	7.674E-02	0.0745	1.140E-01	0.1106	0.000E+00	0.0000	7.352E-01	0.7136	5.846E-02	0.0567	1.794E-03	0.0017	4.414E-02	0.0428

0

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

0

Radio-Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.
Am-241	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	5.801E-01	0.5630

Pu-238	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	8.992E-03	0.0087
Pu-239	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	4.335E-01	0.4207
Pu-241	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	7.732E-03	0.0075
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	1.030E+00	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 22:46 Page 16
Summary : JN-4 Drainpipe Resident Farmer Scenario (all pathways)
File : JN-4_drainpipe_all_pathways.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 = 1.000E+01 years
0
Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	7.505E-02	0.0737	6.076E-02	0.0597	0.000E+00	0.0000	3.908E-01	0.3838	2.129E-02	0.0209	1.238E-03	0.0012	2.347E-02	0.0230
Pu-238	5.270E-06	0.0000	9.882E-04	0.0010	0.000E+00	0.0000	6.330E-03	0.0062	6.897E-04	0.0007	1.004E-05	0.0000	3.801E-04	0.0004
Pu-239	4.115E-04	0.0004	4.985E-02	0.0490	0.000E+00	0.0000	3.227E-01	0.3169	3.516E-02	0.0345	5.112E-04	0.0005	1.938E-02	0.0190
Pu-241	6.886E-04	0.0007	1.011E-03	0.0010	0.000E+00	0.0000	6.539E-03	0.0064	5.216E-04	0.0005	1.593E-05	0.0000	3.926E-04	0.0004
Total	7.615E-02	0.0748	1.126E-01	0.1106	0.000E+00	0.0000	7.264E-01	0.7134	5.767E-02	0.0566	1.775E-03	0.0017	4.362E-02	0.0428

0

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
0
Water Dependent Pathways
0

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.
Am-241	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	5.726E-01	0.5624
Pu-238	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	8.403E-03	0.0083
Pu-239	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	4.280E-01	0.4204
Pu-241	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	9.169E-03	0.0090
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	1.018E+00	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 22:46 Page 17
Summary : JN-4 Drainpipe Resident Farmer Scenario (all pathways)
File : JN-4_drainpipe_all_pathways.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 = 3.000E+01 years
0
Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	7.231E-02	0.0736	5.854E-02	0.0596	0.000E+00	0.0000	3.766E-01	0.3832	2.052E-02	0.0209	1.193E-03	0.0012	2.261E-02	0.0230
Pu-238	4.343E-06	0.0000	8.143E-04	0.0008	0.000E+00	0.0000	5.216E-03	0.0053	5.683E-04	0.0006	8.272E-06	0.0000	3.132E-04	0.0003

Pu-239	3.969E-04	0.0004	4.808E-02	0.0489	0.000E+00	0.0000	3.113E-01	0.3168	3.392E-02	0.0345	4.931E-04	0.0005	1.869E-02	0.0190
Pu-241	1.269E-03	0.0013	1.194E-03	0.0012	0.000E+00	0.0000	7.695E-03	0.0078	4.802E-04	0.0005	2.262E-05	0.0000	4.620E-04	0.0005
Total	7.398E-02	0.0753	1.086E-01	0.1105	0.000E+00	0.0000	7.007E-01	0.7131	5.548E-02	0.0565	1.717E-03	0.0017	4.207E-02	0.0428

0

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

0
0

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.
Am-241	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	5.517E-01	0.5615
Pu-238	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	6.924E-03	0.0070
Pu-239	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	4.128E-01	0.4201
Pu-241	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	1.112E-02	0.0113
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	9.826E-01	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 22:46 Page 18
Summary : JN-4 Drainpipe Resident Farmer Scenario (all pathways)
File : JN-4_drainpipe_all_pathways.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 = 1.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

0
0

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.
Am-241	6.349E-02	0.0736	5.140E-02	0.0596	0.000E+00	0.0000	3.306E-01	0.3833	1.801E-02	0.0209	1.048E-03	0.0012	1.985E-02	0.0230
Pu-238	2.206E-06	0.0000	4.136E-04	0.0005	0.000E+00	0.0000	2.649E-03	0.0031	2.886E-04	0.0003	4.201E-06	0.0000	1.591E-04	0.0002
Pu-239	3.497E-04	0.0004	4.236E-02	0.0491	0.000E+00	0.0000	2.743E-01	0.3179	2.988E-02	0.0346	4.345E-04	0.0005	1.647E-02	0.0191
Pu-241	1.432E-03	0.0017	1.164E-03	0.0013	0.000E+00	0.0000	7.489E-03	0.0087	4.099E-04	0.0005	2.367E-05	0.0000	4.497E-04	0.0005
Total	6.528E-02	0.0757	9.534E-02	0.1105	0.000E+00	0.0000	6.151E-01	0.7129	4.860E-02	0.0563	1.510E-03	0.0018	3.693E-02	0.0428

0

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

0
0

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.
Am-241	2.466E-09	0.0000	4.914E-14	0.0000	0.000E+00	0.0000	3.789E-10	0.0000	1.784E-11	0.0000	6.918E-11	0.0000	4.845E-01	0.5616
Pu-238	1.493E-06	0.0000	2.978E-11	0.0000	0.000E+00	0.0000	2.298E-07	0.0000	1.088E-08	0.0000	4.199E-08	0.0000	3.518E-03	0.0041
Pu-239	2.492E-08	0.0000	4.987E-13	0.0000	0.000E+00	0.0000	3.833E-09	0.0000	1.824E-10	0.0000	7.000E-10	0.0000	3.638E-01	0.4217
Pu-241	2.265E-11	0.0000	4.511E-16	0.0000	0.000E+00	0.0000	3.477E-12	0.0000	1.633E-13	0.0000	6.345E-13	0.0000	1.097E-02	0.0127
Total	1.521E-06	0.0000	3.033E-11	0.0000	0.000E+00	0.0000	2.340E-07	0.0000	1.108E-08	0.0000	4.276E-08	0.0000	8.627E-01	1.0000

0*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
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	4.379E-02	0.0735	3.545E-02	0.0595	0.000E+00	0.0000	2.280E-01	0.3828	1.242E-02	0.0209	7.224E-04	0.0012	1.369E-02	0.0230
Pu-238	3.187E-07	0.0000	5.969E-05	0.0001	0.000E+00	0.0000	3.823E-04	0.0006	4.166E-05	0.0001	6.063E-07	0.0000	2.295E-05	0.0000
Pu-239	2.436E-04	0.0004	2.951E-02	0.0495	0.000E+00	0.0000	1.911E-01	0.3207	2.082E-02	0.0349	3.027E-04	0.0005	1.147E-02	0.0193
Pu-241	9.953E-04	0.0017	8.057E-04	0.0014	0.000E+00	0.0000	5.183E-03	0.0087	2.824E-04	0.0005	1.642E-05	0.0000	3.112E-04	0.0005
Total	4.503E-02	0.0756	6.582E-02	0.1105	0.000E+00	0.0000	4.247E-01	0.7128	3.357E-02	0.0563	1.042E-03	0.0017	2.550E-02	0.0428

0

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
0 Water Dependent Pathways
0

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.
Am-241	1.228E-04	0.0002	1.183E-08	0.0000	0.000E+00	0.0000	1.898E-05	0.0000	2.631E-06	0.0000	2.889E-08	0.0000	3.342E-01	0.5610
Pu-238	3.065E-07	0.0000	6.120E-12	0.0000	0.000E+00	0.0000	4.716E-08	0.0000	2.234E-09	0.0000	8.619E-09	0.0000	5.079E-04	0.0009
Pu-239	2.525E-08	0.0000	5.226E-13	0.0000	0.000E+00	0.0000	3.885E-09	0.0000	1.906E-10	0.0000	7.048E-10	0.0000	2.534E-01	0.4254
Pu-241	2.879E-06	0.0000	2.775E-10	0.0000	0.000E+00	0.0000	4.450E-07	0.0000	6.169E-08	0.0000	6.775E-10	0.0000	7.597E-03	0.0128
Total	1.260E-04	0.0002	1.212E-08	0.0000	0.000E+00	0.0000	1.947E-05	0.0000	2.695E-06	0.0000	3.889E-08	0.0000	5.958E-01	1.0000

0*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
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	1.193E-02	0.0725	9.656E-03	0.0587	0.000E+00	0.0000	6.211E-02	0.3773	3.384E-03	0.0206	1.968E-04	0.0012	3.729E-03	0.0227
Pu-238	1.590E-09	0.0000	6.816E-08	0.0000	0.000E+00	0.0000	4.376E-07	0.0000	4.765E-08	0.0000	7.545E-10	0.0000	2.622E-08	0.0000
Pu-239	6.875E-05	0.0004	8.327E-03	0.0506	0.000E+00	0.0000	5.391E-02	0.3275	5.874E-03	0.0357	8.540E-05	0.0005	3.237E-03	0.0197
Pu-241	2.711E-04	0.0016	2.195E-04	0.0013	0.000E+00	0.0000	1.412E-03	0.0086	7.691E-05	0.0005	4.473E-06	0.0000	8.476E-05	0.0005
Total	1.227E-02	0.0745	1.820E-02	0.1106	0.000E+00	0.0000	1.174E-01	0.7134	9.335E-03	0.0567	2.867E-04	0.0017	7.051E-03	0.0428

0

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

0
0 Water Dependent Pathways

Radio-Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.
Am-241	3.971E-05	0.0002	3.827E-09	0.0000	0.000E+00	0.0000	6.137E-06	0.0000	8.508E-07	0.0000	9.344E-09	0.0000	9.105E-02	0.5531
Pu-238	1.467E-09	0.0000	1.257E-13	0.0000	0.000E+00	0.0000	2.258E-10	0.0000	1.375E-11	0.0000	3.642E-11	0.0000	5.837E-07	0.0000
Pu-239	2.519E-08	0.0000	5.682E-13	0.0000	0.000E+00	0.0000	3.875E-09	0.0000	2.050E-10	0.0000	6.906E-10	0.0000	7.151E-02	0.4343
Pu-241	9.313E-07	0.0000	8.977E-11	0.0000	0.000E+00	0.0000	1.439E-07	0.0000	1.996E-08	0.0000	2.192E-10	0.0000	2.070E-03	0.0126
Total	4.067E-05	0.0002	3.918E-09	0.0000	0.000E+00	0.0000	6.285E-06	0.0000	8.710E-07	0.0000	1.029E-08	0.0000	1.646E-01	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 22:46 Page 21
Summary : JN-4 Drainpipe Resident Farmer Scenario (all pathways)
File : JN-4_drainpipe_all_pathways.rad

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

0 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
Am-241	Am-241	1.000E+00	1.577E-01	1.574E-01	1.568E-01	1.548E-01	1.491E-01	1.309E-01	9.029E-02	2.459E-02
Am-241	Np-237+D	1.000E+00	4.958E-07	1.483E-06	3.226E-06	7.398E-06	1.130E-05	1.078E-05	4.647E-05	1.465E-05
Am-241	U-233	1.000E+00	1.261E-14	6.968E-14	2.904E-13	1.511E-12	3.856E-12	7.964E-10	1.345E-09	4.325E-10
Am-241	Th-229+D	1.000E+00	5.013E-18	6.928E-17	7.177E-16	1.316E-14	1.332E-13	7.502E-13	3.359E-12	6.973E-12
Am-241	ΣDSR(j)		1.577E-01	1.574E-01	1.568E-01	1.548E-01	1.491E-01	1.309E-01	9.034E-02	2.461E-02
0Pu-238	Pu-238	1.840E-09	2.302E-10	2.280E-10	2.236E-10	2.089E-10	1.722E-10	8.744E-11	1.262E-11	1.441E-14
0Pu-238	Pu-238	1.000E+00	1.251E-01	1.239E-01	1.215E-01	1.136E-01	9.357E-02	4.752E-02	6.858E-03	7.831E-06
Pu-238	U-234	1.000E+00	4.983E-08	1.426E-07	2.908E-07	5.544E-07	6.006E-07	2.431E-05	4.970E-06	1.822E-08
Pu-238	Th-230	1.000E+00	1.436E-13	9.167E-13	4.311E-12	2.807E-11	1.198E-10	3.896E-10	7.190E-10	5.833E-10
Pu-238	Ra-226+D	1.000E+00	2.528E-15	3.756E-14	4.135E-13	8.750E-12	1.257E-10	1.467E-09	8.065E-09	2.357E-08
Pu-238	Pb-210+D	1.000E+00	9.844E-18	2.566E-16	5.468E-15	3.151E-13	1.208E-11	3.339E-10	2.969E-09	1.385E-08
Pu-238	ΣDSR(j)		1.251E-01	1.239E-01	1.215E-01	1.136E-01	9.357E-02	4.755E-02	6.863E-03	7.887E-06
0Pu-239	Pu-239	1.000E+00	1.388E-01	1.386E-01	1.381E-01	1.363E-01	1.315E-01	1.159E-01	8.070E-02	2.277E-02
Pu-239	U-235+D	1.000E+00	1.755E-10	4.957E-10	1.014E-09	1.998E-09	2.476E-09	1.164E-08	1.103E-08	9.733E-09
Pu-239	Pa-231	1.000E+00	1.583E-14	1.140E-13	5.692E-13	3.889E-12	1.782E-11	6.775E-11	1.785E-10	2.752E-10
Pu-239	Ac-227+D	1.000E+00	8.485E-17	1.054E-15	1.029E-14	1.945E-13	2.387E-12	2.254E-11	9.879E-11	2.194E-10
Pu-239	ΣDSR(j)		1.388E-01	1.386E-01	1.381E-01	1.363E-01	1.315E-01	1.159E-01	8.070E-02	2.277E-02
0Pu-241	Pu-241	1.000E+00	2.617E-03	2.490E-03	2.253E-03	1.589E-03	5.855E-04	1.779E-05	8.215E-10	5.502E-25
Pu-241	Am-241	1.000E+00	1.248E-04	3.652E-04	8.100E-04	2.046E-03	3.827E-03	4.334E-03	3.013E-03	8.208E-04
Pu-241	Np-237+D	1.000E+00	2.540E-10	1.803E-09	8.940E-09	5.979E-08	2.297E-07	3.532E-07	1.592E-06	5.023E-07
Pu-241	U-233	1.000E+00	5.481E-18	6.430E-17	5.833E-16	9.060E-15	6.619E-14	1.080E-11	4.623E-11	1.486E-11
Pu-241	Th-229+D	1.000E+00	1.638E-21	4.631E-20	1.033E-18	5.568E-17	1.547E-15	1.840E-14	1.007E-13	2.299E-13
Pu-241	ΣDSR(j)		2.742E-03	2.855E-03	3.063E-03	3.635E-03	4.413E-03	4.352E-03	3.015E-03	8.213E-04
0Pu-241+D	Pu-241+D	2.450E-05	5.804E-06	5.521E-06	4.997E-06	3.523E-06	1.298E-06	3.944E-08	1.822E-12	1.220E-27
Pu-241+D	Np-237+D	2.450E-05	1.196E-11	3.501E-11	7.248E-11	1.373E-10	1.083E-10	4.876E-12	3.865E-13	4.353E-28
Pu-241+D	U-233	2.450E-05	3.050E-19	1.660E-18	6.687E-18	3.036E-17	4.589E-17	1.190E-14	5.048E-18	5.701E-33
Pu-241+D	Th-229+D	2.450E-05	1.216E-22	1.663E-21	1.683E-20	2.814E-19	2.127E-18	4.870E-18	8.822E-18	6.663E-18
Pu-241+D	ΣDSR(j)		5.804E-06	5.521E-06	4.997E-06	3.523E-06	1.298E-06	3.945E-08	2.208E-12	6.663E-18

The DSR includes contributions from associated (half-life ó 180 days) daughters.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 22:46 Page 22
Summary : JN-4 Drainpipe Resident Farmer Scenario (all pathways)
File : JN-4_drainpipe_all_pathways.rad

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

0Nuclide (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
Am-241	1.586E+02	1.589E+02	1.595E+02	1.615E+02	1.677E+02	1.909E+02	2.767E+02	1.016E+03
Pu-238	1.999E+02	2.018E+02	2.057E+02	2.202E+02	2.672E+02	5.258E+02	3.643E+03	3.170E+06
Pu-239	1.801E+02	1.804E+02	1.811E+02	1.834E+02	1.901E+02	2.158E+02	3.098E+02	1.098E+03
Pu-241	9.099E+03	8.740E+03	8.148E+03	6.871E+03	5.664E+03	5.744E+03	8.292E+03	3.044E+04

0

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

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	3.700E+00	0.000E+00	1.577E-01	1.586E+02	1.577E-01	1.586E+02
Pu-238	7.400E-02	0.000E+00	1.251E-01	1.999E+02	1.251E-01	1.999E+02
Pu-239	3.140E+00	0.000E+00	1.388E-01	1.801E+02	1.388E-01	1.801E+02
Pu-241	2.520E+00	53.1 ± 0.1	4.590E-03	5.447E+03	2.748E-03	9.099E+03

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 22:46 Page 23
Summary : JN-4 Drainpipe Resident Farmer Scenario (all pathways)
File : JN-4_drainpipe_all_pathways.rad

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

0Nuclide (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
Am-241	Am-241	1.000E+00	5.833E-01	5.822E-01	5.801E-01	5.726E-01	5.517E-01	4.844E-01	3.341E-01	9.100E-02
Am-241	Pu-241	1.000E+00	3.145E-04	9.203E-04	2.041E-03	5.157E-03	9.644E-03	1.092E-02	7.593E-03	2.068E-03
Am-241	ΣDOSE(j)		5.836E-01	5.832E-01	5.821E-01	5.777E-01	5.613E-01	4.953E-01	3.417E-01	9.307E-02
0Np-237	Am-241	1.000E+00	1.834E-06	5.487E-06	1.194E-05	2.737E-05	4.182E-05	3.990E-05	1.719E-04	5.420E-05
Np-237	Pu-241	1.000E+00	6.401E-10	4.543E-09	2.253E-08	1.507E-07	5.787E-07	8.901E-07	4.012E-06	1.266E-06
Np-237	Pu-241	2.450E-05	3.015E-11	8.823E-11	1.826E-10	3.461E-10	2.730E-10	1.229E-11	9.740E-13	1.096E-27
Np-237	ΣDOSE(j)		1.835E-06	5.491E-06	1.196E-05	2.752E-05	4.240E-05	4.079E-05	1.760E-04	5.547E-05
0U-233	Am-241	1.000E+00	4.667E-14	2.578E-13	1.075E-12	5.590E-12	1.427E-11	2.947E-09	4.976E-09	1.600E-09
U-233	Pu-241	1.000E+00	1.381E-17	1.620E-16	1.470E-15	2.283E-14	1.668E-13	2.723E-11	1.165E-10	3.745E-11
U-233	Pu-241	2.450E-05	7.687E-19	4.183E-18	1.685E-17	7.651E-17	1.156E-16	2.998E-14	1.272E-17	0.000E+00
U-233	ΣDOSE(j)		4.669E-14	2.580E-13	1.076E-12	5.613E-12	1.444E-11	2.974E-09	5.092E-09	1.638E-09
0Th-229	Am-241	1.000E+00	1.855E-17	2.563E-16	2.656E-15	4.868E-14	4.928E-13	2.776E-12	1.243E-11	2.580E-11
Th-229	Pu-241	1.000E+00	4.129E-21	1.167E-19	2.604E-18	1.403E-16	3.898E-15	4.638E-14	2.538E-13	5.793E-13

Th-229	Pu-241	2.450E-05	3.065E-22	4.192E-21	4.240E-20	7.092E-19	5.361E-18	1.227E-17	2.223E-17	1.679E-17
Th-229	ΣDOSE(j)		1.855E-17	2.565E-16	2.658E-15	4.882E-14	4.967E-13	2.822E-12	1.268E-11	2.638E-11
0Pu-238	Pu-238	1.840E-09	1.703E-11	1.687E-11	1.655E-11	1.546E-11	1.274E-11	6.471E-12	9.338E-13	1.066E-15
Pu-238	Pu-238	1.000E+00	9.257E-03	9.168E-03	8.992E-03	8.403E-03	6.924E-03	3.517E-03	5.075E-04	5.795E-07
Pu-238	ΣDOSE(j)		9.257E-03	9.168E-03	8.992E-03	8.403E-03	6.924E-03	3.517E-03	5.075E-04	5.795E-07
0U-234	Pu-238	1.000E+00	3.687E-09	1.055E-08	2.152E-08	4.103E-08	4.444E-08	1.799E-06	3.678E-07	1.349E-09
0Th-230	Pu-238	1.000E+00	1.063E-14	6.784E-14	3.190E-13	2.077E-12	8.865E-12	2.883E-11	5.321E-11	4.317E-11
0Ra-226	Pu-238	1.000E+00	1.871E-16	2.779E-15	3.060E-14	6.475E-13	9.300E-12	1.085E-10	5.968E-10	1.744E-09
0Pb-210	Pu-238	1.000E+00	7.285E-19	1.899E-17	4.046E-16	2.331E-14	8.942E-13	2.471E-11	2.197E-10	1.025E-09
0Pu-239	Pu-239	1.000E+00	4.358E-01	4.351E-01	4.335E-01	4.280E-01	4.128E-01	3.638E-01	2.534E-01	7.151E-02
0U-235	Pu-239	1.000E+00	5.509E-10	1.557E-09	3.184E-09	6.275E-09	7.774E-09	3.656E-08	3.465E-08	3.056E-08
0Pa-231	Pu-239	1.000E+00	4.969E-14	3.581E-13	1.787E-12	1.221E-11	5.595E-11	2.127E-10	5.606E-10	8.642E-10
0Ac-227	Pu-239	1.000E+00	2.664E-16	3.308E-15	3.231E-14	6.107E-13	7.496E-12	7.077E-11	3.102E-10	6.890E-10
0Pu-241	Pu-241	1.000E+00	6.595E-03	6.274E-03	5.678E-03	4.004E-03	1.475E-03	4.482E-05	2.070E-09	1.386E-24
Pu-241	Pu-241	2.450E-05	1.463E-05	1.391E-05	1.259E-05	8.879E-06	3.272E-06	9.940E-08	4.591E-12	3.073E-27
Pu-241	ΣDOSE(j)		6.610E-03	6.288E-03	5.691E-03	4.012E-03	1.479E-03	4.492E-05	2.075E-09	1.389E-24

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

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 22:46 Page 24

Summary : JN-4 Drainpipe Resident Farmer Scenario (all pathways)

File : JN-4_drainpipe_all_pathways.rad

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

0Nuclide (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
Am-241	Am-241	1.000E+00	3.700E+00	3.693E+00	3.679E+00	3.632E+00	3.499E+00	3.073E+00	2.119E+00	5.772E-01
Am-241	Pu-241	1.000E+00	0.000E+00	3.938E-03	1.123E-02	3.150E-02	6.073E-02	6.927E-02	4.816E-02	1.312E-02
Am-241	ΣS(j):		3.700E+00	3.697E+00	3.691E+00	3.663E+00	3.560E+00	3.142E+00	2.167E+00	5.903E-01
0Np-237	Am-241	1.000E+00	0.000E+00	1.148E-06	3.165E-06	7.994E-06	1.253E-05	1.199E-05	8.274E-06	2.254E-06
Np-237	Pu-241	1.000E+00	0.000E+00	6.255E-10	5.145E-09	4.212E-08	1.715E-07	2.675E-07	1.881E-07	5.122E-08
Np-237	Pu-241	2.450E-05	0.000E+00	1.870E-11	4.904E-11	1.025E-10	8.319E-11	3.775E-12	1.799E-16	1.205E-31
Np-237	ΣS(j):		0.000E+00	1.149E-06	3.170E-06	8.037E-06	1.270E-05	1.226E-05	8.462E-06	2.305E-06
0U-233	Am-241	1.000E+00	0.000E+00	2.430E-12	1.886E-11	1.280E-10	3.515E-10	3.776E-10	2.606E-10	7.097E-11
U-233	Pu-241	1.000E+00	0.000E+00	8.904E-16	2.097E-14	4.893E-13	4.029E-12	8.339E-12	5.922E-12	1.613E-12
U-233	Pu-241	2.450E-05	0.000E+00	3.990E-17	2.993E-16	1.776E-15	2.907E-15	1.783E-16	8.661E-21	5.800E-36
U-233	ΣS(j):		0.000E+00	2.431E-12	1.888E-11	1.285E-10	3.555E-10	3.859E-10	2.665E-10	7.258E-11
0Th-229	Am-241	1.000E+00	0.000E+00	7.794E-17	1.883E-15	4.825E-14	5.367E-13	3.019E-12	8.117E-12	1.194E-11
Th-229	Pu-241	1.000E+00	0.000E+00	2.131E-20	1.547E-18	1.322E-16	4.183E-15	5.105E-14	1.689E-13	2.622E-13
Th-229	Pu-241	2.450E-05	0.000E+00	1.285E-21	3.028E-20	7.081E-19	5.884E-18	1.290E-17	1.143E-17	6.800E-18
Th-229	ΣS(j):		0.000E+00	7.796E-17	1.884E-15	4.838E-14	5.409E-13	3.070E-12	8.286E-12	1.221E-11
0Pu-238	Pu-238	1.840E-09	1.362E-10	1.348E-10	1.323E-10	1.236E-10	1.018E-10	5.173E-11	7.465E-12	8.524E-15
Pu-238	Pu-238	1.000E+00	7.400E-02	7.329E-02	7.188E-02	6.717E-02	5.535E-02	2.811E-02	4.057E-03	4.633E-06
Pu-238	ΣS(j):		7.400E-02	7.329E-02	7.188E-02	6.717E-02	5.535E-02	2.811E-02	4.057E-03	4.633E-06
0U-234	Pu-238	1.000E+00	0.000E+00	1.947E-07	5.055E-07	1.061E-06	1.174E-06	6.081E-07	8.777E-08	1.002E-10
0Th-230	Pu-238	1.000E+00	0.000E+00	8.983E-13	7.340E-12	5.987E-11	2.720E-10	7.927E-10	1.140E-09	7.754E-10
0Ra-226	Pu-238	1.000E+00	0.000E+00	1.313E-16	3.296E-15	9.642E-14	1.518E-12	1.823E-11	1.009E-10	2.948E-10
0Pb-210	Pu-238	1.000E+00	0.000E+00	1.021E-18	7.689E-17	7.457E-15	3.334E-13	9.684E-12	7.872E-11	2.583E-10
0Pu-239	Pu-239	1.000E+00	3.140E+00	3.134E+00	3.123E+00	3.084E+00	2.974E+00	2.621E+00	1.826E+00	5.152E-01
0U-235	Pu-239	1.000E+00	0.000E+00	2.882E-09	7.546E-09	1.641E-08	2.076E-08	1.858E-08	1.294E-08	3.652E-09

0Pa-231	Pu-239	1.000E+00	0.000E+00	3.120E-14	2.562E-13	2.131E-12	1.030E-11	3.753E-11	8.768E-11	1.049E-10
0Ac-227	Pu-239	1.000E+00	0.000E+00	3.323E-16	8.232E-15	2.300E-13	3.166E-12	2.555E-11	7.844E-11	1.018E-10
0Pu-241	Pu-241	1.000E+00	2.520E+00	2.397E+00	2.169E+00	1.530E+00	5.637E-01	1.713E-02	7.910E-07	5.297E-22
Pu-241	Pu-241	2.450E-05	6.174E-05	5.873E-05	5.315E-05	3.748E-05	1.381E-05	4.196E-07	1.938E-11	1.298E-26
Pu-241	ΣS(j):		2.520E+00	2.397E+00	2.170E+00	1.530E+00	5.637E-01	1.713E-02	7.910E-07	5.297E-22

THF(i) is the thread fraction of the parent nuclide.
0RESCALC.EXE execution time = 60.69 seconds
Total water/soil iteration failures = 9.300E+01.

Attachment 3. Combined Filter Bed and Upper Areas Resident Farmer Scenario Concentration File

Table of Contents

Part IV: Concentration of Radionuclides

Concentration of radionuclides in different media
Time= 0.000E+00 2
Time= 1.000E+00 4
Time= 3.000E+00 6
Time= 1.000E+01 8
Time= 3.000E+01 10
Time= 1.000E+02 12
Time= 3.000E+02 14
Time= 1.000E+03 16

Concentration of radionuclides in environmental media
at t = 0.000E+00 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	1.700E-01	1.700E-01	3.730E-06	0.000E+00	0.000E+00
Co-60	6.690E-03	6.690E-03	1.468E-07	0.000E+00	0.000E+00
Cs-137	2.550E+00	2.550E+00	5.595E-05	0.000E+00	0.000E+00
Eu-152	1.500E-01	1.500E-01	3.291E-06	0.000E+00	0.000E+00
Eu-154	1.400E-02	1.400E-02	3.072E-07	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Np-237	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	3.190E-03	3.190E-03	7.000E-08	0.000E+00	0.000E+00
Pu-239	1.020E-01	1.020E-01	2.238E-06	0.000E+00	0.000E+00
Pu-241	9.110E-01	9.110E-01	1.999E-05	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	5.540E-02	5.540E-02	1.216E-06	0.000E+00	0.000E+00
Th-229	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

U-233	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 3
Concent : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.rad

Concentration of radionuclides in foodstuff media
at t = 0.000E+00 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	0.000E+00	1.702E-01	1.710E-01	1.711E-01	1.711E-01	4.832E-03	1.888E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	5.352E-01	5.352E-01	5.352E-01	5.352E-01	7.948E-01	6.557E-02	0.000E+00	0.000E+00
Cs-137	0.000E+00	1.020E+02	1.020E+02	1.020E+02	1.020E+02	2.464E+02	5.509E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	3.752E-01	3.759E-01	3.759E-01	3.759E-01	2.011E-01	4.784E-03	0.000E+00	0.000E+00
Eu-154	0.000E+00	3.502E-02	3.508E-02	3.509E-02	3.509E-02	1.877E-02	4.465E-04	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Np-237	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	0.000E+00	3.194E-03	3.208E-03	3.210E-03	3.210E-03	1.813E-04	1.772E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.021E-01	1.026E-01	1.026E-01	1.026E-01	5.798E-03	5.665E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	9.121E-01	9.162E-01	9.167E-01	9.167E-01	5.178E-02	5.059E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	0.000E+00	1.662E+01	1.662E+01	1.662E+01	1.662E+01	9.263E+00	1.884E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-233	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 4
Concent : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.rad

Concentration of radionuclides in environmental media

at t = 1.000E+00 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	1.118E-17	1.118E-17	2.453E-22	0.000E+00	0.000E+00
Am-241	1.712E-01	1.712E-01	3.755E-06	0.000E+00	0.000E+00
Co-60	5.865E-03	5.865E-03	1.287E-07	0.000E+00	0.000E+00
Cs-137	2.492E+00	2.492E+00	5.467E-05	0.000E+00	0.000E+00
Eu-152	1.424E-01	1.424E-01	3.124E-06	0.000E+00	0.000E+00
Eu-154	1.294E-02	1.294E-02	2.839E-07	0.000E+00	0.000E+00
Gd-152	2.619E-16	2.619E-16	5.747E-21	0.000E+00	0.000E+00
Np-237	5.520E-08	5.520E-08	1.211E-12	0.000E+00	0.000E+00
Pa-231	1.061E-15	1.061E-15	2.329E-20	0.000E+00	0.000E+00
Pb-210	4.528E-20	4.528E-20	9.936E-25	0.000E+00	0.000E+00
Pu-238	3.165E-03	3.165E-03	6.944E-08	0.000E+00	0.000E+00
Pu-239	1.020E-01	1.020E-01	2.238E-06	0.000E+00	0.000E+00
Pu-241	8.681E-01	8.681E-01	1.905E-05	0.000E+00	0.000E+00
Ra-226	5.860E-18	5.860E-18	1.286E-22	0.000E+00	0.000E+00
Sr-90	5.395E-02	5.395E-02	1.184E-06	0.000E+00	0.000E+00
Th-229	3.792E-18	3.792E-18	8.319E-23	0.000E+00	0.000E+00
Th-230	4.055E-14	4.055E-14	8.897E-19	0.000E+00	0.000E+00
U-233	1.205E-13	1.205E-13	2.643E-18	0.000E+00	0.000E+00
U-234	8.992E-09	8.992E-09	1.973E-13	0.000E+00	0.000E+00
U-235	1.003E-10	1.003E-10	2.200E-15	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+00 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	3.696E-17	2.871E-17	4.471E-17	5.157E-17	8.887E-18	1.681E-19	0.000E+00	0.000E+00
Am-241	0.000E+00	1.714E-01	1.721E-01	1.722E-01	1.722E-01	4.867E-03	1.901E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	4.692E-01	4.692E-01	4.726E-01	4.694E-01	6.968E-01	5.748E-02	0.000E+00	0.000E+00
Cs-137	0.000E+00	9.967E+01	9.968E+01	9.981E+01	9.969E+01	2.407E+02	5.383E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	3.561E-01	3.568E-01	3.579E-01	3.569E-01	1.909E-01	4.541E-03	0.000E+00	0.000E+00
Eu-154	0.000E+00	3.236E-02	3.242E-02	3.257E-02	3.244E-02	1.735E-02	4.126E-04	0.000E+00	0.000E+00
Gd-152	0.000E+00	6.551E-16	6.563E-16	6.213E-16	6.547E-16	3.512E-16	3.354E-18	0.000E+00	0.000E+00

Np-237	0.000E+00	1.064E-06	1.101E-06	9.143E-07	9.719E-07	8.835E-08	4.051E-10	0.000E+00	0.000E+00
Pa-231	0.000E+00	1.002E-14	1.058E-14	7.735E-15	8.705E-15	5.026E-15	7.215E-18	0.000E+00	0.000E+00
Pb-210	0.000E+00	6.365E-19	4.682E-19	7.084E-19	8.663E-19	7.248E-20	2.201E-20	0.000E+00	0.000E+00
Pu-238	0.000E+00	3.169E-03	3.183E-03	3.186E-03	3.185E-03	1.799E-04	1.758E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.021E-01	1.026E-01	1.026E-01	1.026E-01	5.798E-03	5.664E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	8.692E-01	8.731E-01	8.759E-01	8.737E-01	4.935E-02	4.821E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	2.094E-16	2.326E-16	1.324E-16	1.589E-16	1.154E-17	1.165E-17	0.000E+00	0.000E+00
Sr-90	0.000E+00	1.619E+01	1.619E+01	1.622E+01	1.619E+01	9.025E+00	1.835E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	4.710E-18	3.862E-18	7.345E-18	8.263E-18	4.424E-19	2.739E-20	0.000E+00	0.000E+00
Th-230	0.000E+00	4.508E-14	4.112E-14	4.878E-14	5.367E-14	3.087E-15	1.988E-16	0.000E+00	0.000E+00
U-233	0.000E+00	4.569E-13	3.134E-13	6.948E-13	7.524E-13	5.551E-14	6.078E-14	0.000E+00	0.000E+00
U-234	0.000E+00	2.198E-08	2.249E-08	1.966E-08	2.083E-08	1.928E-09	3.377E-09	0.000E+00	0.000E+00
U-235	0.000E+00	2.451E-10	2.509E-10	2.191E-10	2.322E-10	2.149E-11	3.766E-11	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+00 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.965E-16	2.965E-16	6.507E-21	0.000E+00	0.000E+00
Am-241	1.733E-01	1.733E-01	3.801E-06	0.000E+00	0.000E+00
Co-60	4.508E-03	4.508E-03	9.891E-08	0.000E+00	0.000E+00
Cs-137	2.379E+00	2.379E+00	5.220E-05	0.000E+00	0.000E+00
Eu-152	1.283E-01	1.283E-01	2.815E-06	0.000E+00	0.000E+00
Eu-154	1.105E-02	1.105E-02	2.425E-07	0.000E+00	0.000E+00
Gd-152	7.465E-16	7.465E-16	1.638E-20	0.000E+00	0.000E+00
Np-237	1.663E-07	1.663E-07	3.649E-12	0.000E+00	0.000E+00
Pa-231	9.530E-15	9.530E-15	2.091E-19	0.000E+00	0.000E+00
Pb-210	3.606E-18	3.606E-18	7.912E-23	0.000E+00	0.000E+00
Pu-238	3.115E-03	3.115E-03	6.835E-08	0.000E+00	0.000E+00
Pu-239	1.020E-01	1.020E-01	2.238E-06	0.000E+00	0.000E+00
Pu-241	7.884E-01	7.884E-01	1.730E-05	0.000E+00	0.000E+00
Ra-226	1.573E-16	1.573E-16	3.451E-21	0.000E+00	0.000E+00
Sr-90	5.117E-02	5.117E-02	1.123E-06	0.000E+00	0.000E+00
Th-229	1.024E-16	1.024E-16	2.247E-21	0.000E+00	0.000E+00
Th-230	3.622E-13	3.622E-13	7.947E-18	0.000E+00	0.000E+00
U-233	1.085E-12	1.085E-12	2.380E-17	0.000E+00	0.000E+00
U-234	2.667E-08	2.667E-08	5.852E-13	0.000E+00	0.000E+00
U-235	2.998E-10	2.998E-10	6.577E-15	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+00 years*

Radio-Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	0.000E+00	8.267E-16	7.493E-16	9.512E-16	9.980E-16	9.524E-17	4.059E-18	0.000E+00	0.000E+00
Am-241	0.000E+00	1.735E-01	1.742E-01	1.743E-01	1.743E-01	4.926E-03	1.924E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	3.606E-01	3.607E-01	3.633E-01	3.608E-01	5.356E-01	4.418E-02	0.000E+00	0.000E+00
Cs-137	0.000E+00	9.516E+01	9.518E+01	9.530E+01	9.518E+01	2.298E+02	5.139E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	3.209E-01	3.215E-01	3.225E-01	3.216E-01	1.720E-01	4.092E-03	0.000E+00	0.000E+00
Eu-154	0.000E+00	2.764E-02	2.769E-02	2.782E-02	2.770E-02	1.482E-02	3.525E-04	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.867E-15	1.870E-15	1.839E-15	1.869E-15	1.001E-15	9.535E-18	0.000E+00	0.000E+00
Np-237	0.000E+00	3.286E-06	3.324E-06	3.136E-06	3.194E-06	2.949E-07	1.294E-09	0.000E+00	0.000E+00
Pa-231	0.000E+00	9.350E-14	9.523E-14	8.626E-14	8.943E-14	5.237E-14	5.498E-17	0.000E+00	0.000E+00
Pb-210	0.000E+00	4.144E-17	3.648E-17	4.825E-17	5.150E-17	4.694E-18	1.421E-18	0.000E+00	0.000E+00
Pu-238	0.000E+00	3.119E-03	3.133E-03	3.136E-03	3.135E-03	1.771E-04	1.730E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.021E-01	1.026E-01	1.026E-01	1.026E-01	5.797E-03	5.663E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	7.893E-01	7.929E-01	7.955E-01	7.935E-01	4.481E-02	4.378E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	6.061E-15	6.276E-15	5.260E-15	5.555E-15	4.326E-16	3.839E-16	0.000E+00	0.000E+00
Sr-90	0.000E+00	1.535E+01	1.535E+01	1.538E+01	1.536E+01	8.560E+00	1.741E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	1.092E-16	1.034E-16	1.236E-16	1.296E-16	7.277E-18	4.110E-19	0.000E+00	0.000E+00
Th-230	0.000E+00	3.762E-13	3.652E-13	3.931E-13	4.063E-13	2.306E-14	1.266E-15	0.000E+00	0.000E+00
U-233	0.000E+00	3.195E-12	2.753E-12	4.093E-12	4.214E-12	3.430E-13	4.639E-13	0.000E+00	0.000E+00
U-234	0.000E+00	6.620E-08	6.679E-08	6.403E-08	6.517E-08	5.960E-09	1.014E-08	0.000E+00	0.000E+00
U-235	0.000E+00	7.441E-10	7.507E-10	7.194E-10	7.323E-10	6.698E-11	1.140E-10	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+01 years

Contaminat- Surface Air Par- Well Surface

Radio-Nuclide	ted Zone pCi/g	Soil* pCi/g	ticulate pCi/m**3	Water pCi/L	Water pCi/L
Ac-227	1.034E-14	1.034E-14	2.268E-19	0.000E+00	0.000E+00
Am-241	1.788E-01	1.788E-01	3.923E-06	0.000E+00	0.000E+00
Co-60	1.794E-03	1.794E-03	3.937E-08	0.000E+00	0.000E+00
Cs-137	2.023E+00	2.023E+00	4.440E-05	0.000E+00	0.000E+00
Eu-152	8.912E-02	8.912E-02	1.955E-06	0.000E+00	0.000E+00
Eu-154	6.364E-03	6.364E-03	1.396E-07	0.000E+00	0.000E+00
Gd-152	2.095E-15	2.095E-15	4.596E-20	0.000E+00	0.000E+00
Np-237	5.605E-07	5.605E-07	1.230E-11	0.000E+00	0.000E+00
Pa-231	1.050E-13	1.050E-13	2.304E-18	0.000E+00	0.000E+00
Pb-210	4.195E-16	4.195E-16	9.205E-21	0.000E+00	0.000E+00
Pu-238	2.946E-03	2.946E-03	6.465E-08	0.000E+00	0.000E+00
Pu-239	1.019E-01	1.019E-01	2.236E-06	0.000E+00	0.000E+00
Pu-241	5.627E-01	5.627E-01	1.235E-05	0.000E+00	0.000E+00
Ra-226	5.706E-15	5.706E-15	1.252E-19	0.000E+00	0.000E+00
Sr-90	4.253E-02	4.253E-02	9.331E-07	0.000E+00	0.000E+00
Th-229	3.794E-15	3.794E-15	8.326E-20	0.000E+00	0.000E+00
Th-230	3.918E-12	3.918E-12	8.597E-17	0.000E+00	0.000E+00
U-233	1.206E-11	1.206E-11	2.645E-16	0.000E+00	0.000E+00
U-234	8.540E-08	8.540E-08	1.874E-12	0.000E+00	0.000E+00
U-235	9.867E-10	9.867E-10	2.165E-14	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+01 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	2.681E-14	2.597E-14	2.847E-14	2.889E-14	1.197E-15	1.351E-16	0.000E+00	0.000E+00
Am-241	0.000E+00	1.790E-01	1.798E-01	1.799E-01	1.799E-01	5.083E-03	1.986E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	1.435E-01	1.436E-01	1.446E-01	1.436E-01	2.132E-01	1.759E-02	0.000E+00	0.000E+00
Cs-137	0.000E+00	8.094E+01	8.095E+01	8.105E+01	8.095E+01	1.955E+02	4.371E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	2.229E-01	2.233E-01	2.240E-01	2.234E-01	1.195E-01	2.842E-03	0.000E+00	0.000E+00
Eu-154	0.000E+00	1.592E-02	1.595E-02	1.602E-02	1.595E-02	8.534E-03	2.030E-04	0.000E+00	0.000E+00
Gd-152	0.000E+00	5.239E-15	5.248E-15	5.228E-15	5.248E-15	2.808E-15	2.673E-17	0.000E+00	0.000E+00
Np-237	0.000E+00	1.117E-05	1.121E-05	1.102E-05	1.108E-05	1.028E-06	4.448E-09	0.000E+00	0.000E+00
Pa-231	0.000E+00	1.044E-12	1.050E-12	1.020E-12	1.031E-12	6.067E-13	5.677E-16	0.000E+00	0.000E+00
Pb-210	0.000E+00	4.397E-15	4.212E-15	4.725E-15	4.820E-15	4.504E-16	1.436E-16	0.000E+00	0.000E+00

Pu-238	0.000E+00	2.950E-03	2.963E-03	2.966E-03	2.965E-03	1.675E-04	1.636E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.020E-01	1.025E-01	1.026E-01	1.026E-01	5.794E-03	5.660E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	5.634E-01	5.659E-01	5.677E-01	5.663E-01	3.199E-02	3.125E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	2.257E-13	2.281E-13	2.166E-13	2.200E-13	1.754E-14	1.495E-14	0.000E+00	0.000E+00
Sr-90	0.000E+00	1.276E+01	1.276E+01	1.278E+01	1.276E+01	7.114E+00	1.446E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	3.867E-15	3.821E-15	3.992E-15	4.053E-15	2.291E-16	1.183E-17	0.000E+00	0.000E+00
Th-230	0.000E+00	3.967E-12	3.944E-12	4.040E-12	4.081E-12	2.308E-13	1.172E-14	0.000E+00	0.000E+00
U-233	0.000E+00	3.179E-11	3.033E-11	3.508E-11	3.543E-11	3.084E-12	4.784E-12	0.000E+00	0.000E+00
U-234	0.000E+00	2.132E-07	2.140E-07	2.115E-07	2.125E-07	1.936E-08	3.263E-08	0.000E+00	0.000E+00
U-235	0.000E+00	2.463E-09	2.472E-09	2.442E-09	2.455E-09	2.236E-10	3.770E-10	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+01 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.369E-13	2.369E-13	5.198E-18	0.000E+00	0.000E+00
Am-241	1.845E-01	1.845E-01	4.048E-06	0.000E+00	0.000E+00
Co-60	1.291E-04	1.291E-04	2.832E-09	0.000E+00	0.000E+00
Cs-137	1.274E+00	1.274E+00	2.795E-05	0.000E+00	0.000E+00
Eu-152	3.146E-02	3.146E-02	6.903E-07	0.000E+00	0.000E+00
Eu-154	1.315E-03	1.315E-03	2.886E-08	0.000E+00	0.000E+00
Gd-152	4.075E-15	4.075E-15	8.941E-20	0.000E+00	0.000E+00
Np-237	1.695E-06	1.695E-06	3.720E-11	0.000E+00	0.000E+00
Pa-231	9.226E-13	9.226E-13	2.024E-17	0.000E+00	0.000E+00
Pb-210	2.884E-14	2.884E-14	6.329E-19	0.000E+00	0.000E+00
Pu-238	2.514E-03	2.514E-03	5.515E-08	0.000E+00	0.000E+00
Pu-239	1.018E-01	1.018E-01	2.233E-06	0.000E+00	0.000E+00
Pu-241	2.147E-01	2.147E-01	4.711E-06	0.000E+00	0.000E+00
Ra-226	1.453E-13	1.453E-13	3.187E-18	0.000E+00	0.000E+00
Sr-90	2.506E-02	2.506E-02	5.498E-07	0.000E+00	0.000E+00
Th-229	1.017E-13	1.017E-13	2.231E-18	0.000E+00	0.000E+00
Th-230	3.270E-11	3.270E-11	7.174E-16	0.000E+00	0.000E+00
U-233	1.071E-10	1.071E-10	2.351E-15	0.000E+00	0.000E+00
U-234	2.286E-07	2.286E-07	5.016E-12	0.000E+00	0.000E+00
U-235	2.857E-09	2.857E-09	6.269E-14	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+01 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	6.009E-13	5.942E-13	6.175E-13	6.204E-13	1.261E-14	3.051E-15	0.000E+00	0.000E+00
Am-241	0.000E+00	1.847E-01	1.855E-01	1.856E-01	1.856E-01	5.244E-03	2.049E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	1.033E-02	1.033E-02	1.040E-02	1.033E-02	1.534E-02	1.265E-03	0.000E+00	0.000E+00
Cs-137	0.000E+00	5.096E+01	5.096E+01	5.103E+01	5.097E+01	1.231E+02	2.752E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	7.868E-02	7.883E-02	7.907E-02	7.886E-02	4.218E-02	1.003E-03	0.000E+00	0.000E+00
Eu-154	0.000E+00	3.290E-03	3.296E-03	3.311E-03	3.297E-03	1.764E-03	4.195E-05	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.019E-14	1.021E-14	1.020E-14	1.021E-14	5.464E-15	5.198E-17	0.000E+00	0.000E+00
Np-237	0.000E+00	3.387E-05	3.391E-05	3.373E-05	3.378E-05	3.140E-06	1.353E-08	0.000E+00	0.000E+00
Pa-231	0.000E+00	9.209E-12	9.230E-12	9.143E-12	9.174E-12	5.407E-12	4.892E-15	0.000E+00	0.000E+00
Pb-210	0.000E+00	2.936E-13	2.890E-13	3.030E-13	3.050E-13	2.868E-14	9.389E-15	0.000E+00	0.000E+00
Pu-238	0.000E+00	2.517E-03	2.528E-03	2.530E-03	2.529E-03	1.429E-04	1.396E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.019E-01	1.024E-01	1.024E-01	1.024E-01	5.785E-03	5.652E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	2.149E-01	2.159E-01	2.166E-01	2.161E-01	1.220E-02	1.192E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	5.789E-12	5.810E-12	5.713E-12	5.742E-12	4.607E-13	3.884E-13	0.000E+00	0.000E+00
Sr-90	0.000E+00	7.518E+00	7.517E+00	7.531E+00	7.520E+00	4.192E+00	8.522E-01	0.000E+00	0.000E+00
Th-229	0.000E+00	1.024E-13	1.023E-13	1.037E-13	1.043E-13	5.892E-15	2.936E-16	0.000E+00	0.000E+00
Th-230	0.000E+00	3.285E-11	3.289E-11	3.317E-11	3.328E-11	1.880E-12	9.303E-14	0.000E+00	0.000E+00
U-233	0.000E+00	2.730E-10	2.688E-10	2.836E-10	2.845E-10	2.546E-11	4.153E-11	0.000E+00	0.000E+00
U-234	0.000E+00	5.715E-07	5.728E-07	5.710E-07	5.719E-07	5.203E-08	8.745E-08	0.000E+00	0.000E+00
U-235	0.000E+00	7.141E-09	7.159E-09	7.133E-09	7.144E-09	6.501E-10	1.093E-09	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time. For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+02 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L

Ac-227	5.394E-12	5.394E-12	1.184E-16	4.433E-13	1.067E-14
Am-241	1.712E-01	1.712E-01	3.756E-06	0.000E+00	0.000E+00
Co-60	1.289E-08	1.289E-08	2.828E-13	0.000E+00	0.000E+00
Cs-137	2.523E-01	2.523E-01	5.536E-06	0.000E+00	0.000E+00
Eu-152	8.221E-04	8.221E-04	1.804E-08	0.000E+00	0.000E+00
Eu-154	5.278E-06	5.278E-06	1.158E-10	0.000E+00	0.000E+00
Gd-152	5.106E-15	5.106E-15	1.120E-19	0.000E+00	0.000E+00
Np-237	5.237E-06	5.237E-06	1.149E-10	0.000E+00	0.000E+00
Pa-231	9.444E-12	9.444E-12	2.072E-16	7.166E-13	1.726E-14
Pb-210	2.127E-12	2.127E-12	4.667E-17	0.000E+00	0.000E+00
Pu-238	1.441E-03	1.441E-03	3.163E-08	0.000E+00	0.000E+00
Pu-239	1.013E-01	1.013E-01	2.222E-06	0.000E+00	0.000E+00
Pu-241	7.364E-03	7.364E-03	1.616E-07	0.000E+00	0.000E+00
Ra-226	4.405E-12	4.405E-12	9.666E-17	0.000E+00	0.000E+00
Sr-90	3.935E-03	3.935E-03	8.634E-08	2.505E-01	6.033E-03
Th-229	3.493E-12	3.493E-12	7.664E-17	2.655E-14	6.394E-16
Th-230	2.812E-10	2.812E-10	6.170E-15	8.686E-12	2.092E-13
U-233	1.063E-09	1.063E-09	2.333E-14	1.639E-08	3.948E-10
U-234	5.140E-07	5.140E-07	1.128E-11	1.475E-05	3.553E-07
U-235	8.437E-09	8.437E-09	1.851E-13	1.838E-07	4.427E-09

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+02 years*

Radio-Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	4.432E-13	1.373E-11	1.426E-11	1.458E-11	1.460E-11	1.725E-13	7.141E-14	1.600E-13	1.066E-11
Am-241	0.000E+00	1.714E-01	1.722E-01	1.723E-01	1.722E-01	4.865E-03	1.901E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	1.031E-06	1.031E-06	1.039E-06	1.031E-06	1.531E-06	1.263E-07	0.000E+00	0.000E+00
Cs-137	0.000E+00	1.009E+01	1.009E+01	1.011E+01	1.009E+01	2.437E+01	5.450E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	2.056E-03	2.060E-03	2.066E-03	2.061E-03	1.102E-03	2.622E-05	0.000E+00	0.000E+00
Eu-154	0.000E+00	1.320E-05	1.322E-05	1.328E-05	1.323E-05	7.077E-06	1.683E-07	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.277E-14	1.280E-14	1.280E-14	1.280E-14	6.847E-15	6.514E-17	0.000E+00	0.000E+00
Np-237	0.000E+00	1.047E-04	1.048E-04	1.046E-04	1.047E-04	9.731E-06	4.188E-08	0.000E+00	0.000E+00
Pa-231	7.271E-13	9.470E-11	9.571E-11	9.641E-11	9.650E-11	5.656E-11	5.257E-14	1.903E-13	2.004E-12
Pb-210	0.000E+00	2.143E-11	2.129E-11	2.175E-11	2.178E-11	2.053E-12	6.794E-13	0.000E+00	0.000E+00
Pu-238	0.000E+00	1.443E-03	1.450E-03	1.451E-03	1.450E-03	8.193E-05	8.004E-07	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.014E-01	1.018E-01	1.019E-01	1.019E-01	5.756E-03	5.623E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	7.373E-03	7.406E-03	7.430E-03	7.411E-03	4.186E-04	4.089E-06	0.000E+00	0.000E+00

Ra-226	0.000E+00	1.760E-10	1.762E-10	1.754E-10	1.756E-10	1.413E-11	1.186E-11	0.000E+00	0.000E+00
Sr-90	2.505E-01	1.276E+00	1.608E+00	1.642E+00	1.640E+00	1.008E+00	2.644E-01	3.620E-01	6.033E-01
Th-229	3.077E-14	3.534E-12	3.571E-12	3.924E-12	3.931E-12	2.074E-13	1.060E-14	7.071E-14	3.607E-13
Th-230	9.048E-12	2.867E-10	2.984E-10	3.293E-10	3.296E-10	1.682E-11	8.623E-13	2.150E-11	1.081E-10
U-233	1.639E-08	8.323E-09	2.980E-08	3.208E-08	3.219E-08	1.202E-09	2.954E-09	3.943E-09	2.366E-08
U-234	1.475E-05	6.377E-06	2.571E-05	2.791E-05	2.795E-05	9.830E-07	2.493E-06	3.551E-06	2.130E-05
U-235	1.838E-07	8.453E-08	3.255E-07	3.526E-07	3.532E-07	1.271E-08	3.183E-08	4.424E-08	2.654E-07

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 14
Concent : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.rad

Concentration of radionuclides in environmental media
at t = 3.000E+02 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	5.699E-11	5.699E-11	1.251E-15	2.553E-11	6.147E-13
Am-241	1.242E-01	1.242E-01	2.726E-06	0.000E+00	0.000E+00
Co-60	4.782E-20	4.782E-20	1.049E-24	0.000E+00	0.000E+00
Cs-137	2.469E-03	2.469E-03	5.418E-08	0.000E+00	0.000E+00
Eu-152	2.469E-08	2.469E-08	5.418E-13	0.000E+00	0.000E+00
Eu-154	7.500E-13	7.500E-13	1.646E-17	0.000E+00	0.000E+00
Gd-152	5.067E-15	5.067E-15	1.112E-19	0.000E+00	0.000E+00
Np-237	1.108E-05	1.108E-05	2.431E-10	3.312E-04	7.975E-06
Pa-231	6.838E-11	6.838E-11	1.500E-15	2.576E-11	6.203E-13
Pb-210	5.526E-11	5.526E-11	1.213E-15	9.452E-12	2.276E-13
Pu-238	2.943E-04	2.943E-04	6.457E-09	0.000E+00	0.000E+00
Pu-239	9.978E-02	9.978E-02	2.189E-06	0.000E+00	0.000E+00
Pu-241	4.811E-07	4.811E-07	1.056E-11	0.000E+00	0.000E+00
Ra-226	7.056E-11	7.056E-11	1.548E-15	1.132E-12	2.727E-14
Sr-90	1.985E-05	1.985E-05	4.355E-10	1.264E-03	3.043E-05
Th-229	6.871E-11	6.871E-11	1.508E-15	1.583E-11	3.811E-13
Th-230	1.302E-09	1.302E-09	2.858E-14	2.747E-10	6.615E-12
U-233	6.144E-09	6.144E-09	1.348E-13	4.544E-07	1.094E-08
U-234	5.226E-07	5.226E-07	1.147E-11	3.861E-05	9.298E-07
U-235	1.838E-08	1.838E-08	4.034E-13	1.050E-06	2.529E-08

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/19/2007 23:01 Page 15

Concent : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.rad

Concentration of radionuclides in foodstuff media
at t = 3.000E+02 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	2.553E-11	1.520E-10	1.851E-10	1.910E-10	1.911E-10	1.598E-12	8.618E-13	9.218E-12	6.143E-10
Am-241	0.000E+00	1.244E-01	1.249E-01	1.250E-01	1.250E-01	3.531E-03	1.380E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	3.826E-18	3.826E-18	3.854E-18	3.827E-18	5.682E-18	4.687E-19	0.000E+00	0.000E+00
Cs-137	0.000E+00	9.878E-02	9.879E-02	9.892E-02	9.880E-02	2.386E-01	5.335E-02	0.000E+00	0.000E+00
Eu-152	0.000E+00	6.176E-08	6.187E-08	6.206E-08	6.189E-08	3.311E-08	7.875E-10	0.000E+00	0.000E+00
Eu-154	0.000E+00	1.876E-12	1.879E-12	1.888E-12	1.880E-12	1.006E-12	2.392E-14	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.267E-14	1.270E-14	1.270E-14	1.270E-14	6.794E-15	6.464E-17	0.000E+00	0.000E+00
Np-237	3.312E-04	3.366E-04	7.710E-04	8.223E-04	8.224E-04	7.801E-05	5.188E-07	2.392E-04	3.190E-03
Pa-231	2.582E-11	6.930E-10	7.271E-10	7.354E-10	7.356E-10	4.275E-10	4.038E-13	6.304E-12	6.884E-11
Pb-210	9.451E-12	5.585E-10	5.688E-10	5.778E-10	5.781E-10	5.420E-11	1.830E-11	6.821E-11	2.274E-11
Pu-238	0.000E+00	2.946E-04	2.959E-04	2.962E-04	2.961E-04	1.673E-05	1.634E-07	0.000E+00	0.000E+00
Pu-239	0.000E+00	9.990E-02	1.004E-01	1.004E-01	1.004E-01	5.672E-03	5.541E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	4.817E-07	4.839E-07	4.854E-07	4.842E-07	2.735E-08	2.672E-10	0.000E+00	0.000E+00
Ra-226	1.133E-12	2.822E-09	2.825E-09	2.821E-09	2.822E-09	2.272E-10	1.907E-10	1.368E-12	6.842E-12
Sr-90	1.264E-03	6.434E-03	8.110E-03	8.282E-03	8.271E-03	5.085E-03	1.334E-03	1.826E-03	3.044E-03
Th-229	1.594E-11	7.489E-11	9.569E-11	1.077E-10	1.077E-10	4.391E-12	2.331E-13	3.830E-11	1.917E-10
Th-230	2.756E-10	1.404E-09	1.768E-09	1.888E-09	1.889E-09	8.051E-11	4.149E-12	6.630E-10	3.317E-09
U-233	4.544E-07	1.724E-07	7.678E-07	8.394E-07	8.396E-07	2.819E-08	7.317E-08	1.094E-07	6.568E-07
U-234	3.861E-05	1.465E-05	6.525E-05	7.137E-05	7.136E-05	2.395E-06	6.219E-06	9.298E-06	5.579E-05
U-235	1.050E-06	4.088E-07	1.785E-06	1.950E-06	1.950E-06	6.606E-08	1.707E-07	2.529E-07	1.517E-06

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concent : Combined Upper Areas and Filter Bed Areas Resident Farmer (all pathways)
File : combined_upper_areas_and_filter_bed_areas_all_pathways.rad

Concentration of radionuclides in environmental media
at t = 1.000E+03 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	3.990E-10	3.990E-10	8.756E-15	2.634E-10	6.344E-12
Am-241	4.025E-02	4.025E-02	8.831E-07	0.000E+00	0.000E+00

Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	2.291E-10	2.291E-10	5.027E-15	0.000E+00	0.000E+00
Eu-152	3.666E-24	3.666E-24	8.045E-29	0.000E+00	0.000E+00
Eu-154	8.114E-37	8.114E-37	1.780E-41	0.000E+00	0.000E+00
Gd-152	4.836E-15	4.836E-15	1.061E-19	0.000E+00	0.000E+00
Np-237	1.019E-05	1.019E-05	2.236E-10	4.452E-04	1.072E-05
Pa-231	4.162E-10	4.162E-10	9.133E-15	2.241E-10	5.397E-12
Pb-210	6.181E-10	6.181E-10	1.356E-14	8.467E-10	2.039E-11
Pu-238	1.131E-06	1.131E-06	2.482E-11	0.000E+00	0.000E+00
Pu-239	9.480E-02	9.480E-02	2.080E-06	0.000E+00	0.000E+00
Pu-241	1.085E-21	1.085E-21	2.380E-26	0.000E+00	0.000E+00
Ra-226	6.488E-10	6.488E-10	1.424E-14	5.429E-11	1.307E-12
Sr-90	1.810E-13	1.810E-13	3.971E-18	1.153E-11	2.775E-13
Th-229	8.194E-10	8.194E-10	1.798E-14	2.848E-10	6.859E-12
Th-230	2.714E-09	2.714E-09	5.956E-14	7.931E-10	1.910E-11
U-233	1.368E-08	1.368E-08	3.001E-13	1.131E-06	2.723E-08
U-234	5.984E-08	5.984E-08	1.313E-12	5.049E-06	1.216E-07
U-235	2.625E-08	2.625E-08	5.760E-13	1.798E-06	4.330E-08

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+03 years*

Radio-Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	2.634E-10	1.093E-09	1.436E-09	1.490E-09	1.490E-09	1.089E-11	6.472E-12	9.513E-11	6.340E-09
Am-241	0.000E+00	4.030E-02	4.048E-02	4.050E-02	4.050E-02	1.144E-03	4.470E-05	0.000E+00	0.000E+00
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	0.000E+00	9.164E-09	9.165E-09	9.177E-09	9.166E-09	2.213E-08	4.949E-09	0.000E+00	0.000E+00
Eu-152	0.000E+00	9.171E-24	9.187E-24	9.216E-24	9.191E-24	4.916E-24	1.169E-25	0.000E+00	0.000E+00
Eu-154	0.000E+00	2.029E-36	2.033E-36	2.042E-36	2.034E-36	1.088E-36	2.588E-38	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.210E-14	1.212E-14	1.212E-14	1.212E-14	6.484E-15	6.169E-17	0.000E+00	0.000E+00
Np-237	4.452E-04	3.585E-04	9.424E-04	1.012E-03	1.012E-03	9.617E-05	6.599E-07	3.216E-04	4.289E-03
Pa-231	2.242E-10	4.241E-09	4.537E-09	4.579E-09	4.580E-09	2.654E-09	2.496E-12	5.415E-11	5.947E-10
Pb-210	8.466E-10	6.498E-09	7.589E-09	7.789E-09	7.790E-09	7.072E-10	2.620E-10	6.113E-09	2.038E-09
Pu-238	0.000E+00	1.133E-06	1.138E-06	1.139E-06	1.138E-06	6.430E-08	6.282E-10	0.000E+00	0.000E+00
Pu-239	0.000E+00	9.491E-02	9.534E-02	9.539E-02	9.539E-02	5.389E-03	5.264E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	1.086E-21	1.091E-21	1.095E-21	1.092E-21	6.166E-23	6.025E-25	0.000E+00	0.000E+00
Ra-226	5.429E-11	2.597E-08	2.605E-08	2.605E-08	2.605E-08	2.098E-09	1.766E-09	6.538E-11	3.269E-10
Sr-90	1.153E-11	5.866E-11	7.394E-11	7.550E-11	7.539E-11	4.635E-11	1.216E-11	1.665E-11	2.776E-11
Th-229	2.851E-10	9.203E-10	1.297E-09	1.366E-09	1.366E-09	5.204E-11	2.699E-12	6.864E-10	3.432E-09

Th-230	7.932E-10	2.992E-09	4.043E-09	4.180E-09	4.180E-09	1.683E-10	8.590E-12	1.910E-09	9.550E-09
U-233	1.131E-06	4.249E-07	1.906E-06	2.085E-06	2.085E-06	6.977E-08	1.814E-07	2.723E-07	1.634E-06
U-234	5.050E-06	1.895E-06	8.511E-06	9.310E-06	9.308E-06	3.113E-07	8.099E-07	1.216E-06	7.297E-06
U-235	1.798E-06	6.870E-07	3.043E-06	3.326E-06	3.326E-06	1.119E-07	2.902E-07	4.330E-07	2.598E-06

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 4. Combined Upper and Filter Bed Areas Recreational Scenario (No Aquatic Pathways) (Summary File)

Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines

Dose Conversion Factor (and Related) Parameter Summary ... 2
Site-Specific Parameter Summary ... 6
Summary of Pathway Selections ... 13
Contaminated Zone and Total Dose Summary ... 14
Total Dose Components
Time = 0.000E+00 ... 15
Time = 1.000E+00 ... 16
Time = 3.000E+00 ... 17
Time = 1.000E+01 ... 18
Time = 3.000E+01 ... 19
Time = 9.476E+01 ... 20
Time = 1.000E+02 ... 21
Time = 1.664E+02 ... 22
Time = 3.000E+02 ... 23
Time = 1.000E+03 ... 24
Dose/Source Ratios Summed Over All Pathways ... 25
Single Radionuclide Soil Guidelines ... 26
Dose Per Nuclide Summed Over All Pathways ... 27
Soil Concentration Per Nuclide ... 29

Dose Conversion Factor (and Related) Parameter Summary
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Co-60	2.190E-04	2.190E-04	DCF2(3)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(4)
B-1	Eu-152	2.210E-04	2.210E-04	DCF2(5)
B-1	Eu-154	2.860E-04	2.860E-04	DCF2(7)
B-1	Gd-152	2.430E-01	2.430E-01	DCF2(8)

B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(9)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(10)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(11)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(12)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(14)
B-1	Pu-241	8.250E-03	8.250E-03	DCF2(15)
B-1	Pu-241+D	8.254E-03	8.250E-03	DCF2(16)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(17)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(18)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(19)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(20)
B-1	U-233	1.350E-01	1.350E-01	DCF2(21)
B-1	U-234	1.320E-01	1.320E-01	DCF2(22)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(23)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Co-60	2.690E-05	2.690E-05	DCF3(3)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(4)
D-1	Eu-152	6.480E-06	6.480E-06	DCF3(5)
D-1	Eu-154	9.550E-06	9.550E-06	DCF3(7)
D-1	Gd-152	1.610E-04	1.610E-04	DCF3(8)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(9)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(10)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(11)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(12)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(14)
D-1	Pu-241	6.840E-05	6.840E-05	DCF3(15)
D-1	Pu-241+D	7.157E-05	6.840E-05	DCF3(16)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(17)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(18)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(19)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(20)
D-1	U-233	2.890E-04	2.890E-04	DCF3(21)
D-1	U-234	2.830E-04	2.830E-04	DCF3(22)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(23)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name

D-34	Am-241	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34					
D-34	Co-60	, plant/soil concentration ratio, dimensionless	8.000E-02	8.000E-02	RTF(3,1)
D-34	Co-60	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(3,2)
D-34	Co-60	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(3,3)
D-34					
D-34	Cs-137+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Cs-137+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(4,2)
D-34	Cs-137+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(4,3)
D-34					
D-34	Eu-152	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(5,1)
D-34	Eu-152	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(5,2)
D-34	Eu-152	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(5,3)
D-34					
D-34	Eu-154	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(7,1)
D-34	Eu-154	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(7,2)
D-34	Eu-154	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(7,3)
D-34					
D-34	Gd-152	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	Gd-152	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(8,2)
D-34	Gd-152	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(8,3)
D-34					
D-34	Np-237+D	, plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(9,1)
D-34	Np-237+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Np-237+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(9,3)
D-34					
D-34	Pa-231	, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(10,1)
D-34	Pa-231	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(10,2)
D-34	Pa-231	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(10,3)
D-34					
D-34	Pb-210+D	, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(11,1)
D-34	Pb-210+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(11,2)
D-34	Pb-210+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(11,3)
D-34					
D-34	Pu-238	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(12,1)
D-34	Pu-238	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(12,2)
D-34	Pu-238	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(12,3)
D-34					
D-34	Pu-239	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(14,1)
D-34	Pu-239	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(14,2)
D-34	Pu-239	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(14,3)
D-34					
D-34	Pu-241	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(15,1)
D-34	Pu-241	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(15,2)
D-34	Pu-241	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(15,3)
D-34					

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Pu-241+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(16,1)
D-34	Pu-241+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(16,2)
D-34	Pu-241+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(16,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(17,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(17,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(17,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(18,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(18,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(18,3)
D-34				
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(19,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(19,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(19,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(20,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(20,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(20,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(21,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(21,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(22,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(22,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(22,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(23,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(23,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(23,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Co-60 , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Co-60 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(3,2)
D-5				
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(4,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(4,2)
D-5				

D-5	Eu-152 , fish	5.000E+01	5.000E+01	BIOFAC(5,1)
D-5	Eu-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(5,2)
D-5				
D-5	Eu-154 , fish	5.000E+01	5.000E+01	BIOFAC(7,1)
D-5	Eu-154 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(7,2)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(8,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(8,2)
D-5				
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(9,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(9,2)
D-5				
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(10,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(10,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(11,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(11,2)
D-5				
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(12,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(12,2)
D-5				
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(14,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(14,2)
D-5				
D-5	Pu-241 , fish	3.000E+01	3.000E+01	BIOFAC(15,1)
D-5	Pu-241 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(15,2)
D-5				
D-5	Pu-241+D , fish	3.000E+01	3.000E+01	BIOFAC(16,1)
D-5	Pu-241+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(16,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(17,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(17,2)
D-5				
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(18,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(18,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(19,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(19,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(20,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(20,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(21,1)

D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(22,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(22,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(23,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(23,2)

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

Site-Specific Parameter Summary

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.310E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.100E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	not used	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)	9.476E+01	1.000E+02	---	T(6)
R011	Times for calculations (yr)	1.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.664E+02	1.000E+03	---	T(8)
R011	Times for calculations (yr)	3.000E+02	0.000E+00	---	T(9)
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.700E-01	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Co-60	6.690E-03	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Cs-137	2.550E+00	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Eu-152	1.500E-01	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Eu-154	1.400E-02	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Pu-238	3.190E-03	0.000E+00	---	S1(12)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.020E-01	0.000E+00	---	S1(14)
R012	Initial principal radionuclide (pCi/g): Pu-241	9.110E-01	0.000E+00	---	S1(15)
R012	Initial principal radionuclide (pCi/g): Sr-90	5.540E-02	0.000E+00	---	S1(18)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Co-60	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Eu-152	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): Eu-154	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(12)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(14)
R012	Concentration in groundwater (pCi/L): Pu-241	not used	0.000E+00	---	W1(15)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(18)

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)	1.500E+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)	2.270E+02	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)	9.700E-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)

0 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)	not used	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	not used	1.000E-03	Romberg failures occurred	EPS
R014	Density of saturated zone (g/cm**3)	not used	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	not used	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	not used	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	not used	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	not used	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	not used	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	not used	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	not used	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	not used	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	not used	1	---	NS
R015	Unsat. zone 1, thickness (m)	not used	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	not used	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	not used	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	not used	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	not used	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	not used	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	not used	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+01	---	DCNUCU(2,1)

R016	Saturated zone (cm**3/g)	not used	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.349E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Co-60				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+03	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	not used	1.000E+03	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	not used	1.000E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.694E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	1.900E+03	4.600E+03	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	not used	4.600E+03	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	not used	4.600E+03	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.807E-05	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for Eu-152				
R016	Contaminated zone (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	not used	-1.000E+00	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	not used	-1.000E+00	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.665E-05	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Eu-154				
R016	Contaminated zone (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	not used	-1.000E+00	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	not used	-1.000E+00	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.665E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+03	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+03	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+03	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+03	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-05	ALEACH(14)

R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for Pu-241				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+03	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+03	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	2.000E+01	3.000E+01	---	DCNUCC(18)
R016	Unsaturated zone 1 (cm**3/g)	not used	3.000E+01	---	DCNUCU(18,1)
R016	Saturated zone (cm**3/g)	not used	3.000E+01	---	DCNUCS(18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.644E-03	ALEACH(18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(18)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	1.500E+03	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.555E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Gd-152				
R016	Contaminated zone (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	not used	-1.000E+00	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	not used	-1.000E+00	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.665E-05	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	not used	-1.000E+00	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	not used	-1.000E+00	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.119E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.963E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)

R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	not used	1.000E+02	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	not used	1.000E+02	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.694E-05	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(17)
R016	Unsaturated zone 1 (cm**3/g)	not used	7.000E+01	---	DCNUCU(17,1)
R016	Saturated zone (cm**3/g)	not used	7.000E+01	---	DCNUCS(17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.861E-06	ALEACH(17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(17)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	not used	6.000E+04	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	not used	6.000E+04	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.616E-05	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(20)
R016	Unsaturated zone 1 (cm**3/g)	not used	6.000E+04	---	DCNUCU(20,1)
R016	Saturated zone (cm**3/g)	not used	6.000E+04	---	DCNUCS(20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.616E-05	ALEACH(20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(20)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(21)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(21,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(21)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.516E-03	ALEACH(21)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(21)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(22)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(22,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(22)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.516E-03	ALEACH(22)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(22)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(23)

R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(23,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(23)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.516E-03	ALEACH(23)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(23)
R017	Inhalation rate (m**3/yr)	1.400E+04	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	0.000E+00	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.920E-02	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)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)

R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	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

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
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
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	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	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	32	---	---	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	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	suppressed
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:06 Page 14
Summary : Combined Upper Areas and Filter Bed Areas Recreationist
File : recreational_cua_and_fba.rad

Contaminated Zone Dimensions

Area: 131000.00 square meters
Thickness: 6.10 meters
Cover Depth: 0.00 meters

Initial Soil Concentrations, pCi/g

Am-241	1.700E-01
Co-60	6.690E-03
Cs-137	2.550E+00
Eu-152	1.500E-01
Eu-154	1.400E-02
Pu-238	3.190E-03
Pu-239	1.020E-01
Pu-241	9.110E-01
Sr-90	5.540E-02

0

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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
TDOSE(t):	1.868E-01	1.817E-01	1.721E-01	1.431E-01	8.684E-02	1.978E-02	1.767E-02	4.887E-03	1.405E-03	7.174E-04
M(t):	7.471E-03	7.269E-03	6.884E-03	5.722E-03	3.474E-03	7.913E-04	7.070E-04	1.955E-04	5.619E-05	2.870E-05

0Maximum TDOSE(t): 1.868E-01 mrem/yr at t = 0.000E+00 years
1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:06 Page 15
Summary : Combined Upper Areas and Filter Bed Areas Recreationist
File : recreational_cua_and_fba.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)

0
0

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.

Am-241	1.424E-04	0.0008	4.448E-04	0.0024	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.333E-04	0.0023
Co-60	1.913E-03	0.0102	8.097E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.182E-07	0.0000
Cs-137	1.619E-01	0.8666	4.743E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.833E-05	0.0005
Eu-152	1.930E-02	0.1033	1.905E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.637E-07	0.0000
Eu-154	1.947E-03	0.0104	2.271E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.010E-08	0.0000
Pu-238	9.228E-09	0.0000	7.346E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.125E-06	0.0000
Pu-239	5.726E-07	0.0000	2.581E-04	0.0014	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.530E-04	0.0014
Pu-241	9.229E-07	0.0000	4.516E-05	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.447E-05	0.0002
Sr-90	2.536E-05	0.0001	4.219E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.855E-06	0.0000
Total	1.852E-01	0.9915	7.565E-04	0.0041	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.330E-04	0.0045

0

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

0

0 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.
Am-241	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	1.021E-03	0.0055
Co-60	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	1.913E-03	0.0102
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	1.620E-01	0.8671
Eu-152	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	1.930E-02	0.1033
Eu-154	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	1.947E-03	0.0104
Pu-238	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	1.448E-05	0.0001
Pu-239	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	5.117E-04	0.0027
Pu-241	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	9.055E-05	0.0005
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	3.164E-05	0.0002
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	1.868E-01	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:06 Page 16
Summary : Combined Upper Areas and Filter Bed Areas Recreationist
File : recreational_cua_and_fba.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 = 1.000E+00 years

0

0 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.
Am-241	1.422E-04	0.0008	4.441E-04	0.0024	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.326E-04	0.0024
Co-60	1.677E-03	0.0092	7.098E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.036E-07	0.0000
Cs-137	1.582E-01	0.8704	4.634E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.631E-05	0.0005
Eu-152	1.832E-02	0.1008	1.809E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.301E-07	0.0000
Eu-154	1.799E-03	0.0099	2.099E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.327E-08	0.0000
Pu-238	9.155E-09	0.0000	7.288E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.069E-06	0.0000
Pu-239	5.726E-07	0.0000	2.581E-04	0.0014	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.530E-04	0.0014
Pu-241	2.074E-06	0.0000	4.676E-05	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.601E-05	0.0003

Sr-90	2.470E-05	0.0001	4.109E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.702E-06	0.0000
Total	1.801E-01	0.9913	7.573E-04	0.0042	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.315E-04	0.0046

0

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

0

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.
Am-241	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	1.019E-03	0.0056
Co-60	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	1.677E-03	0.0092
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	1.583E-01	0.8709
Eu-152	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	1.832E-02	0.1008
Eu-154	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	1.799E-03	0.0099
Pu-238	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	1.437E-05	0.0001
Pu-239	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	5.116E-04	0.0028
Pu-241	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	9.484E-05	0.0005
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	3.081E-05	0.0002
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	1.817E-01	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:06 Page 17
Summary : Combined Upper Areas and Filter Bed Areas Recreationist
File : recreational_cua_and_fba.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 = 3.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

0

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.
Am-241	1.417E-04	0.0008	4.427E-04	0.0026	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.312E-04	0.0025
Co-60	1.289E-03	0.0075	5.456E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.963E-08	0.0000
Cs-137	1.510E-01	0.8774	4.425E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.240E-05	0.0005
Eu-152	1.651E-02	0.0959	1.630E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.678E-07	0.0000
Eu-154	1.537E-03	0.0089	1.793E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.112E-08	0.0000
Pu-238	9.010E-09	0.0000	7.173E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.958E-06	0.0000
Pu-239	5.725E-07	0.0000	2.580E-04	0.0015	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.530E-04	0.0015
Pu-241	4.209E-06	0.0000	4.973E-05	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.886E-05	0.0003
Sr-90	2.343E-05	0.0001	3.897E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.408E-06	0.0000
Total	1.705E-01	0.9908	7.586E-04	0.0044	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.285E-04	0.0048

0

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

0

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.
Am-241	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	1.016E-03	0.0059
Co-60	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	1.289E-03	0.0075
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	1.511E-01	0.8779
Eu-152	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	1.651E-02	0.0959
Eu-154	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	1.537E-03	0.0089
Pu-238	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	1.414E-05	0.0001
Pu-239	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	5.116E-04	0.0030
Pu-241	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	1.028E-04	0.0006
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	2.923E-05	0.0002
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	1.721E-01	1.0000

0*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
0
Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	1.402E-04	0.0010	4.377E-04	0.0031	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.264E-04	0.0030
Co-60	5.131E-04	0.0036	2.172E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.169E-08	0.0000
Cs-137	1.284E-01	0.8978	3.763E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.009E-05	0.0005
Eu-152	1.147E-02	0.0802	1.132E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.944E-07	0.0000
Eu-154	8.849E-04	0.0062	1.032E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.096E-08	0.0000
Pu-238	8.523E-09	0.0000	6.785E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.581E-06	0.0000
Pu-239	5.722E-07	0.0000	2.579E-04	0.0018	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.529E-04	0.0018
Pu-241	1.020E-05	0.0001	5.797E-05	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.676E-05	0.0004
Sr-90	1.947E-05	0.0001	3.239E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.494E-06	0.0000
Total	1.415E-01	0.9890	7.612E-04	0.0053	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.176E-04	0.0057

0

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
0
Water Dependent Pathways
0

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.
Am-241	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-03	0.0070
Co-60	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	5.131E-04	0.0036
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	1.285E-01	0.8983
Eu-152	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	1.147E-02	0.0802
Eu-154	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	8.849E-04	0.0062
Pu-238	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	1.337E-05	0.0001
Pu-239	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	5.113E-04	0.0036

Pu-241	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	1.249E-04	0.0009
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	2.429E-05	0.0002
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	1.431E-01	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:06 Page 19

Summary : Combined Upper Areas and Filter Bed Areas Recreationist

File : recreational_cua_and_fba.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 = 3.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

0

0

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.
Am-241	1.357E-04	0.0016	4.239E-04	0.0049	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.129E-04	0.0048
Co-60	3.691E-05	0.0004	1.562E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.280E-09	0.0000
Cs-137	8.087E-02	0.9312	2.369E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.413E-05	0.0005
Eu-152	4.048E-03	0.0466	3.996E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.392E-07	0.0000
Eu-154	1.829E-04	0.0021	2.133E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.465E-09	0.0000
Pu-238	7.273E-09	0.0000	5.788E-06	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.614E-06	0.0001
Pu-239	5.714E-07	0.0000	2.575E-04	0.0030	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.525E-04	0.0029
Pu-241	1.907E-05	0.0002	6.952E-05	0.0008	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.783E-05	0.0008
Sr-90	1.147E-05	0.0001	1.908E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.648E-06	0.0000
Total	8.530E-02	0.9822	7.571E-04	0.0087	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.857E-04	0.0090

0

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

0

0

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.
Am-241	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	9.725E-04	0.0112
Co-60	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	3.691E-05	0.0004
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	8.091E-02	0.9317
Eu-152	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	4.048E-03	0.0466
Eu-154	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	1.829E-04	0.0021
Pu-238	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	1.141E-05	0.0001
Pu-239	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-04	0.0059
Pu-241	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	1.564E-04	0.0018
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	1.431E-05	0.0002
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	8.684E-02	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:06 Page 20

Summary : Combined Upper Areas and Filter Bed Areas Recreationist

File : recreational_cua_and_fba.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 = 9.476E+01 years
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	1.224E-04	0.0062	3.819E-04	0.0193	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.720E-04	0.0188
Co-60	7.344E-09	0.0000	3.108E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.536E-13	0.0000
Cs-137	1.808E-02	0.9138	5.297E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.865E-06	0.0005
Eu-152	1.390E-04	0.0070	1.372E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.779E-09	0.0000
Eu-154	1.109E-06	0.0001	1.294E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.134E-11	0.0000
Pu-238	4.351E-09	0.0000	3.461E-06	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.356E-06	0.0002
Pu-239	5.688E-07	0.0000	2.563E-04	0.0130	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.513E-04	0.0127
Pu-241	2.231E-05	0.0011	7.009E-05	0.0035	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.828E-05	0.0035
Sr-90	2.069E-06	0.0001	3.442E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.776E-07	0.0000
Total	1.837E-02	0.9284	7.118E-04	0.0360	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.053E-04	0.0357

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 9.476E+01 years
0 Water Dependent Pathways
0

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.
Am-241	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	8.763E-04	0.0443
Co-60	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	7.345E-09	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	1.809E-02	0.9143
Eu-152	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	1.390E-04	0.0070
Eu-154	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	1.109E-06	0.0001
Pu-238	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	6.822E-06	0.0003
Pu-239	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	5.081E-04	0.0257
Pu-241	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	1.607E-04	0.0081
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	2.581E-06	0.0001
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	1.978E-02	1.0000

0*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
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	1.213E-04	0.0069	3.787E-04	0.0214	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.689E-04	0.0209
Co-60	3.685E-09	0.0000	1.560E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.276E-13	0.0000

Cs-137	1.601E-02	0.9061	4.692E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.739E-06	0.0005
Eu-152	1.058E-04	0.0060	1.044E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.638E-09	0.0000
Eu-154	7.338E-07	0.0000	8.561E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.396E-11	0.0000
Pu-238	4.174E-09	0.0000	3.320E-06	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.220E-06	0.0002
Pu-239	5.686E-07	0.0000	2.562E-04	0.0145	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.512E-04	0.0142
Pu-241	2.218E-05	0.0013	6.958E-05	0.0039	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.779E-05	0.0038
Sr-90	1.801E-06	0.0001	2.997E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.158E-07	0.0000
Total	1.627E-02	0.9203	7.079E-04	0.0400	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.002E-04	0.0396

0

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

0

0

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.
Am-241	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	8.689E-04	0.0492
Co-60	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	3.685E-09	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	1.602E-02	0.9065
Eu-152	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	1.058E-04	0.0060
Eu-154	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	7.338E-07	0.0000
Pu-238	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	6.543E-06	0.0004
Pu-239	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	5.080E-04	0.0287
Pu-241	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	1.596E-04	0.0090
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	2.247E-06	0.0001
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	1.767E-02	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:06 Page 22

Summary : Combined Upper Areas and Filter Bed Areas Recreationist

File : recreational_cua_and_fba.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 = 1.664E+02 years

0

0

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.
Am-241	1.091E-04	0.0223	3.403E-04	0.0696	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.315E-04	0.0678
Co-60	5.909E-13	0.0000	2.501E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.650E-17	0.0000
Cs-137	3.447E-03	0.7053	1.010E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.881E-06	0.0004
Eu-152	3.334E-06	0.0007	3.291E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.147E-10	0.0000
Eu-154	3.911E-09	0.0000	4.562E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.810E-13	0.0000
Pu-238	2.468E-09	0.0000	1.959E-06	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.900E-06	0.0004
Pu-239	5.659E-07	0.0001	2.550E-04	0.0522	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.500E-04	0.0512
Pu-241	2.012E-05	0.0041	6.279E-05	0.0128	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.116E-05	0.0125
Sr-90	3.111E-07	0.0001	5.176E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.182E-08	0.0000
Total	3.580E-03	0.7326	6.600E-04	0.1351	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.465E-04	0.1323

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.664E+02 years

0

Water Dependent Pathways

0

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.
Am-241	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	7.809E-04	0.1598
Co-60	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	5.910E-13	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	3.449E-03	0.7057
Eu-152	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	3.334E-06	0.0007
Eu-154	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	3.911E-09	0.0000
Pu-238	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	3.861E-06	0.0008
Pu-239	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	5.055E-04	0.1034
Pu-241	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	1.441E-04	0.0295
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	3.881E-07	0.0001
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	4.887E-03	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:06 Page 23

Summary : Combined Upper Areas and Filter Bed Areas Recreationist

File : recreational_cua_and_fba.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 = 3.000E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

0

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.
Am-241	8.806E-05	0.0627	2.744E-04	0.1954	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.673E-04	0.1903
Co-60	1.367E-20	0.0000	5.788E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.447E-25	0.0000
Cs-137	1.567E-04	0.1116	4.593E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.553E-08	0.0001
Eu-152	3.177E-09	0.0000	3.137E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.093E-13	0.0000
Eu-154	1.043E-13	0.0000	1.217E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.827E-18	0.0000
Pu-238	8.701E-10	0.0000	6.780E-07	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.574E-07	0.0005
Pu-239	5.605E-07	0.0004	2.525E-04	0.1797	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.475E-04	0.1762
Pu-241	1.625E-05	0.0116	5.065E-05	0.0361	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.934E-05	0.0351
Sr-90	9.087E-09	0.0000	1.512E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.098E-09	0.0000
Total	2.616E-04	0.1862	5.782E-04	0.4116	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.650E-04	0.4022

0

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

0

Water Dependent Pathways

0

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.
Am-241	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	6.298E-04	0.4483

Co-60	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	1.368E-20	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	1.568E-04	0.1116
Eu-152	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	3.177E-09	0.0000
Eu-154	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	1.043E-13	0.0000
Pu-238	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	1.336E-06	0.0010
Pu-239	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	5.006E-04	0.3563
Pu-241	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	1.162E-04	0.0827
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	1.134E-08	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	1.405E-03	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:06 Page 24

Summary : Combined Upper Areas and Filter Bed Areas Recreationist

File : recreational_cua_and_fba.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 = 1.000E+03 years
Water Independent Pathways (Inhalation excludes radon)

0

0

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.
Am-241	2.865E-05	0.0399	8.893E-05	0.1240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.663E-05	0.1207
Co-60	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	1.454E-11	0.0000	4.261E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.935E-15	0.0000
Eu-152	4.718E-25	0.0000	6.931E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.456E-19	0.0000
Eu-154	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
Pu-238	1.405E-10	0.0000	2.657E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.543E-09	0.0000
Pu-239	5.326E-07	0.0007	2.399E-04	0.3343	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.352E-04	0.3278
Pu-241	5.286E-06	0.0074	1.641E-05	0.0229	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.599E-05	0.0223
Sr-90	8.285E-17	0.0000	1.378E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.912E-17	0.0000
Total	3.446E-05	0.0480	3.452E-04	0.4811	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.378E-04	0.4708

0

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

0

0

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.
Am-241	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	2.042E-04	0.2846
Co-60	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	1.455E-11	0.0000
Eu-152	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	7.476E-18	0.0000
Eu-154	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
Pu-238	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	5.341E-09	0.0000
Pu-239	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	4.755E-04	0.6628
Pu-241	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	3.768E-05	0.0525
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	1.033E-16	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 7.174E-04 1.0000
0*Sum of all water independent and dependent pathways.

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

0 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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.003E-03	5.994E-03	5.974E-03	5.907E-03	5.720E-03	5.154E-03	5.110E-03	4.592E-03	3.703E-03	1.200E-03
Am-241	Np-237+D	1.000E+00	4.389E-09	1.315E-08	3.056E-08	9.049E-08	2.532E-07	7.010E-07	7.324E-07	1.075E-06	1.510E-06	1.376E-06
Am-241	U-233	1.000E+00	2.416E-16	1.688E-15	8.880E-15	7.812E-14	6.276E-13	5.239E-12	5.758E-12	1.355E-11	3.195E-11	6.995E-11
Am-241	Th-229+D	1.000E+00	2.553E-19	3.823E-18	4.444E-17	1.164E-15	2.744E-14	7.428E-13	8.640E-13	3.511E-12	1.618E-11	1.886E-10
Am-241	ΣDSR(j)		6.003E-03	5.994E-03	5.974E-03	5.907E-03	5.720E-03	5.154E-03	5.111E-03	4.593E-03	3.705E-03	1.201E-03
0Co-60	Co-60	1.000E+00	2.860E-01	2.507E-01	1.927E-01	7.670E-02	5.518E-03	1.098E-06	5.509E-07	8.833E-11	2.044E-18	0.000E+00
0Cs-137+D	Cs-137+D	1.000E+00	6.351E-02	6.206E-02	5.925E-02	5.040E-02	3.173E-02	7.093E-03	6.284E-03	1.352E-03	6.150E-05	5.706E-12
0Eu-152	Eu-152	7.208E-01	9.275E-02	8.804E-02	7.934E-02	5.510E-02	1.945E-02	6.677E-04	5.083E-04	1.602E-05	1.527E-08	2.267E-24
0Eu-152	Eu-152	2.792E-01	3.593E-02	3.410E-02	3.073E-02	2.134E-02	7.534E-03	2.586E-04	1.969E-04	6.206E-06	5.914E-09	8.781E-25
Eu-152	Gd-152	2.792E-01	1.361E-18	3.992E-18	8.858E-18	2.240E-17	4.228E-17	5.257E-17	5.264E-17	5.268E-17	5.222E-17	4.984E-17
Eu-152	ΣDSR(j)		3.593E-02	3.410E-02	3.073E-02	2.134E-02	7.534E-03	2.586E-04	1.969E-04	6.206E-06	5.914E-09	4.984E-17
0Eu-154	Eu-154	1.000E+00	1.390E-01	1.285E-01	1.098E-01	6.321E-02	1.306E-02	7.923E-05	5.242E-05	2.793E-07	7.449E-12	8.058E-36
0Pu-238	Pu-238	1.840E-09	8.353E-12	8.286E-12	8.156E-12	7.715E-12	6.581E-12	3.934E-12	3.774E-12	2.227E-12	7.705E-13	2.962E-15
0Pu-238	Pu-238	1.000E+00	4.539E-03	4.504E-03	4.433E-03	4.193E-03	3.577E-03	2.138E-03	2.051E-03	1.210E-03	4.187E-04	1.610E-06
Pu-238	U-234	1.000E+00	1.390E-09	4.150E-09	9.574E-09	2.760E-08	7.153E-08	1.552E-07	1.590E-07	1.831E-07	1.611E-07	1.844E-08
Pu-238	Th-230	1.000E+00	9.881E-15	6.894E-14	3.617E-13	3.151E-12	2.464E-11	1.895E-10	2.071E-10	4.531E-10	9.530E-10	1.983E-09
Pu-238	Ra-226+D	1.000E+00	9.720E-17	1.454E-15	1.687E-14	4.382E-13	1.011E-11	2.559E-10	2.961E-10	1.132E-09	4.696E-09	4.305E-08
Pu-238	Pb-210+D	1.000E+00	1.522E-20	4.683E-19	1.161E-17	8.556E-16	5.152E-14	3.036E-12	3.628E-12	1.810E-11	9.312E-11	1.038E-09
Pu-238	ΣDSR(j)		4.539E-03	4.504E-03	4.433E-03	4.193E-03	3.577E-03	2.138E-03	2.051E-03	1.210E-03	4.189E-04	1.674E-06
0Pu-239	Pu-239	1.000E+00	5.017E-03	5.016E-03	5.015E-03	5.013E-03	5.006E-03	4.982E-03	4.980E-03	4.956E-03	4.907E-03	4.662E-03
Pu-239	U-235+D	1.000E+00	7.537E-12	2.257E-11	5.249E-11	1.555E-10	4.360E-10	1.217E-09	1.273E-09	1.893E-09	2.764E-09	3.944E-09
Pu-239	Pa-231	1.000E+00	6.450E-17	4.510E-16	2.379E-15	2.110E-14	1.737E-13	1.570E-12	1.737E-12	4.446E-12	1.250E-11	7.591E-11
Pu-239	Ac-227+D	1.000E+00	2.420E-18	3.603E-17	4.134E-16	1.032E-14	2.144E-13	4.151E-12	4.719E-12	1.498E-11	4.943E-11	3.452E-10
Pu-239	ΣDSR(j)		5.017E-03	5.016E-03	5.015E-03	5.013E-03	5.006E-03	4.982E-03	4.980E-03	4.956E-03	4.907E-03	4.662E-03
0Pu-241	Pu-241	1.000E+00	9.441E-05	8.997E-05	8.171E-05	5.832E-05	2.225E-05	9.823E-07	7.631E-07	3.113E-08	4.986E-11	1.124E-25
Pu-241	Am-241	1.000E+00	4.739E-06	1.391E-05	3.093E-05	7.867E-05	1.494E-04	1.754E-04	1.744E-04	1.581E-04	1.275E-04	4.132E-05
Pu-241	Np-237+D	1.000E+00	2.319E-12	1.600E-11	8.181E-11	6.524E-10	4.073E-09	1.884E-08	1.996E-08	3.240E-08	4.851E-08	4.660E-08
Pu-241	U-233	1.000E+00	9.599E-20	1.423E-18	1.617E-17	3.910E-16	7.467E-15	1.184E-13	1.329E-13	3.665E-13	9.680E-13	2.340E-12
Pu-241	Th-229+D	1.000E+00	8.125E-23	2.495E-21	6.155E-20	4.467E-18	2.592E-16	1.438E-14	1.715E-14	8.494E-14	4.547E-13	6.087E-12
Pu-241	ΣDSR(j)		9.915E-05	1.039E-04	1.126E-04	1.370E-04	1.716E-04	1.764E-04	1.751E-04	1.581E-04	1.276E-04	4.137E-05
0Pu-241+D	Pu-241+D	2.450E-05	2.441E-07	2.326E-07	2.112E-07	1.507E-07	5.751E-08	2.539E-09	1.973E-09	8.048E-11	1.289E-13	2.906E-28
Pu-241+D	Np-237+D	2.450E-05	1.059E-13	3.107E-13	6.905E-13	1.753E-12	3.307E-12	3.773E-12	3.741E-12	3.281E-12	2.473E-12	5.610E-13
Pu-241+D	U-233	2.450E-05	5.852E-21	4.034E-20	2.061E-19	1.636E-18	1.006E-17	4.411E-17	4.652E-17	7.111E-17	9.422E-17	4.937E-17
Pu-241+D	Th-229+D	2.450E-05	6.196E-24	9.188E-23	1.045E-21	2.533E-20	4.878E-19	7.971E-18	8.969E-18	2.560E-17	7.288E-17	2.904E-16
Pu-241+D	ΣDSR(j)		2.441E-07	2.326E-07	2.112E-07	1.507E-07	5.752E-08	2.543E-09	1.976E-09	8.376E-11	2.602E-12	5.613E-13

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

0 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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Sr-90+D	Sr-90+D	1.000E+00	5.711E-04	5.562E-04	5.276E-04	4.384E-04	2.583E-04	4.659E-05	4.056E-05	7.006E-06	2.046E-07	1.865E-15

The DSR includes contributions from associated (half-life ó 180 days) daughters.

0

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

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	4.164E+03	4.171E+03	4.185E+03	4.232E+03	4.370E+03	4.850E+03	4.891E+03	5.443E+03	6.748E+03	2.081E+04
Co-60	8.742E+01	9.971E+01	1.297E+02	3.259E+02	4.531E+03	2.277E+07	4.538E+07	2.830E+11	*1.132E+15	*1.132E+15
Cs-137	3.936E+02	4.028E+02	4.219E+02	4.961E+02	7.879E+02	3.524E+03	3.979E+03	1.849E+04	4.065E+05	4.381E+12
Eu-152	1.943E+02	2.047E+02	2.271E+02	3.270E+02	9.264E+02	2.699E+04	3.545E+04	1.125E+06	1.180E+09	*1.765E+14
Eu-154	1.798E+02	1.945E+02	2.278E+02	3.955E+02	1.914E+03	3.156E+05	4.770E+05	8.950E+07	3.356E+12	*2.639E+14
Pu-238	5.507E+03	5.551E+03	5.640E+03	5.963E+03	6.989E+03	1.169E+04	1.219E+04	2.065E+04	5.968E+04	1.493E+07
Pu-239	4.984E+03	4.984E+03	4.985E+03	4.987E+03	4.995E+03	5.018E+03	5.020E+03	5.045E+03	5.094E+03	5.362E+03
Pu-241	2.515E+05	2.401E+05	2.215E+05	1.823E+05	1.456E+05	1.417E+05	1.427E+05	1.581E+05	1.959E+05	6.044E+05
Sr-90	4.377E+04	4.495E+04	4.739E+04	5.703E+04	9.678E+04	5.366E+05	6.163E+05	3.568E+06	1.222E+08	*1.365E+14

*At specific activity limit

0

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

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.700E-01	0.000E+00	6.003E-03	4.164E+03	6.003E-03	4.164E+03
Co-60	6.690E-03	0.000E+00	2.860E-01	8.742E+01	2.860E-01	8.742E+01
Cs-137	2.550E+00	0.000E+00	6.351E-02	3.936E+02	6.351E-02	3.936E+02
Eu-152	1.500E-01	0.000E+00	1.287E-01	1.943E+02	1.287E-01	1.943E+02
Eu-154	1.400E-02	0.000E+00	1.390E-01	1.798E+02	1.390E-01	1.798E+02
Pu-238	3.190E-03	0.000E+00	4.539E-03	5.507E+03	4.539E-03	5.507E+03
Pu-239	1.020E-01	0.000E+00	5.017E-03	4.984E+03	5.017E-03	4.984E+03
Pu-241	9.110E-01	58.9 ± 0.1	1.818E-04	1.375E+05	9.939E-05	2.515E+05
Sr-90	5.540E-02	0.000E+00	5.711E-04	4.377E+04	5.711E-04	4.377E+04

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

0Nuclide (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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03

Am-241	Am-241	1.000E+00	1.021E-03	1.019E-03	1.016E-03	1.004E-03	9.724E-04	8.761E-04	8.688E-04	7.807E-04	6.296E-04	2.040E-04
Am-241	Pu-241	1.000E+00	4.317E-06	1.267E-05	2.817E-05	7.166E-05	1.361E-04	1.598E-04	1.588E-04	1.440E-04	1.162E-04	3.764E-05
Am-241	ΣDOSE(j)		1.025E-03	1.032E-03	1.044E-03	1.076E-03	1.109E-03	1.036E-03	1.028E-03	9.247E-04	7.458E-04	2.416E-04
0Np-237	Am-241	1.000E+00	7.461E-10	2.235E-09	5.195E-09	1.538E-08	4.305E-08	1.192E-07	1.245E-07	1.827E-07	2.566E-07	2.339E-07
Np-237	Pu-241	1.000E+00	2.113E-12	1.457E-11	7.453E-11	5.944E-10	3.711E-09	1.716E-08	1.819E-08	2.952E-08	4.419E-08	4.245E-08
Np-237	Pu-241	2.450E-05	9.646E-14	2.830E-13	6.291E-13	1.597E-12	3.012E-12	3.437E-12	3.408E-12	2.989E-12	2.253E-12	5.110E-13
Np-237	ΣDOSE(j)		7.483E-10	2.250E-09	5.270E-09	1.598E-08	4.677E-08	1.363E-07	1.427E-07	2.123E-07	3.008E-07	2.764E-07
0U-233	Am-241	1.000E+00	4.108E-17	2.869E-16	1.510E-15	1.328E-14	1.067E-13	8.906E-13	9.789E-13	2.303E-12	5.432E-12	1.189E-11
U-233	Pu-241	1.000E+00	8.744E-20	1.296E-18	1.473E-17	3.562E-16	6.803E-15	1.079E-13	1.211E-13	3.339E-13	8.818E-13	2.131E-12
U-233	Pu-241	2.450E-05	5.331E-21	3.675E-20	1.877E-19	1.490E-18	9.169E-18	4.018E-17	4.238E-17	6.479E-17	8.584E-17	4.498E-17
U-233	ΣDOSE(j)		4.117E-17	2.883E-16	1.525E-15	1.364E-14	1.135E-13	9.985E-13	1.100E-12	2.637E-12	6.314E-12	1.402E-11
0Th-229	Am-241	1.000E+00	4.339E-20	6.499E-19	7.555E-18	1.978E-16	4.665E-15	1.263E-13	1.469E-13	5.969E-13	2.750E-12	3.206E-11
Th-229	Pu-241	1.000E+00	7.402E-23	2.273E-21	5.608E-20	4.069E-18	2.362E-16	1.310E-14	1.562E-14	7.738E-14	4.142E-13	5.545E-12
Th-229	Pu-241	2.450E-05	5.644E-24	8.371E-23	9.520E-22	2.308E-20	4.444E-19	7.261E-18	8.171E-18	2.332E-17	6.639E-17	2.646E-16
Th-229	ΣDOSE(j)		4.347E-20	6.522E-19	7.612E-18	2.019E-16	4.901E-15	1.394E-13	1.625E-13	6.743E-13	3.164E-12	3.761E-11
0Co-60	Co-60	1.000E+00	1.913E-03	1.677E-03	1.289E-03	5.131E-04	3.691E-05	7.345E-09	3.685E-09	5.910E-13	1.368E-20	0.000E+00
0Cs-137	Cs-137	1.000E+00	1.620E-01	1.583E-01	1.511E-01	1.285E-01	8.091E-02	1.809E-02	1.602E-02	3.449E-03	1.568E-04	1.455E-11
0Eu-152	Eu-152	7.208E-01	1.391E-02	1.321E-02	1.190E-02	8.266E-03	2.918E-03	1.002E-04	7.625E-05	2.403E-06	2.290E-09	3.401E-25
Eu-152	Eu-152	2.792E-01	5.389E-03	5.115E-03	4.610E-03	3.202E-03	1.130E-03	3.880E-05	2.953E-05	9.309E-07	8.870E-10	1.317E-25
Eu-152	ΣDOSE(j)		1.930E-02	1.832E-02	1.651E-02	1.147E-02	4.048E-03	1.390E-04	1.058E-04	3.334E-06	3.177E-09	4.718E-25
0Gd-152	Eu-152	2.792E-01	2.042E-19	5.988E-19	1.329E-18	3.359E-18	6.342E-18	7.885E-18	7.896E-18	7.902E-18	7.833E-18	7.476E-18
0Eu-154	Eu-154	1.000E+00	1.947E-03	1.799E-03	1.537E-03	8.849E-04	1.829E-04	1.109E-06	7.338E-07	3.911E-09	1.043E-13	0.000E+00
0Pu-238	Pu-238	1.840E-09	2.664E-14	2.643E-14	2.602E-14	2.461E-14	2.099E-14	1.255E-14	1.204E-14	7.104E-15	2.458E-15	9.449E-18
Pu-238	Pu-238	1.000E+00	1.448E-05	1.437E-05	1.414E-05	1.337E-05	1.141E-05	6.821E-06	6.543E-06	3.861E-06	1.336E-06	5.135E-09
Pu-238	ΣDOSE(j)		1.448E-05	1.437E-05	1.414E-05	1.337E-05	1.141E-05	6.821E-06	6.543E-06	3.861E-06	1.336E-06	5.135E-09
0U-234	Pu-238	1.000E+00	4.435E-12	1.324E-11	3.054E-11	8.803E-11	2.282E-10	4.950E-10	5.072E-10	5.840E-10	5.140E-10	5.881E-11
0Th-230	Pu-238	1.000E+00	3.152E-17	2.199E-16	1.154E-15	1.005E-14	7.860E-14	6.047E-13	6.605E-13	1.445E-12	3.040E-12	6.324E-12
0Ra-226	Pu-238	1.000E+00	3.101E-19	4.639E-18	5.381E-17	1.398E-15	3.224E-14	8.162E-13	9.445E-13	3.609E-12	1.498E-11	1.373E-10
0Pb-210	Pu-238	1.000E+00	4.855E-23	1.494E-21	3.703E-20	2.729E-18	1.644E-16	9.683E-15	1.157E-14	5.772E-14	2.971E-13	3.311E-12
0Pu-239	Pu-239	1.000E+00	5.117E-04	5.116E-04	5.116E-04	5.113E-04	5.106E-04	5.081E-04	5.080E-04	5.055E-04	5.006E-04	4.755E-04
0U-235	Pu-239	1.000E+00	7.688E-13	2.303E-12	5.354E-12	1.586E-11	4.447E-11	1.242E-10	1.298E-10	1.931E-10	2.820E-10	4.023E-10
0Pa-231	Pu-239	1.000E+00	6.579E-18	4.601E-17	2.426E-16	2.152E-15	1.772E-14	1.602E-13	1.772E-13	4.535E-13	1.275E-12	7.743E-12
0Ac-227	Pu-239	1.000E+00	2.469E-19	3.676E-18	4.217E-17	1.053E-15	2.187E-14	4.234E-13	4.814E-13	1.527E-12	5.042E-12	3.521E-11

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated
DOSE(j,t), mrem/yr

0Nuclide (j)	Parent (i)	THF(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Pu-241	Pu-241	1.000E+00	8.601E-05	8.196E-05	7.443E-05	5.313E-05	2.027E-05	8.949E-07	6.952E-07	2.836E-08	4.542E-11	1.024E-25
Pu-241	Pu-241	2.450E-05	2.223E-07	2.119E-07	1.924E-07	1.373E-07	5.239E-08	2.313E-09	1.797E-09	7.332E-11	1.174E-13	2.648E-28
Pu-241	ΣDOSE(j)		8.623E-05	8.217E-05	7.463E-05	5.326E-05	2.032E-05	8.972E-07	6.970E-07	2.844E-08	4.554E-11	1.027E-25
0Sr-90	Sr-90	1.000E+00	3.164E-05	3.081E-05	2.923E-05	2.429E-05	1.431E-05	2.581E-06	2.247E-06	3.881E-07	1.134E-08	1.033E-16

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

File : recreational_cua_and_fba.rad

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

0Nuclide (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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.700E-01	1.697E-01	1.692E-01	1.673E-01	1.620E-01	1.459E-01	1.447E-01	1.300E-01	1.049E-01	3.398E-02
Am-241	Pu-241	1.000E+00	0.000E+00	1.425E-03	4.071E-03	1.149E-02	2.250E-02	2.661E-02	2.645E-02	2.399E-02	1.935E-02	6.270E-03
Am-241	ΣS(j):		1.700E-01	1.712E-01	1.733E-01	1.788E-01	1.845E-01	1.726E-01	1.712E-01	1.540E-01	1.242E-01	4.025E-02
0Np-237	Am-241	1.000E+00	0.000E+00	5.496E-08	1.643E-07	5.405E-07	1.562E-06	4.373E-06	4.570E-06	6.720E-06	9.451E-06	8.624E-06
Np-237	Pu-241	1.000E+00	0.000E+00	2.326E-10	2.023E-09	2.002E-08	1.332E-07	6.288E-07	6.667E-07	1.085E-06	1.627E-06	1.565E-06
Np-237	Pu-241	2.450E-05	0.000E+00	7.050E-12	2.013E-11	5.672E-11	1.103E-10	1.268E-10	1.257E-10	1.103E-10	8.311E-11	1.885E-11
Np-237	ΣS(j):		0.000E+00	5.520E-08	1.663E-07	5.605E-07	1.695E-06	5.002E-06	5.237E-06	7.806E-06	1.108E-05	1.019E-05
0U-233	Am-241	1.000E+00	0.000E+00	1.201E-13	1.076E-12	1.175E-11	1.008E-10	8.605E-10	9.463E-10	2.235E-09	5.286E-09	1.160E-08
U-233	Pu-241	1.000E+00	0.000E+00	3.402E-16	8.936E-15	3.014E-13	6.350E-12	1.040E-10	1.168E-10	3.238E-10	8.579E-10	2.079E-09
U-233	Pu-241	2.450E-05	0.000E+00	1.553E-17	1.349E-16	1.329E-15	8.716E-15	3.898E-14	4.113E-14	6.305E-14	8.368E-14	4.390E-14
U-233	ΣS(j):		0.000E+00	1.205E-13	1.085E-12	1.206E-11	1.071E-10	9.645E-10	1.063E-09	2.559E-09	6.144E-09	1.368E-08
0Th-229	Am-241	1.000E+00	0.000E+00	3.783E-18	1.018E-16	3.721E-15	9.685E-14	2.712E-12	3.158E-12	1.291E-11	5.972E-11	6.986E-10
Th-229	Pu-241	1.000E+00	0.000E+00	8.053E-21	6.381E-19	7.307E-17	4.841E-15	2.806E-13	3.351E-13	1.672E-12	8.991E-12	1.208E-10
Th-229	Pu-241	2.450E-05	0.000E+00	4.909E-22	1.291E-20	4.365E-19	9.271E-18	1.565E-16	1.762E-16	5.055E-16	1.444E-15	5.767E-15
Th-229	ΣS(j):		0.000E+00	3.792E-18	1.024E-16	3.794E-15	1.017E-13	2.993E-12	3.493E-12	1.458E-11	6.871E-11	8.194E-10
0Co-60	Co-60	1.000E+00	6.690E-03	5.865E-03	4.508E-03	1.794E-03	1.291E-04	2.568E-08	1.289E-08	2.066E-12	4.782E-20	0.000E+00
0Cs-137	Cs-137	1.000E+00	2.550E+00	2.492E+00	2.379E+00	2.023E+00	1.274E+00	2.848E-01	2.523E-01	5.430E-02	2.469E-03	2.291E-10
0Eu-152	Eu-152	7.208E-01	1.081E-01	1.026E-01	9.248E-02	6.424E-02	2.268E-02	7.784E-04	5.925E-04	1.868E-05	1.780E-08	2.643E-24
Eu-152	Eu-152	2.792E-01	4.188E-02	3.976E-02	3.582E-02	2.488E-02	8.783E-03	3.015E-04	2.295E-04	7.234E-06	6.894E-09	1.024E-24
Eu-152	ΣS(j):		1.500E-01	1.424E-01	1.283E-01	8.912E-02	3.146E-02	1.080E-03	8.221E-04	2.591E-05	2.469E-08	3.666E-24
0Gd-152	Eu-152	2.792E-01	0.000E+00	2.619E-16	7.465E-16	2.095E-15	4.075E-15	5.099E-15	5.106E-15	5.111E-15	5.067E-15	4.836E-15
0Eu-154	Eu-154	1.000E+00	1.400E-02	1.294E-02	1.105E-02	6.364E-03	1.315E-03	7.977E-06	5.278E-06	2.813E-08	7.500E-13	8.114E-37
0Pu-238	Pu-238	1.840E-09	5.870E-12	5.823E-12	5.731E-12	5.421E-12	4.625E-12	2.765E-12	2.652E-12	1.565E-12	5.414E-13	2.082E-15
Pu-238	Pu-238	1.000E+00	3.190E-03	3.165E-03	3.115E-03	2.946E-03	2.514E-03	1.503E-03	1.441E-03	8.505E-04	2.943E-04	1.131E-06
Pu-238	ΣS(j):		3.190E-03	3.165E-03	3.115E-03	2.946E-03	2.514E-03	1.503E-03	1.441E-03	8.505E-04	2.943E-04	1.131E-06
0U-234	Pu-238	1.000E+00	0.000E+00	8.992E-09	2.667E-08	8.540E-08	2.286E-07	5.015E-07	5.140E-07	5.930E-07	5.226E-07	5.984E-08
0Th-230	Pu-238	1.000E+00	0.000E+00	4.055E-14	3.622E-13	3.918E-12	3.270E-11	2.573E-10	2.812E-10	6.177E-10	1.302E-09	2.714E-09
0Ra-226	Pu-238	1.000E+00	0.000E+00	5.860E-18	1.573E-16	5.706E-15	1.453E-13	3.804E-12	4.405E-12	1.694E-11	7.056E-11	6.488E-10
0Pb-210	Pu-238	1.000E+00	0.000E+00	4.528E-20	3.606E-18	4.195E-16	2.884E-14	1.778E-12	2.127E-12	1.069E-11	5.526E-11	6.181E-10
0Pu-239	Pu-239	1.000E+00	1.020E-01	1.020E-01	1.020E-01	1.019E-01	1.018E-01	1.013E-01	1.013E-01	1.008E-01	9.978E-02	9.480E-02
0U-235	Pu-239	1.000E+00	0.000E+00	1.003E-10	2.998E-10	9.867E-10	2.857E-09	8.066E-09	8.437E-09	1.257E-08	1.838E-08	2.625E-08
0Pa-231	Pu-239	1.000E+00	0.000E+00	1.061E-15	9.530E-15	1.050E-13	9.226E-13	8.531E-12	9.444E-12	2.426E-11	6.838E-11	4.162E-10
0Ac-227	Pu-239	1.000E+00	0.000E+00	1.118E-17	2.965E-16	1.034E-14	2.369E-13	4.741E-12	5.394E-12	1.721E-11	5.699E-11	3.990E-10

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:06 Page 30
Summary : Combined Upper Areas and Filter Bed Areas Recreationist
File : recreational_cua_and_fba.rad

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

0Nuclide (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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Pu-241	Pu-241	1.000E+00	9.110E-01	8.681E-01	7.884E-01	5.627E-01	2.147E-01	9.478E-03	7.364E-03	3.004E-04	4.811E-07	1.085E-21
Pu-241	Pu-241	2.450E-05	2.232E-05	2.127E-05	1.932E-05	1.379E-05	5.260E-06	2.322E-07	1.804E-07	7.360E-09	1.179E-11	2.658E-26

Pu-241	ΣS(j):		9.110E-01	8.681E-01	7.884E-01	5.627E-01	2.147E-01	9.479E-03	7.364E-03	3.004E-04	4.811E-07	1.085E-21
0Sr-90	Sr-90	1.000E+00	5.540E-02	5.395E-02	5.117E-02	4.253E-02	2.506E-02	4.520E-03	3.935E-03	6.796E-04	1.985E-05	1.810E-13

THF(i) is the thread fraction of the parent nuclide.
0RESCALC.EXE execution time = 12.78 seconds
Total water/soil iteration failures = 2.700E+01.

Attachment 5. Combined Upper and Filter Bed Areas Recreational Scenario (With Aquatic Pathways) (Summary File)

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1RESRAD, Version 6.3      T½ Limit = 180 days        11/30/2007  12:03  Page   1
 Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
 File    : recreational_cua_and_fba_aquatic_pathways.rad
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Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines


```
 Dose Conversion Factor (and Related) Parameter Summary ...    2
 Site-Specific Parameter Summary ........................    6
 Summary of Pathway Selections ..........................   13
 Contaminated Zone and Total Dose Summary ...............   14
 Total Dose Components
      Time = 0.000E+00 ..................................   16
      Time = 1.000E+00 ..................................   17
      Time = 3.000E+00 ..................................   18
      Time = 1.000E+01 ..................................   19
      Time = 3.000E+01 ..................................   20
      Time = 9.476E+01 ..................................   21
      Time = 1.000E+02 ..................................   22
      Time = 1.664E+02 ..................................   23
      Time = 3.000E+02 ..................................   24
      Time = 1.000E+03 ..................................   25
 Dose/Source Ratios Summed Over All Pathways ............   26
 Single Radionuclide Soil Guidelines ....................   27
 Dose Per Nuclide Summed Over All Pathways ..............   28
 Soil Concentration Per Nuclide .........................   30
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1RESRAD, Version 6.3      T½ Limit = 180 days        11/30/2007  12:03  Page   2
 Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
 File    : recreational_cua_and_fba_aquatic_pathways.rad
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Dose Conversion Factor (and Related) Parameter Summary
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Co-60	2.190E-04	2.190E-04	DCF2(3)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(4)
B-1	Eu-152	2.210E-04	2.210E-04	DCF2(5)
B-1	Eu-154	2.860E-04	2.860E-04	DCF2(7)
B-1	Gd-152	2.430E-01	2.430E-01	DCF2(8)

B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(9)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(10)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(11)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(12)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(14)
B-1	Pu-241	8.250E-03	8.250E-03	DCF2(15)
B-1	Pu-241+D	8.254E-03	8.250E-03	DCF2(16)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(17)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(18)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(19)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(20)
B-1	U-233	1.350E-01	1.350E-01	DCF2(21)
B-1	U-234	1.320E-01	1.320E-01	DCF2(22)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(23)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Co-60	2.690E-05	2.690E-05	DCF3(3)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(4)
D-1	Eu-152	6.480E-06	6.480E-06	DCF3(5)
D-1	Eu-154	9.550E-06	9.550E-06	DCF3(7)
D-1	Gd-152	1.610E-04	1.610E-04	DCF3(8)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(9)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(10)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(11)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(12)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(14)
D-1	Pu-241	6.840E-05	6.840E-05	DCF3(15)
D-1	Pu-241+D	7.157E-05	6.840E-05	DCF3(16)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(17)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(18)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(19)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(20)
D-1	U-233	2.890E-04	2.890E-04	DCF3(21)
D-1	U-234	2.830E-04	2.830E-04	DCF3(22)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(23)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name

D-34	Am-241	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34					
D-34	Co-60	, plant/soil concentration ratio, dimensionless	8.000E-02	8.000E-02	RTF(3,1)
D-34	Co-60	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(3,2)
D-34	Co-60	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(3,3)
D-34					
D-34	Cs-137+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Cs-137+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(4,2)
D-34	Cs-137+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(4,3)
D-34					
D-34	Eu-152	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(5,1)
D-34	Eu-152	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(5,2)
D-34	Eu-152	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(5,3)
D-34					
D-34	Eu-154	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(7,1)
D-34	Eu-154	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(7,2)
D-34	Eu-154	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(7,3)
D-34					
D-34	Gd-152	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	Gd-152	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(8,2)
D-34	Gd-152	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(8,3)
D-34					
D-34	Np-237+D	, plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(9,1)
D-34	Np-237+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Np-237+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(9,3)
D-34					
D-34	Pa-231	, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(10,1)
D-34	Pa-231	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(10,2)
D-34	Pa-231	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(10,3)
D-34					
D-34	Pb-210+D	, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(11,1)
D-34	Pb-210+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(11,2)
D-34	Pb-210+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(11,3)
D-34					
D-34	Pu-238	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(12,1)
D-34	Pu-238	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(12,2)
D-34	Pu-238	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(12,3)
D-34					
D-34	Pu-239	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(14,1)
D-34	Pu-239	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(14,2)
D-34	Pu-239	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(14,3)
D-34					
D-34	Pu-241	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(15,1)
D-34	Pu-241	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(15,2)
D-34	Pu-241	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(15,3)
D-34					

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Pu-241+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(16,1)
D-34	Pu-241+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(16,2)
D-34	Pu-241+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(16,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(17,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(17,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(17,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(18,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(18,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(18,3)
D-34				
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(19,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(19,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(19,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(20,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(20,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(20,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(21,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(21,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(22,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(22,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(22,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(23,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(23,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(23,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Co-60 , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Co-60 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(3,2)
D-5				
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(4,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(4,2)
D-5				

D-5	Eu-152 , fish	5.000E+01	5.000E+01	BIOFAC(5,1)
D-5	Eu-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(5,2)
D-5				
D-5	Eu-154 , fish	5.000E+01	5.000E+01	BIOFAC(7,1)
D-5	Eu-154 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(7,2)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(8,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(8,2)
D-5				
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(9,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(9,2)
D-5				
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(10,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(10,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(11,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(11,2)
D-5				
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(12,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(12,2)
D-5				
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(14,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(14,2)
D-5				
D-5	Pu-241 , fish	3.000E+01	3.000E+01	BIOFAC(15,1)
D-5	Pu-241 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(15,2)
D-5				
D-5	Pu-241+D , fish	3.000E+01	3.000E+01	BIOFAC(16,1)
D-5	Pu-241+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(16,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(17,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(17,2)
D-5				
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(18,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(18,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(19,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(19,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(20,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(20,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(21,1)

D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(22,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(22,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(23,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(23,2)

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

Site-Specific Parameter Summary

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.310E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.100E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	3.620E+02	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)	9.476E+01	1.000E+02	---	T(6)
R011	Times for calculations (yr)	1.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.664E+02	1.000E+03	---	T(8)
R011	Times for calculations (yr)	3.000E+02	0.000E+00	---	T(9)
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.700E-01	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Co-60	6.690E-03	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Cs-137	2.550E+00	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Eu-152	1.500E-01	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Eu-154	1.400E-02	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Pu-238	3.190E-03	0.000E+00	---	S1(12)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.020E-01	0.000E+00	---	S1(14)
R012	Initial principal radionuclide (pCi/g): Pu-241	9.110E-01	0.000E+00	---	S1(15)
R012	Initial principal radionuclide (pCi/g): Sr-90	5.540E-02	0.000E+00	---	S1(18)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Co-60	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Eu-152	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): Eu-154	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(12)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(14)
R012	Concentration in groundwater (pCi/L): Pu-241	not used	0.000E+00	---	W1(15)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(18)

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)	1.500E+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)	2.270E+02	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)	9.700E-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)

0 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)	6.190E+08	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	Romberg failures occurred	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.300E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	6.100E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	9.140E+00	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)	3.050E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+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)	2.270E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)

R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.349E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Co-60				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+03	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+03	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	6.000E+01	1.000E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.694E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	1.900E+03	4.600E+03	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	1.900E+03	4.600E+03	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	2.800E+02	4.600E+03	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.807E-05	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for Eu-152				
R016	Contaminated zone (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	2.450E+02	-1.000E+00	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.665E-05	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Eu-154				
R016	Contaminated zone (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	2.450E+02	-1.000E+00	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.665E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-05	ALEACH(14)

R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for Pu-241				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	2.000E+01	3.000E+01	---	DCNUCC(18)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	3.000E+01	---	DCNUCU(18,1)
R016	Saturated zone (cm**3/g)	1.500E+01	3.000E+01	---	DCNUCS(18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.644E-03	ALEACH(18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(18)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	1.500E+03	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+03	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	4.500E+02	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.555E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Gd-152				
R016	Contaminated zone (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	8.000E+02	-1.000E+00	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	2.450E+02	-1.000E+00	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.665E-05	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+00	-1.000E+00	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.119E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.963E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)

R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.694E-05	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(17)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(17,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.861E-06	ALEACH(17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(17)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.200E+03	6.000E+04	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.616E-05	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(20)
R016	Unsaturated zone 1 (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCU(20,1)
R016	Saturated zone (cm**3/g)	3.200E+03	6.000E+04	---	DCNUCS(20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.616E-05	ALEACH(20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(20)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(21)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(21,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(21)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.516E-03	ALEACH(21)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(21)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(22)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(22,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(22)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.516E-03	ALEACH(22)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(22)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(23)

R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(23,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(23)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.516E-03	ALEACH(23)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(23)
R017	Inhalation rate (m**3/yr)	not used	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	not used	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	not used	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	not used	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	not used	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	not used	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	not used	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)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)

R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	not used	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+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	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	not used	1.500E-01	---	DM
R019	Depth of roots (m)	not used	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	0.000E+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	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	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

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
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
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	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	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	32	---	---	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	suppressed
2 -- inhalation (w/o radon)	suppressed
3 -- plant ingestion	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	suppressed
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions

Area: 131000.00 square meters
Thickness: 6.10 meters
Cover Depth: 0.00 meters

Initial Soil Concentrations, pCi/g

Am-241	1.700E-01
Co-60	6.690E-03
Cs-137	2.550E+00
Eu-152	1.500E-01
Eu-154	1.400E-02
Pu-238	3.190E-03
Pu-239	1.020E-01
Pu-241	9.110E-01
Sr-90	5.540E-02

0

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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
TDOSE(t):	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.486E-06	7.388E-06	1.383E-06	3.608E-07	4.322E-07
M(t):	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.394E-07	2.955E-07	5.532E-08	1.443E-08	1.729E-08

0Maximum TDOSE(t): 8.486E-06 mrem/yr at t = 94.8 ± 0.2 years
0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 9.476E+01 years
Water Independent Pathways (Inhalation excludes radon)

0
0

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	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

Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	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 = 9.476E+01 years
Water Dependent Pathways

Radio-Nuclide	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.
Am-241	3.394E-13	0.0000	7.179E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.112E-13	0.0000
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	3.869E-10	0.0000	8.188E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.687E-10	0.0001
Pu-239	4.470E-12	0.0000	9.470E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.417E-12	0.0000
Pu-241	1.806E-14	0.0000	3.817E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.187E-14	0.0000
Sr-90	4.683E-06	0.5519	3.802E-06	0.4480	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.485E-06	0.9999
Total	4.684E-06	0.5520	3.802E-06	0.4480	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.486E-06	1.0000

0*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 = 0.000E+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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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

Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0

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

0

0

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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 17
Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
File : recreational_cua_and_fba_aquatic_pathways.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 = 1.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

0

0

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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0

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

0

0

Radio-Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 18

Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)

File : recreational_cua_and_fba_aquatic_pathways.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 = 3.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

0

0

Radio-Nuclide	Ground mrem/yr	Ground fract.	Inhalation mrem/yr	Inhalation fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	Soil mrem/yr	Soil fract.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0

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

0

0

Radio-Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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

Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0*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
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0

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
0 Water Dependent Pathways
0

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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

File : recreational_cua_and_fba_aquatic_pathways.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 = 3.000E+01 years
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0

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
0 Water Dependent Pathways
0

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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
File : recreational_cua_and_fba_aquatic_pathways.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 = 9.476E+01 years
0 Water Independent Pathways (Inhalation excludes radon)
0

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.

Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 9.476E+01 years

0

0 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.
Am-241	3.394E-13	0.0000	7.179E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.112E-13	0.0000
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	3.869E-10	0.0000	8.188E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.687E-10	0.0001
Pu-239	4.470E-12	0.0000	9.470E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.417E-12	0.0000
Pu-241	1.806E-14	0.0000	3.817E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.187E-14	0.0000
Sr-90	4.683E-06	0.5519	3.802E-06	0.4480	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.485E-06	0.9999
Total	4.684E-06	0.5520	3.802E-06	0.4480	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.486E-06	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 22
Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
File : recreational_cua_and_fba_aquatic_pathways.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 = 1.000E+02 years

0

0 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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0

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

0

Water Dependent Pathways

0

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.
Am-241	4.984E-13	0.0000	1.055E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.039E-13	0.0000
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	4.571E-10	0.0001	9.675E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.538E-10	0.0001
Pu-239	5.393E-12	0.0000	1.143E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.536E-12	0.0000
Pu-241	3.072E-14	0.0000	6.497E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.722E-14	0.0000
Sr-90	4.077E-06	0.5519	3.310E-06	0.4480	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.387E-06	0.9999
Total	4.078E-06	0.5520	3.310E-06	0.4480	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.388E-06	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 23

Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)

File : recreational_cua_and_fba_aquatic_pathways.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 = 1.664E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

0

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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.664E+02 years

0

Water Dependent Pathways

0

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.

Am-241	4.695E-08	0.0339	4.803E-08	0.0347	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.498E-08	0.0687
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	1.025E-09	0.0007	2.170E-10	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.242E-09	0.0009
Pu-239	1.572E-11	0.0000	3.341E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.906E-11	0.0000
Pu-241	5.319E-09	0.0038	5.441E-09	0.0039	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.076E-08	0.0078
Sr-90	7.042E-07	0.5092	5.717E-07	0.4134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.276E-06	0.9226
Total	7.575E-07	0.5478	6.254E-07	0.4522	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.383E-06	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 24

Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)

File : recreational_cua_and_fba_aquatic_pathways.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 = 3.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

0

0

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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0

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

0

0

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.
Am-241	1.367E-07	0.3790	1.399E-07	0.3878	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.766E-07	0.7668
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	1.179E-09	0.0033	2.497E-10	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.429E-09	0.0040
Pu-239	3.042E-11	0.0001	6.513E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.693E-11	0.0001
Pu-241	2.243E-08	0.0622	2.296E-08	0.0636	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.539E-08	0.1258

Sr-90	2.057E-08	0.0570	1.670E-08	0.0463	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.727E-08	0.1033
Total	1.809E-07	0.5015	1.798E-07	0.4985	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.608E-07	1.0000

0*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)

0
0

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.
Am-241	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
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	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
Pu-239	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
Pu-241	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
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	0.000E+00	0.0000

0

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

0
0

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.
Am-241	1.808E-07	0.4182	1.850E-07	0.4280	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.658E-07	0.8462
Co-60	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	0.000E+00	0.0000
Eu-152	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
Eu-154	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
Pu-238	1.547E-10	0.0004	3.494E-11	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.896E-10	0.0004
Pu-239	5.257E-11	0.0001	1.188E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.444E-11	0.0001
Pu-241	3.273E-08	0.0757	3.350E-08	0.0775	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.622E-08	0.1532
Sr-90	1.876E-16	0.0000	1.523E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.399E-16	0.0000
Total	2.137E-07	0.4944	2.185E-07	0.5056	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.322E-07	1.0000

0*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

0 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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.587E-07	1.627E-06	2.151E-06
Am-241	U-233	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.419E-12	3.552E-12	2.802E-11	8.735E-11	2.132E-10
Am-241	Th-229+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.282E-16	2.234E-16	9.891E-15	1.053E-13	1.830E-12
Am-241	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.419E-12	3.552E-12	5.587E-07	1.627E-06	2.152E-06
0Co-60	Co-60	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Cs-137+D	Cs-137+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Eu-152	Eu-152	7.208E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Eu-152	Eu-152	2.792E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Eu-152	Gd-152	2.792E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Eu-152	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Eu-154	Eu-154	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Pu-238	Pu-238	1.840E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Pu-238	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.469E-07	1.736E-07	3.892E-07	4.478E-07	5.849E-08
Pu-238	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.507E-13	5.059E-13	4.138E-12	1.506E-11	4.326E-11
Pu-238	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.420E-18	1.009E-13	4.786E-12
Pu-238	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.025E-11	9.078E-10
Pu-238	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.469E-07	1.736E-07	3.892E-07	4.478E-07	5.945E-08
0Pu-239	Pu-239	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.309E-11	6.404E-11	1.866E-10	3.605E-10	6.164E-10
Pu-239	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.065E-15	1.104E-14	8.280E-14	3.787E-13	3.273E-12
Pu-239	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.539E-14	2.083E-14	1.987E-13	1.173E-12	1.206E-11
Pu-239	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.311E-11	6.408E-11	1.869E-10	3.620E-10	6.318E-10
0Pu-241	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-241	Np-237+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.181E-08	4.982E-08	7.269E-08
Pu-241	U-233	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.397E-14	4.079E-14	6.682E-13	2.602E-12	7.126E-12
Pu-241	Th-229+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.165E-18	2.426E-18	1.802E-16	2.801E-15	5.892E-14
Pu-241	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.397E-14	4.080E-14	1.181E-08	4.982E-08	7.269E-08
0Pu-241+D	Pu-241+D	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-241+D	Np-237+D	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.387E-12	4.512E-12	1.023E-12
Pu-241+D	U-233	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.260E-17	5.855E-17	2.130E-16	2.904E-16	1.533E-16
Pu-241+D	Th-229+D	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.413E-21	3.997E-21	1.147E-19	5.894E-19	2.915E-18
Pu-241+D	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.260E-17	5.855E-17	5.388E-12	4.512E-12	1.024E-12

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 27
Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
File : recreational_cua_and_fba_aquatic_pathways.rad

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

0 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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Sr-90+D	Sr-90+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.532E-04	1.333E-04	2.303E-05	6.727E-07	6.135E-15

The DSR includes contributions from associated (half-life ó 180 days) daughters.

0

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

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	4.475E+07	1.536E+07	1.162E+07
Co-60	*1.132E+15	*1.132E+15	*1.132E+15	*1.132E+15	*1.132E+15	*1.132E+15	*1.132E+15	*1.132E+15	*1.132E+15	*1.132E+15
Cs-137	*8.704E+13	*8.704E+13	*8.704E+13	*8.704E+13	*8.704E+13	*8.704E+13	*8.704E+13	*8.704E+13	*8.704E+13	*8.704E+13
Eu-152	*1.765E+14	*1.765E+14	*1.765E+14	*1.765E+14	*1.765E+14	*1.765E+14	*1.765E+14	*1.765E+14	*1.765E+14	*1.765E+14
Eu-154	*2.639E+14	*2.639E+14	*2.639E+14	*2.639E+14	*2.639E+14	*2.639E+14	*2.639E+14	*2.639E+14	*2.639E+14	*2.639E+14
Pu-238	*1.712E+13	*1.712E+13	*1.712E+13	*1.712E+13	*1.712E+13	1.701E+08	1.440E+08	6.423E+07	5.583E+07	4.206E+08
Pu-239	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	3.957E+10
Pu-241	*1.030E+14	*1.030E+14	*1.030E+14	*1.030E+14	*1.030E+14	*1.030E+14	*1.030E+14	2.117E+09	5.018E+08	3.439E+08
Sr-90	*1.365E+14	*1.365E+14	*1.365E+14	*1.365E+14	*1.365E+14	1.632E+05	1.875E+05	1.085E+06	3.716E+07	*1.365E+14

*At specific activity limit

0

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 = 94.8 ± 0.2 years

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.700E-01	657 ± 1	2.479E-06	1.008E+07	2.419E-12	*3.431E+12
Co-60	6.690E-03	0.000E+00	0.000E+00	*1.132E+15	0.000E+00	*1.132E+15
Cs-137	2.550E+00	0.000E+00	0.000E+00	*8.704E+13	0.000E+00	*8.704E+13
Eu-152	1.500E-01	0.000E+00	0.000E+00	*1.765E+14	0.000E+00	*1.765E+14
Eu-154	1.400E-02	0.000E+00	0.000E+00	*2.639E+14	0.000E+00	*2.639E+14
Pu-238	3.190E-03	256.0 ± 0.5	4.593E-07	5.443E+07	1.469E-07	1.701E+08
Pu-239	1.020E-01	1.000E+03	6.318E-10	3.957E+10	5.311E-11	*6.214E+10
Pu-241	9.110E-01	679 ± 1	8.255E-08	3.028E+08	2.401E-14	*1.030E+14
Sr-90	5.540E-02	94.8 ± 0.2	1.532E-04	1.632E+05	1.532E-04	1.632E+05

*At specific activity limit

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated
DOSE(j,t), mrem/yr

0Nuclide (j)	Parent (i)	THF(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Np-237	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.498E-08	2.766E-07	3.657E-07
Np-237	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.075E-08	4.538E-08	6.622E-08

Np-237	Pu-241	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.908E-12	4.110E-12	9.323E-13
Np-237	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.057E-07	3.220E-07	4.319E-07
0U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.112E-13	6.038E-13	4.763E-12	1.485E-11	3.624E-11
U-233	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.183E-14	3.716E-14	6.088E-13	2.371E-12	6.492E-12
U-233	Pu-241	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.880E-17	5.334E-17	1.941E-16	2.646E-16	1.397E-16
U-233	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.330E-13	6.411E-13	5.372E-12	1.722E-11	4.273E-11
0Th-229	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.180E-17	3.797E-17	1.682E-15	1.791E-14	3.110E-13
Th-229	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.061E-18	2.210E-18	1.641E-16	2.552E-15	5.368E-14
Th-229	Pu-241	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.198E-21	3.641E-21	1.045E-19	5.370E-19	2.655E-18
Th-229	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.286E-17	4.018E-17	1.846E-15	2.046E-14	3.647E-13
0Co-60	Co-60	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Cs-137	Cs-137	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Eu-152	Eu-152	7.208E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Eu-152	Eu-152	2.792E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Eu-152	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Gd-152	Eu-152	2.792E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Eu-154	Eu-154	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Pu-238	Pu-238	1.840E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0U-234	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.687E-10	5.538E-10	1.242E-09	1.428E-09	1.866E-10
0Th-230	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.119E-15	1.614E-15	1.320E-14	4.805E-14	1.380E-13
0Ra-226	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.530E-21	3.218E-16	1.527E-14
0Pb-210	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.270E-14	2.896E-12
0Pu-239	Pu-239	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0U-235	Pu-239	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.415E-12	6.533E-12	1.903E-11	3.677E-11	6.288E-11
0Pa-231	Pu-239	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.226E-16	1.127E-15	8.446E-15	3.862E-14	3.339E-13
0Ac-227	Pu-239	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.570E-15	2.125E-15	2.026E-14	1.196E-13	1.230E-12

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 29
Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
File : recreational_cua_and_fba_aquatic_pathways.rad

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated
DOSE(j,t), mrem/yr

0Nuclide (j)	Parent (i)	THF(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Pu-241	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-241	Pu-241	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-241	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Sr-90	Sr-90	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.485E-06	7.387E-06	1.276E-06	3.727E-08	3.399E-16

THF(i) is the thread fraction of the parent nuclide.
1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 30
Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
File : recreational_cua_and_fba_aquatic_pathways.rad

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated
S(j,t), pCi/g

0Nuclide (j)	Parent (i)	THF(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03

Am-241	Am-241	1.000E+00	1.700E-01	1.697E-01	1.692E-01	1.673E-01	1.620E-01	1.459E-01	1.447E-01	1.300E-01	1.049E-01	3.398E-02
Am-241	Pu-241	1.000E+00	0.000E+00	1.425E-03	4.071E-03	1.149E-02	2.250E-02	2.661E-02	2.645E-02	2.399E-02	1.935E-02	6.270E-03
Am-241	ΣS(j):		1.700E-01	1.712E-01	1.733E-01	1.788E-01	1.845E-01	1.726E-01	1.712E-01	1.540E-01	1.242E-01	4.025E-02
0Np-237	Am-241	1.000E+00	0.000E+00	5.496E-08	1.643E-07	5.405E-07	1.562E-06	4.373E-06	4.570E-06	6.720E-06	9.451E-06	8.624E-06
Np-237	Pu-241	1.000E+00	0.000E+00	2.326E-10	2.023E-09	2.002E-08	1.332E-07	6.288E-07	6.667E-07	1.085E-06	1.627E-06	1.565E-06
Np-237	Pu-241	2.450E-05	0.000E+00	7.050E-12	2.013E-11	5.672E-11	1.103E-10	1.268E-10	1.257E-10	1.103E-10	8.311E-11	1.885E-11
Np-237	ΣS(j):		0.000E+00	5.520E-08	1.663E-07	5.605E-07	1.695E-06	5.002E-06	5.237E-06	7.806E-06	1.108E-05	1.019E-05
0U-233	Am-241	1.000E+00	0.000E+00	1.201E-13	1.076E-12	1.175E-11	1.008E-10	8.605E-10	9.463E-10	2.235E-09	5.286E-09	1.160E-08
U-233	Pu-241	1.000E+00	0.000E+00	3.402E-16	8.936E-15	3.014E-13	6.350E-12	1.040E-10	1.168E-10	3.238E-10	8.579E-10	2.079E-09
U-233	Pu-241	2.450E-05	0.000E+00	1.553E-17	1.349E-16	1.329E-15	8.716E-15	3.898E-14	4.113E-14	6.305E-14	8.368E-14	4.390E-14
U-233	ΣS(j):		0.000E+00	1.205E-13	1.085E-12	1.206E-11	1.071E-10	9.645E-10	1.063E-09	2.559E-09	6.144E-09	1.368E-08
0Th-229	Am-241	1.000E+00	0.000E+00	3.783E-18	1.018E-16	3.721E-15	9.685E-14	2.712E-12	3.158E-12	1.291E-11	5.972E-11	6.986E-10
Th-229	Pu-241	1.000E+00	0.000E+00	8.053E-21	6.381E-19	7.307E-17	4.841E-15	2.806E-13	3.351E-13	1.672E-12	8.991E-12	1.208E-10
Th-229	Pu-241	2.450E-05	0.000E+00	4.909E-22	1.291E-20	4.365E-19	9.271E-18	1.565E-16	1.762E-16	5.055E-16	1.444E-15	5.767E-15
Th-229	ΣS(j):		0.000E+00	3.792E-18	1.024E-16	3.794E-15	1.017E-13	2.993E-12	3.493E-12	1.458E-11	6.871E-11	8.194E-10
0Co-60	Co-60	1.000E+00	6.690E-03	5.865E-03	4.508E-03	1.794E-03	1.291E-04	2.568E-08	1.289E-08	2.066E-12	4.782E-20	0.000E+00
0Cs-137	Cs-137	1.000E+00	2.550E+00	2.492E+00	2.379E+00	2.023E+00	1.274E+00	2.848E-01	2.523E-01	5.430E-02	2.469E-03	2.291E-10
0Eu-152	Eu-152	7.208E-01	1.081E-01	1.026E-01	9.248E-02	6.424E-02	2.268E-02	7.784E-04	5.925E-04	1.868E-05	1.780E-08	2.643E-24
Eu-152	Eu-152	2.792E-01	4.188E-02	3.976E-02	3.582E-02	2.488E-02	8.783E-03	3.015E-04	2.295E-04	7.234E-06	6.894E-09	1.024E-24
Eu-152	ΣS(j):		1.500E-01	1.424E-01	1.283E-01	8.912E-02	3.146E-02	1.080E-03	8.221E-04	2.591E-05	2.469E-08	3.666E-24
0Gd-152	Eu-152	2.792E-01	0.000E+00	2.619E-16	7.465E-16	2.095E-15	4.075E-15	5.099E-15	5.106E-15	5.111E-15	5.067E-15	4.836E-15
0Eu-154	Eu-154	1.000E+00	1.400E-02	1.294E-02	1.105E-02	6.364E-03	1.315E-03	7.977E-06	5.278E-06	2.813E-08	7.500E-13	8.114E-37
0Pu-238	Pu-238	1.840E-09	5.870E-12	5.823E-12	5.731E-12	5.421E-12	4.625E-12	2.765E-12	2.652E-12	1.565E-12	5.414E-13	2.082E-15
Pu-238	Pu-238	1.000E+00	3.190E-03	3.165E-03	3.115E-03	2.946E-03	2.514E-03	1.503E-03	1.441E-03	8.505E-04	2.943E-04	1.131E-06
Pu-238	ΣS(j):		3.190E-03	3.165E-03	3.115E-03	2.946E-03	2.514E-03	1.503E-03	1.441E-03	8.505E-04	2.943E-04	1.131E-06
0U-234	Pu-238	1.000E+00	0.000E+00	8.992E-09	2.667E-08	8.540E-08	2.286E-07	5.015E-07	5.140E-07	5.930E-07	5.226E-07	5.984E-08
0Th-230	Pu-238	1.000E+00	0.000E+00	4.055E-14	3.622E-13	3.918E-12	3.270E-11	2.573E-10	2.812E-10	6.177E-10	1.302E-09	2.714E-09
0Ra-226	Pu-238	1.000E+00	0.000E+00	5.860E-18	1.573E-16	5.706E-15	1.453E-13	3.804E-12	4.405E-12	1.694E-11	7.056E-11	6.488E-10
0Pb-210	Pu-238	1.000E+00	0.000E+00	4.528E-20	3.606E-18	4.195E-16	2.884E-14	1.778E-12	2.127E-12	1.069E-11	5.526E-11	6.181E-10
0Pu-239	Pu-239	1.000E+00	1.020E-01	1.020E-01	1.020E-01	1.019E-01	1.018E-01	1.013E-01	1.013E-01	1.008E-01	9.978E-02	9.480E-02
0U-235	Pu-239	1.000E+00	0.000E+00	1.003E-10	2.998E-10	9.867E-10	2.857E-09	8.066E-09	8.437E-09	1.257E-08	1.838E-08	2.625E-08
0Pa-231	Pu-239	1.000E+00	0.000E+00	1.061E-15	9.530E-15	1.050E-13	9.226E-13	8.531E-12	9.444E-12	2.426E-11	6.838E-11	4.162E-10
0Ac-227	Pu-239	1.000E+00	0.000E+00	1.118E-17	2.965E-16	1.034E-14	2.369E-13	4.741E-12	5.394E-12	1.721E-11	5.699E-11	3.990E-10

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 31
Summary : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
File : recreational_cua_and_fba_aquatic_pathways.rad

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated
S(j,t), pCi/g

0Nuclide (j)	Parent (i)	THF(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Pu-241	Pu-241	1.000E+00	9.110E-01	8.681E-01	7.884E-01	5.627E-01	2.147E-01	9.478E-03	7.364E-03	3.004E-04	4.811E-07	1.085E-21
Pu-241	Pu-241	2.450E-05	2.232E-05	2.127E-05	1.932E-05	1.379E-05	5.260E-06	2.322E-07	1.804E-07	7.360E-09	1.179E-11	2.658E-26
Pu-241	ΣS(j):		9.110E-01	8.681E-01	7.884E-01	5.627E-01	2.147E-01	9.479E-03	7.364E-03	3.004E-04	4.811E-07	1.085E-21
0Sr-90	Sr-90	1.000E+00	5.540E-02	5.395E-02	5.117E-02	4.253E-02	2.506E-02	4.520E-03	3.935E-03	6.796E-04	1.985E-05	1.810E-13

THF(i) is the thread fraction of the parent nuclide.
0RESCALC.EXE execution time = 87.13 seconds
Total water/soil iteration failures = 1.980E+02.

Attachment 6. Combined Upper and Filter Bed Areas Recreational Scenario Concentration File

```
1RESRAD, Version 6.3      T½ Limit = 180 days        11/30/2007  12:03  Page   1
 Concent : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
 File    : recreational_cua_and_fba_aquatic_pathways.rad
```

Table of Contents

Part IV: Concentration of Radionuclides

Concentration of radionuclides in different media
Time= 0.000E+00 2
Time= 1.000E+00 4
Time= 3.000E+00 6
Time= 1.000E+01 8
Time= 3.000E+01 10
Time= 9.476E+01 12
Time= 1.000E+02 14
Time= 1.664E+02 16
Time= 3.000E+02 18
Time= 1.000E+03 20


```
1RESRAD, Version 6.3      T½ Limit = 180 days        11/30/2007  12:03  Page   2
 Concent : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
 File    : recreational_cua_and_fba_aquatic_pathways.rad
```

Concentration of radionuclides in environmental media
at t = 0.000E+00 years

Radio-Nuclide	Contaminat-ted Zone pCi/g	Surface Soil* pCi/g	Air Par-ticulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	1.700E-01	1.700E-01	3.730E-06	0.000E+00	0.000E+00
Co-60	6.690E-03	6.690E-03	1.468E-07	0.000E+00	0.000E+00
Cs-137	2.550E+00	2.550E+00	5.595E-05	0.000E+00	0.000E+00
Eu-152	1.500E-01	1.500E-01	3.291E-06	0.000E+00	0.000E+00
Eu-154	1.400E-02	1.400E-02	3.072E-07	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Np-237	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	3.190E-03	3.190E-03	7.000E-08	0.000E+00	0.000E+00
Pu-239	1.020E-01	1.020E-01	2.238E-06	0.000E+00	0.000E+00
Pu-241	9.110E-01	9.110E-01	1.999E-05	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	5.540E-02	5.540E-02	1.216E-06	0.000E+00	0.000E+00
Th-229	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-233	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 0.000E+00 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	0.000E+00	1.702E-01	1.710E-01	1.711E-01	1.711E-01	4.832E-03	1.888E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	5.352E-01	5.352E-01	5.352E-01	5.352E-01	7.948E-01	6.557E-02	0.000E+00	0.000E+00
Cs-137	0.000E+00	1.020E+02	1.020E+02	1.020E+02	1.020E+02	2.464E+02	5.509E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	3.752E-01	3.759E-01	3.759E-01	3.759E-01	2.011E-01	4.784E-03	0.000E+00	0.000E+00
Eu-154	0.000E+00	3.502E-02	3.508E-02	3.509E-02	3.509E-02	1.877E-02	4.465E-04	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Np-237	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	0.000E+00	3.194E-03	3.208E-03	3.210E-03	3.210E-03	1.813E-04	1.772E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.021E-01	1.026E-01	1.026E-01	1.026E-01	5.798E-03	5.665E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	9.121E-01	9.162E-01	9.167E-01	9.167E-01	5.178E-02	5.059E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	0.000E+00	1.662E+01	1.662E+01	1.662E+01	1.662E+01	9.263E+00	1.884E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-233	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+00 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	1.118E-17	1.118E-17	2.453E-22	0.000E+00	0.000E+00
Am-241	1.712E-01	1.712E-01	3.755E-06	0.000E+00	0.000E+00
Co-60	5.865E-03	5.865E-03	1.287E-07	0.000E+00	0.000E+00
Cs-137	2.492E+00	2.492E+00	5.467E-05	0.000E+00	0.000E+00
Eu-152	1.424E-01	1.424E-01	3.124E-06	0.000E+00	0.000E+00
Eu-154	1.294E-02	1.294E-02	2.839E-07	0.000E+00	0.000E+00
Gd-152	2.619E-16	2.619E-16	5.747E-21	0.000E+00	0.000E+00
Np-237	5.520E-08	5.520E-08	1.211E-12	0.000E+00	0.000E+00
Pa-231	1.061E-15	1.061E-15	2.329E-20	0.000E+00	0.000E+00
Pb-210	4.528E-20	4.528E-20	9.936E-25	0.000E+00	0.000E+00
Pu-238	3.165E-03	3.165E-03	6.944E-08	0.000E+00	0.000E+00
Pu-239	1.020E-01	1.020E-01	2.238E-06	0.000E+00	0.000E+00
Pu-241	8.681E-01	8.681E-01	1.905E-05	0.000E+00	0.000E+00
Ra-226	5.860E-18	5.860E-18	1.286E-22	0.000E+00	0.000E+00
Sr-90	5.395E-02	5.395E-02	1.184E-06	0.000E+00	0.000E+00
Th-229	3.792E-18	3.792E-18	8.319E-23	0.000E+00	0.000E+00
Th-230	4.055E-14	4.055E-14	8.897E-19	0.000E+00	0.000E+00
U-233	1.205E-13	1.205E-13	2.643E-18	0.000E+00	0.000E+00
U-234	8.992E-09	8.992E-09	1.973E-13	0.000E+00	0.000E+00
U-235	1.003E-10	1.003E-10	2.200E-15	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 5
Concent : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
File : recreational_cua_and_fba_aquatic_pathways.rad

Concentration of radionuclides in foodstuff media
at t = 1.000E+00 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	3.696E-17	2.871E-17	4.471E-17	5.157E-17	8.887E-18	1.681E-19	0.000E+00	0.000E+00
Am-241	0.000E+00	1.714E-01	1.721E-01	1.722E-01	1.722E-01	4.867E-03	1.901E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	4.692E-01	4.692E-01	4.726E-01	4.694E-01	6.968E-01	5.748E-02	0.000E+00	0.000E+00
Cs-137	0.000E+00	9.967E+01	9.968E+01	9.981E+01	9.969E+01	2.407E+02	5.383E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	3.561E-01	3.568E-01	3.579E-01	3.569E-01	1.909E-01	4.541E-03	0.000E+00	0.000E+00
Eu-154	0.000E+00	3.236E-02	3.242E-02	3.257E-02	3.244E-02	1.735E-02	4.126E-04	0.000E+00	0.000E+00

Gd-152	0.000E+00	6.551E-16	6.563E-16	6.213E-16	6.547E-16	3.512E-16	3.354E-18	0.000E+00	0.000E+00
Np-237	0.000E+00	1.064E-06	1.101E-06	9.143E-07	9.719E-07	8.835E-08	4.051E-10	0.000E+00	0.000E+00
Pa-231	0.000E+00	1.002E-14	1.058E-14	7.735E-15	8.705E-15	5.026E-15	7.215E-18	0.000E+00	0.000E+00
Pb-210	0.000E+00	6.365E-19	4.682E-19	7.084E-19	8.663E-19	7.248E-20	2.201E-20	0.000E+00	0.000E+00
Pu-238	0.000E+00	3.169E-03	3.183E-03	3.186E-03	3.185E-03	1.799E-04	1.758E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.021E-01	1.026E-01	1.026E-01	1.026E-01	5.798E-03	5.664E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	8.692E-01	8.731E-01	8.759E-01	8.737E-01	4.935E-02	4.821E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	2.094E-16	2.326E-16	1.324E-16	1.589E-16	1.154E-17	1.165E-17	0.000E+00	0.000E+00
Sr-90	0.000E+00	1.619E+01	1.619E+01	1.622E+01	1.619E+01	9.025E+00	1.835E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	4.710E-18	3.862E-18	7.345E-18	8.263E-18	4.424E-19	2.739E-20	0.000E+00	0.000E+00
Th-230	0.000E+00	4.508E-14	4.112E-14	4.878E-14	5.367E-14	3.087E-15	1.988E-16	0.000E+00	0.000E+00
U-233	0.000E+00	4.569E-13	3.134E-13	6.948E-13	7.524E-13	5.551E-14	6.078E-14	0.000E+00	0.000E+00
U-234	0.000E+00	2.198E-08	2.249E-08	1.966E-08	2.083E-08	1.928E-09	3.377E-09	0.000E+00	0.000E+00
U-235	0.000E+00	2.451E-10	2.509E-10	2.191E-10	2.322E-10	2.149E-11	3.766E-11	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+00 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.965E-16	2.965E-16	6.507E-21	0.000E+00	0.000E+00
Am-241	1.733E-01	1.733E-01	3.801E-06	0.000E+00	0.000E+00
Co-60	4.508E-03	4.508E-03	9.891E-08	0.000E+00	0.000E+00
Cs-137	2.379E+00	2.379E+00	5.220E-05	0.000E+00	0.000E+00
Eu-152	1.283E-01	1.283E-01	2.815E-06	0.000E+00	0.000E+00
Eu-154	1.105E-02	1.105E-02	2.425E-07	0.000E+00	0.000E+00
Gd-152	7.465E-16	7.465E-16	1.638E-20	0.000E+00	0.000E+00
Np-237	1.663E-07	1.663E-07	3.649E-12	0.000E+00	0.000E+00
Pa-231	9.530E-15	9.530E-15	2.091E-19	0.000E+00	0.000E+00
Pb-210	3.606E-18	3.606E-18	7.912E-23	0.000E+00	0.000E+00
Pu-238	3.115E-03	3.115E-03	6.835E-08	0.000E+00	0.000E+00
Pu-239	1.020E-01	1.020E-01	2.238E-06	0.000E+00	0.000E+00
Pu-241	7.884E-01	7.884E-01	1.730E-05	0.000E+00	0.000E+00
Ra-226	1.573E-16	1.573E-16	3.451E-21	0.000E+00	0.000E+00
Sr-90	5.117E-02	5.117E-02	1.123E-06	0.000E+00	0.000E+00
Th-229	1.024E-16	1.024E-16	2.247E-21	0.000E+00	0.000E+00
Th-230	3.622E-13	3.622E-13	7.947E-18	0.000E+00	0.000E+00
U-233	1.085E-12	1.085E-12	2.380E-17	0.000E+00	0.000E+00
U-234	2.667E-08	2.667E-08	5.852E-13	0.000E+00	0.000E+00

U-235	2.998E-10	2.998E-10	6.577E-15	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+00 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	8.267E-16	7.493E-16	9.512E-16	9.980E-16	9.524E-17	4.059E-18	0.000E+00	0.000E+00
Am-241	0.000E+00	1.735E-01	1.742E-01	1.743E-01	1.743E-01	4.926E-03	1.924E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	3.606E-01	3.607E-01	3.633E-01	3.608E-01	5.356E-01	4.418E-02	0.000E+00	0.000E+00
Cs-137	0.000E+00	9.516E+01	9.518E+01	9.530E+01	9.518E+01	2.298E+02	5.139E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	3.209E-01	3.215E-01	3.225E-01	3.216E-01	1.720E-01	4.092E-03	0.000E+00	0.000E+00
Eu-154	0.000E+00	2.764E-02	2.769E-02	2.782E-02	2.770E-02	1.482E-02	3.525E-04	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.867E-15	1.870E-15	1.839E-15	1.869E-15	1.001E-15	9.535E-18	0.000E+00	0.000E+00
Np-237	0.000E+00	3.286E-06	3.324E-06	3.136E-06	3.194E-06	2.949E-07	1.294E-09	0.000E+00	0.000E+00
Pa-231	0.000E+00	9.350E-14	9.523E-14	8.626E-14	8.943E-14	5.237E-14	5.498E-17	0.000E+00	0.000E+00
Pb-210	0.000E+00	4.144E-17	3.648E-17	4.825E-17	5.150E-17	4.694E-18	1.421E-18	0.000E+00	0.000E+00
Pu-238	0.000E+00	3.119E-03	3.133E-03	3.136E-03	3.135E-03	1.771E-04	1.730E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.021E-01	1.026E-01	1.026E-01	1.026E-01	5.797E-03	5.663E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	7.893E-01	7.929E-01	7.955E-01	7.935E-01	4.481E-02	4.378E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	6.061E-15	6.276E-15	5.260E-15	5.555E-15	4.326E-16	3.839E-16	0.000E+00	0.000E+00
Sr-90	0.000E+00	1.535E+01	1.535E+01	1.538E+01	1.536E+01	8.560E+00	1.741E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	1.092E-16	1.034E-16	1.236E-16	1.296E-16	7.277E-18	4.110E-19	0.000E+00	0.000E+00
Th-230	0.000E+00	3.762E-13	3.652E-13	3.931E-13	4.063E-13	2.306E-14	1.266E-15	0.000E+00	0.000E+00
U-233	0.000E+00	3.195E-12	2.753E-12	4.093E-12	4.214E-12	3.430E-13	4.639E-13	0.000E+00	0.000E+00
U-234	0.000E+00	6.620E-08	6.679E-08	6.403E-08	6.517E-08	5.960E-09	1.014E-08	0.000E+00	0.000E+00
U-235	0.000E+00	7.441E-10	7.507E-10	7.194E-10	7.323E-10	6.698E-11	1.140E-10	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+01 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	1.034E-14	1.034E-14	2.268E-19	0.000E+00	0.000E+00
Am-241	1.788E-01	1.788E-01	3.923E-06	0.000E+00	0.000E+00
Co-60	1.794E-03	1.794E-03	3.937E-08	0.000E+00	0.000E+00
Cs-137	2.023E+00	2.023E+00	4.440E-05	0.000E+00	0.000E+00
Eu-152	8.912E-02	8.912E-02	1.955E-06	0.000E+00	0.000E+00
Eu-154	6.364E-03	6.364E-03	1.396E-07	0.000E+00	0.000E+00
Gd-152	2.095E-15	2.095E-15	4.596E-20	0.000E+00	0.000E+00
Np-237	5.605E-07	5.605E-07	1.230E-11	0.000E+00	0.000E+00
Pa-231	1.050E-13	1.050E-13	2.304E-18	0.000E+00	0.000E+00
Pb-210	4.195E-16	4.195E-16	9.205E-21	0.000E+00	0.000E+00
Pu-238	2.946E-03	2.946E-03	6.465E-08	0.000E+00	0.000E+00
Pu-239	1.019E-01	1.019E-01	2.236E-06	0.000E+00	0.000E+00
Pu-241	5.627E-01	5.627E-01	1.235E-05	0.000E+00	0.000E+00
Ra-226	5.706E-15	5.706E-15	1.252E-19	0.000E+00	0.000E+00
Sr-90	4.253E-02	4.253E-02	9.331E-07	0.000E+00	0.000E+00
Th-229	3.794E-15	3.794E-15	8.326E-20	0.000E+00	0.000E+00
Th-230	3.918E-12	3.918E-12	8.597E-17	0.000E+00	0.000E+00
U-233	1.206E-11	1.206E-11	2.645E-16	0.000E+00	0.000E+00
U-234	8.540E-08	8.540E-08	1.874E-12	0.000E+00	0.000E+00
U-235	9.867E-10	9.867E-10	2.165E-14	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+01 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	2.681E-14	2.597E-14	2.847E-14	2.889E-14	1.197E-15	1.351E-16	0.000E+00	0.000E+00
Am-241	0.000E+00	1.790E-01	1.798E-01	1.799E-01	1.799E-01	5.083E-03	1.986E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	1.435E-01	1.436E-01	1.446E-01	1.436E-01	2.132E-01	1.759E-02	0.000E+00	0.000E+00
Cs-137	0.000E+00	8.094E+01	8.095E+01	8.105E+01	8.095E+01	1.955E+02	4.371E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	2.229E-01	2.233E-01	2.240E-01	2.234E-01	1.195E-01	2.842E-03	0.000E+00	0.000E+00
Eu-154	0.000E+00	1.592E-02	1.595E-02	1.602E-02	1.595E-02	8.534E-03	2.030E-04	0.000E+00	0.000E+00
Gd-152	0.000E+00	5.239E-15	5.248E-15	5.228E-15	5.248E-15	2.808E-15	2.673E-17	0.000E+00	0.000E+00
Np-237	0.000E+00	1.117E-05	1.121E-05	1.102E-05	1.108E-05	1.028E-06	4.448E-09	0.000E+00	0.000E+00
Pa-231	0.000E+00	1.044E-12	1.050E-12	1.020E-12	1.031E-12	6.067E-13	5.677E-16	0.000E+00	0.000E+00

Pb-210	0.000E+00	4.397E-15	4.212E-15	4.725E-15	4.820E-15	4.504E-16	1.436E-16	0.000E+00	0.000E+00
Pu-238	0.000E+00	2.950E-03	2.963E-03	2.966E-03	2.965E-03	1.675E-04	1.636E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.020E-01	1.025E-01	1.026E-01	1.026E-01	5.794E-03	5.660E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	5.634E-01	5.659E-01	5.677E-01	5.663E-01	3.199E-02	3.125E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	2.257E-13	2.281E-13	2.166E-13	2.200E-13	1.754E-14	1.495E-14	0.000E+00	0.000E+00
Sr-90	0.000E+00	1.276E+01	1.276E+01	1.278E+01	1.276E+01	7.114E+00	1.446E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	3.867E-15	3.821E-15	3.992E-15	4.053E-15	2.291E-16	1.183E-17	0.000E+00	0.000E+00
Th-230	0.000E+00	3.967E-12	3.944E-12	4.040E-12	4.081E-12	2.308E-13	1.172E-14	0.000E+00	0.000E+00
U-233	0.000E+00	3.179E-11	3.033E-11	3.508E-11	3.543E-11	3.084E-12	4.784E-12	0.000E+00	0.000E+00
U-234	0.000E+00	2.132E-07	2.140E-07	2.115E-07	2.125E-07	1.936E-08	3.263E-08	0.000E+00	0.000E+00
U-235	0.000E+00	2.463E-09	2.472E-09	2.442E-09	2.455E-09	2.236E-10	3.770E-10	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+01 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.369E-13	2.369E-13	5.198E-18	0.000E+00	0.000E+00
Am-241	1.845E-01	1.845E-01	4.048E-06	0.000E+00	0.000E+00
Co-60	1.291E-04	1.291E-04	2.832E-09	0.000E+00	0.000E+00
Cs-137	1.274E+00	1.274E+00	2.795E-05	0.000E+00	0.000E+00
Eu-152	3.146E-02	3.146E-02	6.903E-07	0.000E+00	0.000E+00
Eu-154	1.315E-03	1.315E-03	2.886E-08	0.000E+00	0.000E+00
Gd-152	4.075E-15	4.075E-15	8.941E-20	0.000E+00	0.000E+00
Np-237	1.695E-06	1.695E-06	3.720E-11	0.000E+00	0.000E+00
Pa-231	9.226E-13	9.226E-13	2.024E-17	0.000E+00	0.000E+00
Pb-210	2.884E-14	2.884E-14	6.329E-19	0.000E+00	0.000E+00
Pu-238	2.514E-03	2.514E-03	5.515E-08	0.000E+00	0.000E+00
Pu-239	1.018E-01	1.018E-01	2.233E-06	0.000E+00	0.000E+00
Pu-241	2.147E-01	2.147E-01	4.711E-06	0.000E+00	0.000E+00
Ra-226	1.453E-13	1.453E-13	3.187E-18	0.000E+00	0.000E+00
Sr-90	2.506E-02	2.506E-02	5.498E-07	0.000E+00	0.000E+00
Th-229	1.017E-13	1.017E-13	2.231E-18	0.000E+00	0.000E+00
Th-230	3.270E-11	3.270E-11	7.174E-16	0.000E+00	0.000E+00
U-233	1.071E-10	1.071E-10	2.351E-15	0.000E+00	0.000E+00
U-234	2.286E-07	2.286E-07	5.016E-12	0.000E+00	0.000E+00
U-235	2.857E-09	2.857E-09	6.269E-14	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+01 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	6.009E-13	5.942E-13	6.175E-13	6.204E-13	1.261E-14	3.051E-15	0.000E+00	0.000E+00
Am-241	0.000E+00	1.847E-01	1.855E-01	1.856E-01	1.856E-01	5.244E-03	2.049E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	1.033E-02	1.033E-02	1.040E-02	1.033E-02	1.534E-02	1.265E-03	0.000E+00	0.000E+00
Cs-137	0.000E+00	5.096E+01	5.096E+01	5.103E+01	5.097E+01	1.231E+02	2.752E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	7.868E-02	7.883E-02	7.907E-02	7.886E-02	4.218E-02	1.003E-03	0.000E+00	0.000E+00
Eu-154	0.000E+00	3.290E-03	3.296E-03	3.311E-03	3.297E-03	1.764E-03	4.195E-05	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.019E-14	1.021E-14	1.020E-14	1.021E-14	5.464E-15	5.198E-17	0.000E+00	0.000E+00
Np-237	0.000E+00	3.387E-05	3.391E-05	3.373E-05	3.378E-05	3.140E-06	1.353E-08	0.000E+00	0.000E+00
Pa-231	0.000E+00	9.209E-12	9.230E-12	9.143E-12	9.174E-12	5.407E-12	4.892E-15	0.000E+00	0.000E+00
Pb-210	0.000E+00	2.936E-13	2.890E-13	3.030E-13	3.050E-13	2.868E-14	9.389E-15	0.000E+00	0.000E+00
Pu-238	0.000E+00	2.517E-03	2.528E-03	2.530E-03	2.529E-03	1.429E-04	1.396E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.019E-01	1.024E-01	1.024E-01	1.024E-01	5.785E-03	5.652E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	2.149E-01	2.159E-01	2.166E-01	2.161E-01	1.220E-02	1.192E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	5.789E-12	5.810E-12	5.713E-12	5.742E-12	4.607E-13	3.884E-13	0.000E+00	0.000E+00
Sr-90	0.000E+00	7.518E+00	7.517E+00	7.531E+00	7.520E+00	4.192E+00	8.522E-01	0.000E+00	0.000E+00
Th-229	0.000E+00	1.024E-13	1.023E-13	1.037E-13	1.043E-13	5.892E-15	2.936E-16	0.000E+00	0.000E+00
Th-230	0.000E+00	3.285E-11	3.289E-11	3.317E-11	3.328E-11	1.880E-12	9.303E-14	0.000E+00	0.000E+00
U-233	0.000E+00	2.730E-10	2.688E-10	2.836E-10	2.845E-10	2.546E-11	4.153E-11	0.000E+00	0.000E+00
U-234	0.000E+00	5.715E-07	5.728E-07	5.710E-07	5.719E-07	5.203E-08	8.745E-08	0.000E+00	0.000E+00
U-235	0.000E+00	7.141E-09	7.159E-09	7.133E-09	7.144E-09	6.501E-10	1.093E-09	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 9.476E+01 years

Radio-	Contaminated Zone	Surface Soil*	Air Particulate	Well Water	Surface Water

Nuclide	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
Ac-227	4.741E-12	4.741E-12	1.040E-16	3.264E-13	6.907E-17
Am-241	1.726E-01	1.726E-01	3.786E-06	0.000E+00	0.000E+00
Co-60	2.568E-08	2.568E-08	5.635E-13	0.000E+00	0.000E+00
Cs-137	2.848E-01	2.848E-01	6.249E-06	0.000E+00	0.000E+00
Eu-152	1.080E-03	1.080E-03	2.370E-08	0.000E+00	0.000E+00
Eu-154	7.977E-06	7.977E-06	1.750E-10	0.000E+00	0.000E+00
Gd-152	5.099E-15	5.099E-15	1.119E-19	0.000E+00	0.000E+00
Np-237	5.002E-06	5.002E-06	1.098E-10	0.000E+00	0.000E+00
Pa-231	8.531E-12	8.531E-12	1.872E-16	5.185E-13	1.097E-16
Pb-210	1.778E-12	1.778E-12	3.900E-17	0.000E+00	0.000E+00
Pu-238	1.503E-03	1.503E-03	3.297E-08	0.000E+00	0.000E+00
Pu-239	1.013E-01	1.013E-01	2.223E-06	0.000E+00	0.000E+00
Pu-241	9.479E-03	9.479E-03	2.080E-07	0.000E+00	0.000E+00
Ra-226	3.804E-12	3.804E-12	8.346E-17	0.000E+00	0.000E+00
Sr-90	4.520E-03	4.520E-03	9.917E-08	2.878E-01	6.090E-05
Th-229	2.993E-12	2.993E-12	6.568E-17	1.450E-14	3.068E-18
Th-230	2.573E-10	2.573E-10	5.645E-15	5.930E-12	1.255E-15
U-233	9.645E-10	9.645E-10	2.116E-14	1.099E-08	2.326E-12
U-234	5.015E-07	5.015E-07	1.100E-11	1.244E-05	2.633E-09
U-235	8.066E-09	8.066E-09	1.770E-13	1.518E-07	3.213E-11

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 9.476E+01 years*

Radio-Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	6.906E-17	1.205E-11	1.242E-11	1.270E-11	1.272E-11	1.536E-13	6.244E-14	1.035E-15	6.895E-14
Am-241	0.000E+00	1.728E-01	1.735E-01	1.737E-01	1.736E-01	4.904E-03	1.917E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	2.055E-06	2.055E-06	2.070E-06	2.056E-06	3.051E-06	2.517E-07	0.000E+00	0.000E+00
Cs-137	0.000E+00	1.139E+01	1.139E+01	1.141E+01	1.139E+01	2.751E+01	6.152E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	2.701E-03	2.706E-03	2.714E-03	2.707E-03	1.448E-03	3.444E-05	0.000E+00	0.000E+00
Eu-154	0.000E+00	1.995E-05	1.999E-05	2.008E-05	2.000E-05	1.070E-05	2.544E-07	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.275E-14	1.278E-14	1.278E-14	1.278E-14	6.837E-15	6.505E-17	0.000E+00	0.000E+00
Np-237	0.000E+00	1.000E-04	1.001E-04	9.992E-05	9.997E-05	9.294E-06	4.000E-08	0.000E+00	0.000E+00
Pa-231	1.116E-16	8.550E-11	8.625E-11	8.678E-11	8.687E-11	5.095E-11	4.718E-14	1.226E-15	1.284E-14
Pb-210	0.000E+00	1.791E-11	1.780E-11	1.819E-11	1.822E-11	1.717E-12	5.680E-13	0.000E+00	0.000E+00
Pu-238	0.000E+00	1.504E-03	1.511E-03	1.513E-03	1.512E-03	8.541E-05	8.345E-07	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.014E-01	1.019E-01	1.019E-01	1.019E-01	5.758E-03	5.625E-05	0.000E+00	0.000E+00

Pu-241	0.000E+00	9.490E-03	9.533E-03	9.563E-03	9.540E-03	5.388E-04	5.264E-06	0.000E+00	0.000E+00
Ra-226	0.000E+00	1.520E-10	1.522E-10	1.514E-10	1.516E-10	1.219E-11	1.024E-11	0.000E+00	0.000E+00
Sr-90	6.087E-05	1.465E+00	1.846E+00	1.535E+00	1.812E+00	9.674E-01	2.959E-01	3.645E-03	6.075E-03
Th-229	3.668E-18	3.022E-12	3.044E-12	3.283E-12	3.289E-12	1.763E-13	8.938E-15	3.481E-16	1.782E-15
Th-230	1.320E-15	2.615E-10	2.696E-10	2.955E-10	2.958E-10	1.531E-11	7.819E-13	1.298E-13	6.538E-13
U-233	2.325E-12	6.212E-09	2.061E-08	2.210E-08	2.219E-08	8.628E-10	2.076E-09	2.322E-11	1.393E-10
U-234	2.632E-09	5.546E-06	2.185E-05	2.367E-05	2.372E-05	8.436E-07	2.127E-06	2.631E-08	1.578E-07
U-235	3.213E-11	7.254E-08	2.715E-07	2.936E-07	2.942E-07	1.073E-08	2.670E-08	3.210E-10	1.926E-09

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+02 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	5.394E-12	5.394E-12	1.184E-16	4.433E-13	9.381E-17
Am-241	1.712E-01	1.712E-01	3.756E-06	0.000E+00	0.000E+00
Co-60	1.289E-08	1.289E-08	2.828E-13	0.000E+00	0.000E+00
Cs-137	2.523E-01	2.523E-01	5.536E-06	0.000E+00	0.000E+00
Eu-152	8.221E-04	8.221E-04	1.804E-08	0.000E+00	0.000E+00
Eu-154	5.278E-06	5.278E-06	1.158E-10	0.000E+00	0.000E+00
Gd-152	5.106E-15	5.106E-15	1.120E-19	0.000E+00	0.000E+00
Np-237	5.237E-06	5.237E-06	1.149E-10	0.000E+00	0.000E+00
Pa-231	9.444E-12	9.444E-12	2.072E-16	7.166E-13	1.516E-16
Pb-210	2.127E-12	2.127E-12	4.667E-17	0.000E+00	0.000E+00
Pu-238	1.441E-03	1.441E-03	3.163E-08	0.000E+00	0.000E+00
Pu-239	1.013E-01	1.013E-01	2.222E-06	0.000E+00	0.000E+00
Pu-241	7.364E-03	7.364E-03	1.616E-07	0.000E+00	0.000E+00
Ra-226	4.405E-12	4.405E-12	9.666E-17	0.000E+00	0.000E+00
Sr-90	3.935E-03	3.935E-03	8.634E-08	2.505E-01	5.302E-05
Th-229	3.493E-12	3.493E-12	7.664E-17	2.655E-14	5.619E-18
Th-230	2.812E-10	2.812E-10	6.170E-15	8.686E-12	1.838E-15
U-233	1.063E-09	1.063E-09	2.333E-14	1.639E-08	3.469E-12
U-234	5.140E-07	5.140E-07	1.128E-11	1.475E-05	3.122E-09
U-235	8.437E-09	8.437E-09	1.851E-13	1.838E-07	3.891E-11

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+02 years*

Radio-Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	9.380E-17	1.373E-11	1.426E-11	1.458E-11	1.460E-11	1.725E-13	7.141E-14	1.406E-15	9.366E-14
Am-241	0.000E+00	1.714E-01	1.722E-01	1.723E-01	1.722E-01	4.865E-03	1.901E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	1.031E-06	1.031E-06	1.039E-06	1.031E-06	1.531E-06	1.263E-07	0.000E+00	0.000E+00
Cs-137	0.000E+00	1.009E+01	1.009E+01	1.011E+01	1.009E+01	2.437E+01	5.450E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	2.056E-03	2.060E-03	2.066E-03	2.061E-03	1.102E-03	2.622E-05	0.000E+00	0.000E+00
Eu-154	0.000E+00	1.320E-05	1.322E-05	1.328E-05	1.323E-05	7.077E-06	1.683E-07	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.277E-14	1.280E-14	1.280E-14	1.280E-14	6.847E-15	6.514E-17	0.000E+00	0.000E+00
Np-237	0.000E+00	1.047E-04	1.048E-04	1.046E-04	1.047E-04	9.731E-06	4.188E-08	0.000E+00	0.000E+00
Pa-231	1.539E-16	9.470E-11	9.571E-11	9.641E-11	9.650E-11	5.656E-11	5.257E-14	1.672E-15	1.761E-14
Pb-210	0.000E+00	2.143E-11	2.129E-11	2.175E-11	2.178E-11	2.053E-12	6.794E-13	0.000E+00	0.000E+00
Pu-238	0.000E+00	1.443E-03	1.450E-03	1.451E-03	1.450E-03	8.193E-05	8.004E-07	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.014E-01	1.018E-01	1.019E-01	1.019E-01	5.756E-03	5.623E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	7.373E-03	7.406E-03	7.430E-03	7.411E-03	4.186E-04	4.089E-06	0.000E+00	0.000E+00
Ra-226	0.000E+00	1.760E-10	1.762E-10	1.754E-10	1.756E-10	1.413E-11	1.186E-11	0.000E+00	0.000E+00
Sr-90	5.302E-05	1.276E+00	1.608E+00	1.642E+00	1.640E+00	1.008E+00	2.644E-01	3.181E-03	5.302E-03
Th-229	6.511E-18	3.534E-12	3.571E-12	3.924E-12	3.931E-12	2.074E-13	1.060E-14	6.214E-16	3.170E-15
Th-230	1.915E-15	2.867E-10	2.984E-10	3.293E-10	3.296E-10	1.682E-11	8.623E-13	1.890E-13	9.503E-13
U-233	3.469E-12	8.323E-09	2.980E-08	3.208E-08	3.219E-08	1.202E-09	2.954E-09	3.465E-11	2.079E-10
U-234	3.122E-09	6.377E-06	2.571E-05	2.791E-05	2.795E-05	9.830E-07	2.493E-06	3.120E-08	1.872E-07
U-235	3.890E-11	8.453E-08	3.255E-07	3.526E-07	3.532E-07	1.271E-08	3.183E-08	3.888E-10	2.333E-09

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.664E+02 years

Radio-Nuclide	Contaminated Zone	Surface Soil*	Air Particulate	Well Water	Surface Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
Ac-227	1.721E-11	1.721E-11	3.776E-16	4.296E-12	9.091E-16

Am-241	1.540E-01	1.540E-01	3.380E-06	0.000E+00	0.000E+00
Co-60	2.066E-12	2.066E-12	4.534E-17	0.000E+00	0.000E+00
Cs-137	5.430E-02	5.430E-02	1.191E-06	0.000E+00	0.000E+00
Eu-152	2.591E-05	2.591E-05	5.685E-10	0.000E+00	0.000E+00
Eu-154	2.813E-08	2.813E-08	6.171E-13	0.000E+00	0.000E+00
Gd-152	5.111E-15	5.111E-15	1.121E-19	0.000E+00	0.000E+00
Np-237	7.806E-06	7.806E-06	1.713E-10	1.079E-04	2.284E-08
Pa-231	2.426E-11	2.426E-11	5.324E-16	5.567E-12	1.178E-15
Pb-210	1.069E-11	1.069E-11	2.345E-16	0.000E+00	0.000E+00
Pu-238	8.505E-04	8.505E-04	1.866E-08	0.000E+00	0.000E+00
Pu-239	1.008E-01	1.008E-01	2.211E-06	0.000E+00	0.000E+00
Pu-241	3.004E-04	3.004E-04	6.592E-09	0.000E+00	0.000E+00
Ra-226	1.694E-11	1.694E-11	3.716E-16	0.000E+00	0.000E+00
Sr-90	6.796E-04	6.796E-04	1.491E-08	4.327E-02	9.157E-06
Th-229	1.458E-11	1.458E-11	3.200E-16	1.395E-12	2.952E-16
Th-230	6.177E-10	6.177E-10	1.355E-14	7.455E-11	1.578E-14
U-233	2.559E-09	2.559E-09	5.615E-14	1.410E-07	2.985E-11
U-234	5.930E-07	5.930E-07	1.301E-11	3.346E-05	7.082E-09
U-235	1.257E-08	1.257E-08	2.758E-13	5.419E-07	1.147E-10

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.664E+02 years*

Radio-Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	9.090E-16	4.474E-11	5.025E-11	5.158E-11	5.162E-11	5.051E-13	2.426E-13	1.363E-14	9.082E-13
Am-241	0.000E+00	1.542E-01	1.549E-01	1.550E-01	1.550E-01	4.378E-03	1.711E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	1.653E-10	1.653E-10	1.665E-10	1.654E-10	2.455E-10	2.025E-11	0.000E+00	0.000E+00
Cs-137	0.000E+00	2.172E+00	2.172E+00	2.175E+00	2.172E+00	5.246E+00	1.173E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	6.481E-05	6.493E-05	6.513E-05	6.495E-05	3.474E-05	8.264E-07	0.000E+00	0.000E+00
Eu-154	0.000E+00	7.035E-08	7.048E-08	7.080E-08	7.051E-08	3.771E-08	8.970E-10	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.278E-14	1.281E-14	1.281E-14	1.281E-14	6.853E-15	6.520E-17	0.000E+00	0.000E+00
Np-237	2.283E-08	1.936E-04	3.351E-04	3.512E-04	3.514E-04	3.317E-05	2.025E-07	6.848E-07	9.131E-06
Pa-231	1.185E-15	2.447E-10	2.521E-10	2.551E-10	2.552E-10	1.488E-10	1.405E-13	1.224E-14	1.323E-13
Pb-210	0.000E+00	1.075E-10	1.070E-10	1.088E-10	1.089E-10	1.026E-11	3.403E-12	0.000E+00	0.000E+00
Pu-238	0.000E+00	8.515E-04	8.554E-04	8.562E-04	8.559E-04	4.834E-05	4.723E-07	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.009E-01	1.013E-01	1.014E-01	1.014E-01	5.728E-03	5.596E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	3.008E-04	3.022E-04	3.031E-04	3.024E-04	1.708E-05	1.668E-07	0.000E+00	0.000E+00
Ra-226	0.000E+00	6.771E-10	6.775E-10	6.757E-10	6.762E-10	5.441E-11	4.566E-11	0.000E+00	0.000E+00
Sr-90	9.157E-06	2.203E-01	2.777E-01	2.836E-01	2.832E-01	1.741E-01	4.567E-02	5.494E-04	9.157E-04

Th-229	3.029E-16	1.528E-11	1.710E-11	2.026E-11	2.028E-11	9.193E-13	4.911E-14	3.004E-14	1.507E-13
Th-230	1.595E-14	6.487E-10	7.474E-10	8.258E-10	8.263E-10	3.790E-11	1.966E-12	1.589E-12	7.960E-12
U-233	2.985E-11	5.513E-08	2.399E-07	2.617E-07	2.619E-07	8.889E-09	2.295E-08	2.984E-10	1.791E-09
U-234	7.082E-09	1.304E-05	5.690E-05	6.214E-05	6.215E-05	2.106E-06	5.441E-06	7.081E-08	4.249E-07
U-235	1.147E-10	2.186E-07	9.287E-07	1.013E-06	1.013E-06	3.476E-08	8.923E-08	1.147E-09	6.880E-09

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+02 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	5.699E-11	5.699E-11	1.251E-15	2.553E-11	5.402E-15
Am-241	1.242E-01	1.242E-01	2.726E-06	0.000E+00	0.000E+00
Co-60	4.782E-20	4.782E-20	1.049E-24	0.000E+00	0.000E+00
Cs-137	2.469E-03	2.469E-03	5.418E-08	0.000E+00	0.000E+00
Eu-152	2.469E-08	2.469E-08	5.418E-13	0.000E+00	0.000E+00
Eu-154	7.500E-13	7.500E-13	1.646E-17	0.000E+00	0.000E+00
Gd-152	5.067E-15	5.067E-15	1.112E-19	0.000E+00	0.000E+00
Np-237	1.108E-05	1.108E-05	2.431E-10	3.312E-04	7.009E-08
Pa-231	6.838E-11	6.838E-11	1.500E-15	2.576E-11	5.451E-15
Pb-210	5.526E-11	5.526E-11	1.213E-15	9.452E-12	2.000E-15
Pu-238	2.943E-04	2.943E-04	6.457E-09	0.000E+00	0.000E+00
Pu-239	9.978E-02	9.978E-02	2.189E-06	0.000E+00	0.000E+00
Pu-241	4.811E-07	4.811E-07	1.056E-11	0.000E+00	0.000E+00
Ra-226	7.056E-11	7.056E-11	1.548E-15	1.132E-12	2.397E-16
Sr-90	1.985E-05	1.985E-05	4.355E-10	1.264E-03	2.675E-07
Th-229	6.871E-11	6.871E-11	1.508E-15	1.583E-11	3.349E-15
Th-230	1.302E-09	1.302E-09	2.858E-14	2.747E-10	5.813E-14
U-233	6.144E-09	6.144E-09	1.348E-13	4.544E-07	9.617E-11
U-234	5.226E-07	5.226E-07	1.147E-11	3.861E-05	8.172E-09
U-235	1.838E-08	1.838E-08	4.034E-13	1.050E-06	2.222E-10

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+02 years*

Radio-Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	5.402E-15	1.520E-10	1.851E-10	1.910E-10	1.911E-10	1.598E-12	8.618E-13	8.101E-14	5.399E-12
Am-241	0.000E+00	1.244E-01	1.249E-01	1.250E-01	1.250E-01	3.531E-03	1.380E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	3.826E-18	3.826E-18	3.854E-18	3.827E-18	5.682E-18	4.687E-19	0.000E+00	0.000E+00
Cs-137	0.000E+00	9.878E-02	9.879E-02	9.892E-02	9.880E-02	2.386E-01	5.335E-02	0.000E+00	0.000E+00
Eu-152	0.000E+00	6.176E-08	6.187E-08	6.206E-08	6.189E-08	3.311E-08	7.875E-10	0.000E+00	0.000E+00
Eu-154	0.000E+00	1.876E-12	1.879E-12	1.888E-12	1.880E-12	1.006E-12	2.392E-14	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.267E-14	1.270E-14	1.270E-14	1.270E-14	6.794E-15	6.464E-17	0.000E+00	0.000E+00
Np-237	7.009E-08	3.366E-04	7.710E-04	8.223E-04	8.224E-04	7.801E-05	5.188E-07	2.103E-06	2.803E-05
Pa-231	5.464E-15	6.930E-10	7.271E-10	7.354E-10	7.356E-10	4.275E-10	4.038E-13	5.541E-14	6.049E-13
Pb-210	2.000E-15	5.585E-10	5.688E-10	5.778E-10	5.781E-10	5.420E-11	1.830E-11	5.995E-13	1.999E-13
Pu-238	0.000E+00	2.946E-04	2.959E-04	2.962E-04	2.961E-04	1.673E-05	1.634E-07	0.000E+00	0.000E+00
Pu-239	0.000E+00	9.990E-02	1.004E-01	1.004E-01	1.004E-01	5.672E-03	5.541E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	4.817E-07	4.839E-07	4.854E-07	4.842E-07	2.735E-08	2.672E-10	0.000E+00	0.000E+00
Ra-226	2.397E-16	2.822E-09	2.825E-09	2.821E-09	2.822E-09	2.272E-10	1.907E-10	1.203E-14	6.013E-14
Sr-90	2.675E-07	6.434E-03	8.110E-03	8.282E-03	8.271E-03	5.085E-03	1.334E-03	1.605E-05	2.675E-05
Th-229	3.374E-15	7.489E-11	9.569E-11	1.077E-10	1.077E-10	4.391E-12	2.331E-13	3.366E-13	1.685E-12
Th-230	5.833E-14	1.404E-09	1.768E-09	1.888E-09	1.889E-09	8.051E-11	4.149E-12	5.827E-12	2.915E-11
U-233	9.617E-11	1.724E-07	7.678E-07	8.394E-07	8.396E-07	2.819E-08	7.317E-08	9.618E-10	5.772E-09
U-234	8.172E-09	1.465E-05	6.525E-05	7.137E-05	7.136E-05	2.395E-06	6.219E-06	8.172E-08	4.903E-07
U-235	2.222E-10	4.088E-07	1.785E-06	1.950E-06	1.950E-06	6.606E-08	1.707E-07	2.222E-09	1.333E-08

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+03 years

Radio-Nuclide	Contaminated Zone	Surface Soil*	Air Particulate	Well Water	Surface Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
Ac-227	3.990E-10	3.990E-10	8.756E-15	2.634E-10	5.575E-14
Am-241	4.025E-02	4.025E-02	8.831E-07	0.000E+00	0.000E+00
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	2.291E-10	2.291E-10	5.027E-15	0.000E+00	0.000E+00

Eu-152	3.666E-24	3.666E-24	8.045E-29	0.000E+00	0.000E+00
Eu-154	8.114E-37	8.114E-37	1.780E-41	0.000E+00	0.000E+00
Gd-152	4.836E-15	4.836E-15	1.061E-19	0.000E+00	0.000E+00
Np-237	1.019E-05	1.019E-05	2.236E-10	4.452E-04	9.422E-08
Pa-231	4.162E-10	4.162E-10	9.133E-15	2.241E-10	4.743E-14
Pb-210	6.181E-10	6.181E-10	1.356E-14	8.467E-10	1.792E-13
Pu-238	1.131E-06	1.131E-06	2.482E-11	0.000E+00	0.000E+00
Pu-239	9.480E-02	9.480E-02	2.080E-06	0.000E+00	0.000E+00
Pu-241	1.085E-21	1.085E-21	2.380E-26	0.000E+00	0.000E+00
Ra-226	6.488E-10	6.488E-10	1.424E-14	5.429E-11	1.149E-14
Sr-90	1.810E-13	1.810E-13	3.971E-18	1.153E-11	2.439E-15
Th-229	8.194E-10	8.194E-10	1.798E-14	2.848E-10	6.028E-14
Th-230	2.714E-09	2.714E-09	5.956E-14	7.931E-10	1.678E-13
U-233	1.368E-08	1.368E-08	3.001E-13	1.131E-06	2.393E-10
U-234	5.984E-08	5.984E-08	1.313E-12	5.049E-06	1.069E-09
U-235	2.625E-08	2.625E-08	5.760E-13	1.798E-06	3.805E-10

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:03 Page 21
Concent : Combined Upper Areas and Filter Bed Areas Recreationist (Aquatic Pathways)
File : recreational_cua_and_fba_aquatic_pathways.rad

Concentration of radionuclides in foodstuff media
at t = 1.000E+03 years*

Radio-Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	5.575E-14	1.093E-09	1.436E-09	1.490E-09	1.490E-09	1.089E-11	6.472E-12	8.360E-13	5.572E-11
Am-241	0.000E+00	4.030E-02	4.048E-02	4.050E-02	4.050E-02	1.144E-03	4.470E-05	0.000E+00	0.000E+00
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	0.000E+00	9.164E-09	9.165E-09	9.177E-09	9.166E-09	2.213E-08	4.949E-09	0.000E+00	0.000E+00
Eu-152	0.000E+00	9.171E-24	9.187E-24	9.216E-24	9.191E-24	4.916E-24	1.169E-25	0.000E+00	0.000E+00
Eu-154	0.000E+00	2.029E-36	2.033E-36	2.042E-36	2.034E-36	1.088E-36	2.588E-38	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.210E-14	1.212E-14	1.212E-14	1.212E-14	6.484E-15	6.169E-17	0.000E+00	0.000E+00
Np-237	9.422E-08	3.585E-04	9.424E-04	1.012E-03	1.012E-03	9.617E-05	6.599E-07	2.827E-06	3.769E-05
Pa-231	4.746E-14	4.241E-09	4.537E-09	4.579E-09	4.580E-09	2.654E-09	2.496E-12	4.759E-13	5.227E-12
Pb-210	1.792E-13	6.498E-09	7.589E-09	7.789E-09	7.790E-09	7.072E-10	2.620E-10	5.372E-11	1.791E-11
Pu-238	0.000E+00	1.133E-06	1.138E-06	1.139E-06	1.138E-06	6.430E-08	6.282E-10	0.000E+00	0.000E+00
Pu-239	0.000E+00	9.491E-02	9.534E-02	9.539E-02	9.539E-02	5.389E-03	5.264E-05	0.000E+00	0.000E+00
Pu-241	0.000E+00	1.086E-21	1.091E-21	1.095E-21	1.092E-21	6.166E-23	6.025E-25	0.000E+00	0.000E+00
Ra-226	1.149E-14	2.597E-08	2.605E-08	2.605E-08	2.605E-08	2.098E-09	1.766E-09	5.746E-13	2.873E-12
Sr-90	2.439E-15	5.866E-11	7.394E-11	7.550E-11	7.539E-11	4.635E-11	1.216E-11	1.464E-13	2.439E-13
Th-229	6.034E-14	9.203E-10	1.297E-09	1.366E-09	1.366E-09	5.204E-11	2.699E-12	6.032E-12	3.016E-11
Th-230	1.679E-13	2.992E-09	4.043E-09	4.180E-09	4.180E-09	1.683E-10	8.590E-12	1.679E-11	8.393E-11
U-233	2.393E-10	4.249E-07	1.906E-06	2.085E-06	2.085E-06	6.977E-08	1.814E-07	2.393E-09	1.436E-08

U-234	1.069E-09	1.895E-06	8.511E-06	9.310E-06	9.308E-06	3.113E-07	8.099E-07	1.069E-08	6.413E-08
U-235	3.805E-10	6.870E-07	3.043E-06	3.326E-06	3.326E-06	1.119E-07	2.902E-07	3.805E-09	2.283E-08

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 7. JN-4 Drainpipe Area Recreational Scenario (No Aquatic Pathways) (Summary File)

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1RESRAD, Version 6.3      T½ Limit = 180 days        11/30/2007  12:02  Page   1
 Summary : JN-4 Drainpipe Area Recreationist
 File    : recreational_JN-4_drainpipe.rad
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Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines


```
 Dose Conversion Factor (and Related) Parameter Summary ...    2
 Site-Specific Parameter Summary ........................    5
 Summary of Pathway Selections ..........................   11
 Contaminated Zone and Total Dose Summary ...............   12
 Total Dose Components
      Time = 0.000E+00 ..................................   13
      Time = 1.000E+00 ..................................   14
      Time = 3.000E+00 ..................................   15
      Time = 1.000E+01 ..................................   16
      Time = 3.000E+01 ..................................   17
      Time = 9.476E+01 ..................................   18
      Time = 1.000E+02 ..................................   19
      Time = 1.664E+02 ..................................   20
      Time = 3.000E+02 ..................................   21
      Time = 1.000E+03 ..................................   22
 Dose/Source Ratios Summed Over All Pathways ............   23
 Single Radionuclide Soil Guidelines ....................   24
 Dose Per Nuclide Summed Over All Pathways ..............   25
 Soil Concentration Per Nuclide .........................   26
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1RESRAD, Version 6.3      T½ Limit = 180 days        11/30/2007  12:02  Page   2
 Summary : JN-4 Drainpipe Area Recreationist
 File    : recreational_JN-4_drainpipe.rad
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Dose Conversion Factor (and Related) Parameter Summary
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(6)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(8)
B-1	Pu-241	8.250E-03	8.250E-03	DCF2(9)
B-1	Pu-241+D	8.254E-03	8.250E-03	DCF2(10)

B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(11)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(12)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(13)
B-1	U-233	1.350E-01	1.350E-01	DCF2(14)
B-1	U-234	1.320E-01	1.320E-01	DCF2(15)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(16)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(6)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(8)
D-1	Pu-241	6.840E-05	6.840E-05	DCF3(9)
D-1	Pu-241+D	7.157E-05	6.840E-05	DCF3(10)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(11)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(12)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(13)
D-1	U-233	2.890E-04	2.890E-04	DCF3(14)
D-1	U-234	2.830E-04	2.830E-04	DCF3(15)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(16)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(4,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)

D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-238 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(8,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(8,3)
D-34				
D-34	Pu-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(9,1)
D-34	Pu-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(9,2)
D-34	Pu-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(9,3)
D-34				
D-34	Pu-241+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(10,1)
D-34	Pu-241+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(10,2)
D-34	Pu-241+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(10,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(11,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(12,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(12,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(12,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(13,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(13,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(13,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(14,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(14,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(15,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(15,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(15,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(16,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(16,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(8,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(8,2)
D-5				
D-5	Pu-241 , fish	3.000E+01	3.000E+01	BIOFAC(9,1)
D-5	Pu-241 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(9,2)
D-5				
D-5	Pu-241+D , fish	3.000E+01	3.000E+01	BIOFAC(10,1)
D-5	Pu-241+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(10,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(11,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(11,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(14,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(14,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(15,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(15,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(16,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)

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

Site-Specific Parameter Summary

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	6.490E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.524E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	not used	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)	9.476E+01	1.000E+02	---	T(6)
R011	Times for calculations (yr)	1.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.664E+02	1.000E+03	---	T(8)
R011	Times for calculations (yr)	3.000E+02	0.000E+00	---	T(9)
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	3.700E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Pu-238	7.400E-02	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-239	3.140E+00	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): Pu-241	2.520E+00	0.000E+00	---	S1(9)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): Pu-241	not used	0.000E+00	---	W1(9)
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)	1.500E+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)	2.270E+02	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)	9.700E-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)	not used	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	not used	1.000E-03	Romberg failures occurred	EPS
R014	Density of saturated zone (g/cm**3)	not used	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	not used	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	not used	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	not used	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	not used	1.000E+02	---	HCSZ

R014	Saturated zone hydraulic gradient	not used	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Water table drop rate (m/yr)	not used	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	not used	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	not used	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	not used	1	---	NS
R015	Unsat. zone 1, thickness (m)	not used	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	not used	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	not used	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	not used	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	not used	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	not used	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	not used	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.541E-04	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.779E-03	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+03	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+03	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.779E-03	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for Pu-241				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+03	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+03	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.779E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)

R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	1.500E+03	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.423E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	not used	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	not used	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.481E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.186E-03	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	not used	1.000E+02	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	not used	1.000E+02	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.880E-03	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	not used	7.000E+01	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	not used	7.000E+01	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.346E-04	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	not used	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	not used	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.469E-04	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-230				

R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	not used	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	not used	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.469E-04	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.407E-01	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.407E-01	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.407E-01	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)
R017	Inhalation rate (m**3/yr)	1.400E+04	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	0.000E+00	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.920E-02	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)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM

R019	Depth of roots (m)	not used	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	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

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
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
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	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)

STOR	Livestock fodder	4.500E+01	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	32	---	---	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	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	suppressed
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g

Area:	64.90 square meters	Am-241	3.700E+00
Thickness:	0.15 meters	Pu-238	7.400E-02
Cover Depth:	0.00 meters	Pu-239	3.140E+00
		Pu-241	2.520E+00

0

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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
TDOSE(t):	1.174E-02	1.173E-02	1.169E-02	1.156E-02	1.117E-02	9.910E-03	9.814E-03	8.674E-03	6.774E-03	1.867E-03
M(t):	4.697E-04	4.690E-04	4.676E-04	4.624E-04	4.468E-04	3.964E-04	3.926E-04	3.470E-04	2.710E-04	7.470E-05

0Maximum TDOSE(t): 1.174E-02 mrem/yr at t = 0.000E+00 years

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
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	2.446E-03	0.2083	4.401E-03	0.3748	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.120E-04	0.0521
Pu-238	1.858E-07	0.0000	7.742E-05	0.0066	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.072E-05	0.0009
Pu-239	1.341E-05	0.0011	3.609E-03	0.3074	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.051E-04	0.0430
Pu-241	1.993E-06	0.0002	5.675E-05	0.0048	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.976E-06	0.0007
Total	2.462E-03	0.2097	8.145E-03	0.6936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.136E-03	0.0967

0

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
0 Water Dependent Pathways
0

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.
Am-241	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	7.460E-03	0.6353
Pu-238	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	8.832E-05	0.0075
Pu-239	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	4.128E-03	0.3515
Pu-241	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	6.672E-05	0.0057
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	1.174E-02	1.0000

0*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
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	2.442E-03	0.2083	4.393E-03	0.3747	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.108E-04	0.0521
Pu-238	1.840E-07	0.0000	7.667E-05	0.0065	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.061E-05	0.0009
Pu-239	1.338E-05	0.0011	3.603E-03	0.3073	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.042E-04	0.0430
Pu-241	4.500E-06	0.0004	5.867E-05	0.0050	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.239E-06	0.0007
Total	2.460E-03	0.2098	8.131E-03	0.6935	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.134E-03	0.0967

0

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
0 Water Dependent Pathways
0

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.
Am-241	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	7.446E-03	0.6350
Pu-238	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	8.747E-05	0.0075
Pu-239	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	4.120E-03	0.3514
Pu-241	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	7.141E-05	0.0061
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	1.173E-02	1.0000

0*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
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	2.433E-03	0.2081	4.377E-03	0.3744	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.086E-04	0.0521
Pu-238	1.805E-07	0.0000	7.520E-05	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.041E-05	0.0009
Pu-239	1.334E-05	0.0011	3.590E-03	0.3071	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.024E-04	0.0430
Pu-241	9.140E-06	0.0008	6.221E-05	0.0053	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.724E-06	0.0007
Total	2.456E-03	0.2101	8.104E-03	0.6933	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.130E-03	0.0967

0

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
0 Water Dependent Pathways
0

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.

Am-241	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	7.418E-03	0.6346
Pu-238	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	8.579E-05	0.0073
Pu-239	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	4.105E-03	0.3512
Pu-241	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	8.008E-05	0.0069
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	1.169E-02	1.0000

0*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
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	2.402E-03	0.2077	4.320E-03	0.3737	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.007E-04	0.0520
Pu-238	1.686E-07	0.0000	7.028E-05	0.0061	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.729E-06	0.0008
Pu-239	1.317E-05	0.0011	3.545E-03	0.3066	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.961E-04	0.0429
Pu-241	2.204E-05	0.0019	7.192E-05	0.0062	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.005E-05	0.0009
Total	2.437E-03	0.2108	8.007E-03	0.6926	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.117E-03	0.0966

0

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
0 Water Dependent Pathways
0

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.
Am-241	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	7.323E-03	0.6334
Pu-238	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	8.017E-05	0.0069
Pu-239	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	4.054E-03	0.3507
Pu-241	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	1.040E-04	0.0090
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	1.156E-02	1.0000

0*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
0 Water Independent Pathways (Inhalation excludes radon)
0

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.

Am-241	2.314E-03	0.2072	4.163E-03	0.3727	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.788E-04	0.0518
Pu-238	1.390E-07	0.0000	5.791E-05	0.0052	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.017E-06	0.0007
Pu-239	1.270E-05	0.0011	3.419E-03	0.3061	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.784E-04	0.0428
Pu-241	4.060E-05	0.0036	8.493E-05	0.0076	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.183E-05	0.0011
Total	2.367E-03	0.2120	7.724E-03	0.6916	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-03	0.0964

0

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

0

Water Dependent Pathways

0

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.
Am-241	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	7.056E-03	0.6317
Pu-238	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	6.606E-05	0.0059
Pu-239	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	3.910E-03	0.3501
Pu-241	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	1.374E-04	0.0123
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	1.117E-02	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:02 Page 18

Summary : JN-4 Drainpipe Area Recreationist

File : recreational_JN-4_drainpipe.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 = 9.476E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

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.
Am-241	2.052E-03	0.2070	3.691E-03	0.3724	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.132E-04	0.0518
Pu-238	7.425E-08	0.0000	3.094E-05	0.0031	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.284E-06	0.0004
Pu-239	1.130E-05	0.0011	3.041E-03	0.3069	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.256E-04	0.0429
Pu-241	4.616E-05	0.0047	8.351E-05	0.0084	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.161E-05	0.0012
Total	2.109E-03	0.2128	6.846E-03	0.6908	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.547E-04	0.0963

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 9.476E+01 years

0

Water Dependent Pathways

0

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.
Am-241	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	6.256E-03	0.6312
Pu-238	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	3.530E-05	0.0036
Pu-239	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	3.478E-03	0.3509
Pu-241	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	1.413E-04	0.0143

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	9.910E-03	1.0000

0*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)

0
0

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.
Am-241	2.032E-03	0.2070	3.655E-03	0.3724	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.082E-04	0.0518
Pu-238	7.058E-08	0.0000	2.941E-05	0.0030	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.072E-06	0.0004
Pu-239	1.119E-05	0.0011	3.012E-03	0.3069	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.216E-04	0.0430
Pu-241	4.582E-05	0.0047	8.279E-05	0.0084	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.151E-05	0.0012
Total	2.089E-03	0.2128	6.780E-03	0.6908	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.454E-04	0.0963

0

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

0
0

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.
Am-241	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	6.195E-03	0.6313
Pu-238	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	3.355E-05	0.0034
Pu-239	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	3.445E-03	0.3510
Pu-241	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	1.401E-04	0.0143
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	9.814E-03	1.0000

0*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 = 1.664E+02 years
Water Independent Pathways (Inhalation excludes radon)

0
0

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.
Am-241	1.796E-03	0.2071	3.231E-03	0.3725	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.492E-04	0.0518
Pu-238	3.712E-08	0.0000	1.547E-05	0.0018	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.141E-06	0.0002
Pu-239	9.926E-06	0.0011	2.672E-03	0.3080	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.739E-04	0.0431
Pu-241	4.081E-05	0.0047	7.343E-05	0.0085	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.021E-05	0.0012
Total	1.847E-03	0.2129	5.992E-03	0.6908	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.355E-04	0.0963

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.664E+02 years

0

Water Dependent Pathways

0

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.
Am-241	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	5.476E-03	0.6313
Pu-238	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	1.764E-05	0.0020
Pu-239	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	3.056E-03	0.3523
Pu-241	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	1.244E-04	0.0143
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	8.674E-03	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:02 Page 21
Summary : JN-4 Drainpipe Area Recreationist
File : recreational_JN-4_drainpipe.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 = 3.000E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

0

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.
Am-241	1.401E-03	0.2068	2.521E-03	0.3721	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.505E-04	0.0517
Pu-238	1.020E-08	0.0000	4.244E-06	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.876E-07	0.0001
Pu-239	7.797E-06	0.0012	2.099E-03	0.3098	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.937E-04	0.0434
Pu-241	3.185E-05	0.0047	5.730E-05	0.0085	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.966E-06	0.0012
Total	1.441E-03	0.2127	4.681E-03	0.6910	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.527E-04	0.0964

0

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

0

Water Dependent Pathways

0

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.
Am-241	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	4.273E-03	0.6307
Pu-238	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	4.842E-06	0.0007
Pu-239	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	2.400E-03	0.3543
Pu-241	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	9.711E-05	0.0143
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	6.774E-03	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:02 Page 22
Summary : JN-4 Drainpipe Area Recreationist
File : recreational_JN-4_drainpipe.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 = 1.000E+03 years
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	3.817E-04	0.2044	6.866E-04	0.3677	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.547E-05	0.0511
Pu-238	5.088E-11	0.0000	4.847E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.711E-10	0.0000
Pu-239	2.200E-06	0.0012	5.921E-04	0.3171	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.287E-05	0.0444
Pu-241	8.675E-06	0.0046	1.561E-05	0.0084	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.170E-06	0.0012
Total	3.926E-04	0.2102	1.294E-03	0.6931	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.805E-04	0.0967

0

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
0 Water Dependent Pathways
0

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.
Am-241	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	1.164E-03	0.6232
Pu-238	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	5.569E-09	0.0000
Pu-239	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	6.772E-04	0.3626
Pu-241	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	2.645E-05	0.0142
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	1.867E-03	1.0000

0*Sum of all water independent and dependent pathways.

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

0 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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.016E-03	2.012E-03	2.005E-03	1.979E-03	1.907E-03	1.691E-03	1.674E-03	1.480E-03	1.155E-03	3.145E-04
Am-241	Np-237+D	1.000E+00	2.655E-09	7.668E-09	1.648E-08	3.755E-08	5.728E-08	5.517E-08	5.464E-08	4.831E-08	3.769E-08	1.027E-08
Am-241	U-233	1.000E+00	8.820E-17	5.791E-16	2.653E-15	1.457E-14	3.783E-14	4.069E-14	4.030E-14	3.565E-14	2.781E-14	7.576E-15
Am-241	Th-229+D	1.000E+00	1.459E-19	2.086E-18	2.189E-17	4.037E-16	4.094E-15	2.117E-14	2.247E-14	3.746E-14	6.015E-14	8.839E-14
Am-241	ΣDSR(j)		2.016E-03	2.012E-03	2.005E-03	1.979E-03	1.907E-03	1.691E-03	1.674E-03	1.480E-03	1.155E-03	3.145E-04
0Pu-238	Pu-238	1.840E-09	2.196E-12	2.175E-12	2.133E-12	1.993E-12	1.643E-12	8.777E-13	8.343E-13	4.387E-13	1.204E-13	1.375E-16
0Pu-238	Pu-238	1.000E+00	1.194E-03	1.182E-03	1.159E-03	1.083E-03	8.927E-04	4.770E-04	4.534E-04	2.384E-04	6.543E-05	7.472E-08
Pu-238	U-234	1.000E+00	5.031E-10	1.414E-09	2.865E-09	5.446E-09	5.896E-09	3.209E-09	3.050E-09	1.604E-09	4.402E-10	5.027E-13
Pu-238	Th-230	1.000E+00	3.758E-15	2.522E-14	1.215E-13	8.017E-13	3.435E-12	9.525E-12	9.855E-12	1.266E-11	1.413E-11	9.607E-12
Pu-238	Ra-226+D	1.000E+00	5.948E-17	8.645E-16	9.411E-15	1.979E-13	2.836E-12	3.000E-11	3.308E-11	7.842E-11	1.817E-10	5.302E-10
Pu-238	Pb-210+D	1.000E+00	1.337E-21	4.017E-20	9.448E-19	5.823E-17	2.288E-15	5.617E-14	6.378E-14	1.894E-13	5.136E-13	1.681E-12
Pu-238	ΣDSR(j)		1.194E-03	1.182E-03	1.159E-03	1.083E-03	8.928E-04	4.770E-04	4.534E-04	2.384E-04	6.544E-05	7.526E-08
0Pu-239	Pu-239	1.000E+00	1.315E-03	1.312E-03	1.307E-03	1.291E-03	1.245E-03	1.108E-03	1.097E-03	9.731E-04	7.643E-04	2.157E-04
Pu-239	U-235+D	1.000E+00	5.254E-12	1.482E-11	3.030E-11	5.969E-11	7.395E-11	6.675E-11	6.612E-11	5.864E-11	4.606E-11	1.300E-11

Pu-239	Pa-231	1.000E+00	2.187E-17	1.471E-16	7.124E-16	4.792E-15	2.185E-14	7.454E-14	7.836E-14	1.214E-13	1.824E-13	2.180E-13
Pu-239	Ac-227+D	1.000E+00	1.236E-18	1.787E-17	1.921E-16	3.859E-15	4.836E-14	3.527E-13	3.794E-13	6.945E-13	1.158E-12	1.501E-12
Pu-239	ΣDSR(j)		1.315E-03	1.312E-03	1.307E-03	1.291E-03	1.245E-03	1.108E-03	1.097E-03	9.731E-04	7.643E-04	2.157E-04
0Pu-241	Pu-241	1.000E+00	2.470E-05	2.350E-05	2.127E-05	1.499E-05	5.526E-06	2.181E-07	1.679E-07	6.104E-09	7.754E-12	5.192E-27
Pu-241	Am-241	1.000E+00	1.591E-06	4.664E-06	1.035E-05	2.617E-05	4.894E-05	5.584E-05	5.543E-05	4.937E-05	3.853E-05	1.050E-05
Pu-241	Np-237+D	1.000E+00	1.412E-12	9.507E-12	4.607E-11	3.044E-10	1.165E-09	1.798E-09	1.790E-09	1.611E-09	1.258E-09	3.426E-10
Pu-241	U-233	1.000E+00	3.541E-20	5.009E-19	5.130E-18	8.613E-17	6.463E-16	1.310E-15	1.308E-15	1.188E-15	9.281E-16	2.528E-16
Pu-241	Th-229+D	1.000E+00	4.676E-23	1.382E-21	3.141E-20	1.707E-18	4.754E-17	5.161E-16	5.589E-16	1.064E-15	1.838E-15	2.849E-15
Pu-241	ΣDSR(j)		2.629E-05	2.816E-05	3.162E-05	4.116E-05	5.447E-05	5.606E-05	5.560E-05	4.938E-05	3.854E-05	1.050E-05
0Pu-241+D	Pu-241+D	2.450E-05	1.842E-07	1.752E-07	1.586E-07	1.118E-07	4.121E-08	1.626E-09	1.252E-09	4.552E-11	5.782E-14	3.872E-29
Pu-241+D	Np-237+D	2.450E-05	6.401E-14	1.809E-13	3.699E-13	6.966E-13	5.483E-13	3.184E-14	2.467E-14	9.219E-16	1.175E-18	7.866E-34
Pu-241+D	U-233	2.450E-05	2.135E-21	1.382E-20	6.124E-20	2.938E-19	4.523E-19	3.510E-20	2.730E-20	1.038E-21	1.325E-24	8.876E-40
Pu-241+D	Th-229+D	2.450E-05	3.539E-24	5.009E-23	5.132E-22	8.637E-21	6.541E-20	1.397E-19	1.402E-19	1.369E-19	1.241E-19	7.387E-20
Pu-241+D	ΣDSR(j)		1.842E-07	1.752E-07	1.586E-07	1.118E-07	4.121E-08	1.626E-09	1.252E-09	4.552E-11	5.782E-14	7.387E-20

The DSR includes contributions from associated (half-life ó 180 days) daughters.

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

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	1.240E+04	1.242E+04	1.247E+04	1.263E+04	1.311E+04	1.479E+04	1.493E+04	1.689E+04	2.165E+04	7.948E+04
Pu-238	2.095E+04	2.115E+04	2.156E+04	2.307E+04	2.800E+04	5.241E+04	5.514E+04	1.048E+05	3.821E+05	3.322E+08
Pu-239	1.902E+04	1.905E+04	1.912E+04	1.936E+04	2.008E+04	2.257E+04	2.279E+04	2.569E+04	3.271E+04	1.159E+05
Pu-241	9.443E+05	8.822E+05	7.867E+05	6.057E+05	4.586E+05	4.459E+05	4.496E+05	5.062E+05	6.487E+05	2.382E+06

0

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

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	3.700E+00	0.000E+00	2.016E-03	1.240E+04	2.016E-03	1.240E+04
Pu-238	7.400E-02	0.000E+00	1.194E-03	2.095E+04	1.194E-03	2.095E+04
Pu-239	3.140E+00	0.000E+00	1.315E-03	1.902E+04	1.315E-03	1.902E+04
Pu-241	2.520E+00	58.1 ± 0.1	5.816E-05	4.299E+05	2.648E-05	9.443E+05

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

0Nuclide Parent THF(i) DOSE(j,t), mrem/yr

(j)	(i)		t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	7.460E-03	7.446E-03	7.418E-03	7.323E-03	7.055E-03	6.256E-03	6.195E-03	5.476E-03	4.272E-03	1.164E-03
Am-241	Pu-241	1.000E+00	4.008E-06	1.175E-05	2.609E-05	6.594E-05	1.233E-04	1.407E-04	1.397E-04	1.244E-04	9.711E-05	2.645E-05
Am-241	ΣDOSE(j)		7.464E-03	7.458E-03	7.445E-03	7.389E-03	7.179E-03	6.396E-03	6.335E-03	5.600E-03	4.369E-03	1.190E-03
0Np-237	Am-241	1.000E+00	9.823E-09	2.837E-08	6.096E-08	1.390E-07	2.119E-07	2.041E-07	2.022E-07	1.787E-07	1.395E-07	3.799E-08
Np-237	Pu-241	1.000E+00	3.557E-12	2.396E-11	1.161E-10	7.671E-10	2.935E-09	4.530E-09	4.510E-09	4.059E-09	3.170E-09	8.634E-10
Np-237	Pu-241	2.450E-05	1.613E-13	4.559E-13	9.320E-13	1.755E-12	1.382E-12	8.025E-14	6.216E-14	2.323E-15	2.960E-18	0.000E+00
Np-237	ΣDOSE(j)		9.827E-09	2.840E-08	6.108E-08	1.397E-07	2.149E-07	2.086E-07	2.067E-07	1.828E-07	1.426E-07	3.885E-08
0U-233	Am-241	1.000E+00	3.263E-16	2.143E-15	9.817E-15	5.392E-14	1.400E-13	1.505E-13	1.491E-13	1.319E-13	1.029E-13	2.803E-14
U-233	Pu-241	1.000E+00	8.922E-20	1.262E-18	1.293E-17	2.170E-16	1.629E-15	3.301E-15	3.296E-15	2.994E-15	2.339E-15	6.371E-16
U-233	Pu-241	2.450E-05	5.380E-21	3.483E-20	1.543E-19	7.404E-19	1.140E-18	8.845E-20	6.880E-20	2.617E-21	3.340E-24	0.000E+00
U-233	ΣDOSE(j)		3.264E-16	2.144E-15	9.830E-15	5.414E-14	1.416E-13	1.538E-13	1.524E-13	1.349E-13	1.052E-13	2.867E-14
0Th-229	Am-241	1.000E+00	5.397E-19	7.717E-18	8.099E-17	1.494E-15	1.515E-14	7.832E-14	8.314E-14	1.386E-13	2.225E-13	3.271E-13
Th-229	Pu-241	1.000E+00	1.178E-22	3.484E-21	7.915E-20	4.301E-18	1.198E-16	1.300E-15	1.408E-15	2.681E-15	4.632E-15	7.180E-15
Th-229	Pu-241	2.450E-05	8.919E-24	1.262E-22	1.293E-21	2.177E-20	1.648E-19	3.521E-19	3.534E-19	3.450E-19	3.128E-19	1.862E-19
Th-229	ΣDOSE(j)		5.398E-19	7.721E-18	8.107E-17	1.498E-15	1.527E-14	7.962E-14	8.455E-14	1.413E-13	2.272E-13	3.342E-13
0Pu-238	Pu-238	1.840E-09	1.625E-13	1.609E-13	1.579E-13	1.475E-13	1.216E-13	6.495E-14	6.174E-14	3.247E-14	8.910E-15	1.017E-17
Pu-238	Pu-238	1.000E+00	8.832E-05	8.747E-05	8.579E-05	8.017E-05	6.606E-05	3.530E-05	3.355E-05	1.764E-05	4.842E-06	5.529E-09
Pu-238	ΣDOSE(j)		8.832E-05	8.747E-05	8.579E-05	8.017E-05	6.606E-05	3.530E-05	3.355E-05	1.764E-05	4.842E-06	5.529E-09
0U-234	Pu-238	1.000E+00	3.723E-11	1.046E-10	2.120E-10	4.030E-10	4.363E-10	2.375E-10	2.257E-10	1.187E-10	3.258E-11	3.720E-14
0Th-230	Pu-238	1.000E+00	2.781E-16	1.866E-15	8.991E-15	5.933E-14	2.542E-13	7.049E-13	7.293E-13	9.371E-13	1.045E-12	7.109E-13
0Ra-226	Pu-238	1.000E+00	4.402E-18	6.397E-17	6.964E-16	1.464E-14	2.099E-13	2.220E-12	2.448E-12	5.803E-12	1.345E-11	3.923E-11
0Pb-210	Pu-238	1.000E+00	9.897E-23	2.972E-21	6.992E-20	4.309E-18	1.693E-16	4.156E-15	4.719E-15	1.402E-14	3.801E-14	1.244E-13
0Pu-239	Pu-239	1.000E+00	4.128E-03	4.120E-03	4.105E-03	4.054E-03	3.910E-03	3.478E-03	3.445E-03	3.056E-03	2.400E-03	6.772E-04
0U-235	Pu-239	1.000E+00	1.650E-11	4.654E-11	9.513E-11	1.874E-10	2.322E-10	2.096E-10	2.076E-10	1.841E-10	1.446E-10	4.081E-11
0Pa-231	Pu-239	1.000E+00	6.869E-17	4.620E-16	2.237E-15	1.505E-14	6.861E-14	2.341E-13	2.460E-13	3.811E-13	5.728E-13	6.845E-13
0Ac-227	Pu-239	1.000E+00	3.882E-18	5.611E-17	6.033E-16	1.212E-14	1.519E-13	1.108E-12	1.191E-12	2.181E-12	3.638E-12	4.713E-12
0Pu-241	Pu-241	1.000E+00	6.225E-05	5.922E-05	5.359E-05	3.779E-05	1.392E-05	5.495E-07	4.230E-07	1.538E-08	1.954E-11	1.309E-26
Pu-241	Pu-241	2.450E-05	4.642E-07	4.416E-07	3.996E-07	2.818E-07	1.038E-07	4.098E-09	3.155E-09	1.147E-10	1.457E-13	9.726E-29
Pu-241	ΣDOSE(j)		6.271E-05	5.966E-05	5.399E-05	3.807E-05	1.403E-05	5.536E-07	4.262E-07	1.550E-08	1.969E-11	1.318E-26

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

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated
S(j,t), pCi/g

0Nuclide (j)	Parent (i)	THF(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.700E+00	3.693E+00	3.679E+00	3.632E+00	3.499E+00	3.103E+00	3.073E+00	2.716E+00	2.119E+00	5.772E-01
Am-241	Pu-241	1.000E+00	0.000E+00	3.938E-03	1.123E-02	3.150E-02	6.073E-02	6.978E-02	6.927E-02	6.171E-02	4.816E-02	1.312E-02
Am-241	ΣS(j):		3.700E+00	3.697E+00	3.691E+00	3.663E+00	3.560E+00	3.172E+00	3.142E+00	2.778E+00	2.167E+00	5.903E-01
0Np-237	Am-241	1.000E+00	0.000E+00	1.148E-06	3.165E-06	7.994E-06	1.253E-05	1.211E-05	1.199E-05	1.060E-05	8.274E-06	2.254E-06
Np-237	Pu-241	1.000E+00	0.000E+00	6.255E-10	5.145E-09	4.212E-08	1.715E-07	2.686E-07	2.675E-07	2.408E-07	1.881E-07	5.122E-08
Np-237	Pu-241	2.450E-05	0.000E+00	1.870E-11	4.904E-11	1.025E-10	8.319E-11	4.873E-12	3.775E-12	1.412E-13	1.799E-16	1.205E-31
Np-237	ΣS(j):		0.000E+00	1.149E-06	3.170E-06	8.037E-06	1.270E-05	1.238E-05	1.226E-05	1.085E-05	8.462E-06	2.305E-06
0U-233	Am-241	1.000E+00	0.000E+00	2.430E-12	1.886E-11	1.280E-10	3.515E-10	3.811E-10	3.776E-10	3.340E-10	2.606E-10	7.097E-11
U-233	Pu-241	1.000E+00	0.000E+00	8.904E-16	2.097E-14	4.893E-13	4.029E-12	8.351E-12	8.339E-12	7.581E-12	5.922E-12	1.613E-12

U-233	Pu-241	2.450E-05	0.000E+00	3.990E-17	2.993E-16	1.776E-15	2.907E-15	2.291E-16	1.783E-16	6.785E-18	8.661E-21	5.800E-36
U-233	ΣS(j):		0.000E+00	2.431E-12	1.888E-11	1.285E-10	3.555E-10	3.895E-10	3.859E-10	3.415E-10	2.665E-10	7.258E-11
0Th-229	Am-241	1.000E+00	0.000E+00	7.794E-17	1.883E-15	4.825E-14	5.367E-13	2.843E-12	3.019E-12	5.048E-12	8.117E-12	1.194E-11
Th-229	Pu-241	1.000E+00	0.000E+00	2.131E-20	1.547E-18	1.322E-16	4.183E-15	4.711E-14	5.105E 14	9.756E-14	1.689E-13	2.622E 13
Th-229	Pu-241	2.450E-05	0.000E+00	1.285E-21	3.028E-20	7.081E-19	5.884E-18	1.285E-17	1.290E-17	1.260E-17	1.143E-17	6.800E-18
Th-229	ΣS(j):		0.000E+00	7.796E-17	1.884E-15	4.838E-14	5.409E-13	2.890E-12	3.070E-12	5.145E-12	8.286E-12	1.221E-11
0Pu-238	Pu-238	1.840E-09	1.362E-10	1.348E-10	1.323E-10	1.236E-10	1.018E-10	5.442E-11	5.173E-11	2.720E-11	7.465E-12	8.524E-15
Pu-238	Pu-238	1.000E+00	7.400E-02	7.329E-02	7.188E-02	6.717E-02	5.535E-02	2.957E-02	2.811E-02	1.478E-02	4.057E-03	4.633E-06
Pu-238	ΣS(j):		7.400E-02	7.329E-02	7.188E-02	6.717E-02	5.535E-02	2.957E-02	2.811E-02	1.478E-02	4.057E-03	4.633E-06
0U-234	Pu-238	1.000E+00	0.000E+00	1.947E-07	5.055E-07	1.061E-06	1.174E-06	6.398E-07	6.081E-07	3.198E-07	8.777E-08	1.002E-10
0Th-230	Pu-238	1.000E+00	0.000E+00	8.983E-13	7.340E-12	5.987E-11	2.720E-10	7.659E-10	7.927E-10	1.021E-09	1.140E-09	7.754E-10
0Ra-226	Pu-238	1.000E+00	0.000E+00	1.313E-16	3.296E-15	9.642E-14	1.518E-12	1.652E-11	1.823E-11	4.340E-11	1.009E-10	2.948E-10
0Pb-210	Pu-238	1.000E+00	0.000E+00	1.021E-18	7.689E-17	7.457E-15	3.334E-13	8.522E-12	9.684E-12	2.893E-11	7.872E-11	2.583E-10
0Pu-239	Pu-239	1.000E+00	3.140E+00	3.134E+00	3.123E+00	3.084E+00	2.974E+00	2.646E+00	2.621E+00	2.324E+00	1.826E+00	5.152E-01
0U-235	Pu-239	1.000E+00	0.000E+00	2.882E-09	7.546E-09	1.641E-08	2.076E-08	1.876E-08	1.858E-08	1.648E-08	1.294E-08	3.652E-09
0Pa-231	Pu-239	1.000E+00	0.000E+00	3.120E-14	2.562E-13	2.131E-12	1.030E-11	3.569E-11	3.753E-11	5.825E-11	8.768E-11	1.049E-10
0Ac-227	Pu-239	1.000E+00	0.000E+00	3.323E-16	8.232E-15	2.300E-13	3.166E-12	2.374E-11	2.555E-11	4.693E-11	7.844E-11	1.018E-10
0Pu-241	Pu-241	1.000E+00	2.520E+00	2.397E+00	2.169E+00	1.530E+00	5.637E-01	2.225E-02	1.713E-02	6.227E-04	7.910E-07	5.297E-22
Pu-241	Pu-241	2.450E-05	6.174E-05	5.873E-05	5.315E-05	3.748E-05	1.381E-05	5.450E-07	4.196E-07	1.526E-08	1.938E-11	1.298E-26
Pu-241	ΣS(j):		2.520E+00	2.397E+00	2.170E+00	1.530E+00	5.637E-01	2.225E-02	1.713E-02	6.227E-04	7.910E-07	5.297E-22

THF(i) is the thread fraction of the parent nuclide.
0RESCALC.EXE execution time = 5.87 seconds
Total water/soil iteration failures = 2.400E+01.

Attachment 8. JN-4 Drainpipe Area Recreational Scenario (With Aquatic Pathways) (Summary File)

Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines

Dose Conversion Factor (and Related) Parameter Summary ... 2
Site-Specific Parameter Summary 5
Summary of Pathway Selections 11
Contaminated Zone and Total Dose Summary 12
Total Dose Components
Time = 0.000E+00 13
Time = 1.000E+00 14
Time = 3.000E+00 15
Time = 1.000E+01 16
Time = 3.000E+01 17
Time = 9.476E+01 18
Time = 1.000E+02 19
Time = 1.664E+02 20
Time = 3.000E+02 21
Time = 1.000E+03 22
Dose/Source Ratios Summed Over All Pathways 23
Single Radionuclide Soil Guidelines 24
Dose Per Nuclide Summed Over All Pathways 25
Soil Concentration Per Nuclide 26

Dose Conversion Factor (and Related) Parameter Summary
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(6)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(8)
B-1	Pu-241	8.250E-03	8.250E-03	DCF2(9)
B-1	Pu-241+D	8.254E-03	8.250E-03	DCF2(10)

B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(11)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(12)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(13)
B-1	U-233	1.350E-01	1.350E-01	DCF2(14)
B-1	U-234	1.320E-01	1.320E-01	DCF2(15)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(16)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(6)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(8)
D-1	Pu-241	6.840E-05	6.840E-05	DCF3(9)
D-1	Pu-241+D	7.157E-05	6.840E-05	DCF3(10)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(11)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(12)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(13)
D-1	U-233	2.890E-04	2.890E-04	DCF3(14)
D-1	U-234	2.830E-04	2.830E-04	DCF3(15)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(16)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(4,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)

D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-238 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(8,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(8,3)
D-34				
D-34	Pu-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(9,1)
D-34	Pu-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(9,2)
D-34	Pu-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(9,3)
D-34				
D-34	Pu-241+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(10,1)
D-34	Pu-241+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(10,2)
D-34	Pu-241+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(10,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(11,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(12,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(12,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(12,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(13,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(13,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(13,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(14,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(14,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(15,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(15,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(15,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(16,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(16,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

0 Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(8,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(8,2)
D-5				
D-5	Pu-241 , fish	3.000E+01	3.000E+01	BIOFAC(9,1)
D-5	Pu-241 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(9,2)
D-5				
D-5	Pu-241+D , fish	3.000E+01	3.000E+01	BIOFAC(10,1)
D-5	Pu-241+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(10,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(11,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(11,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(14,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(14,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(15,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(15,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(16,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)

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

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	6.490E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.524E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	8.100E+00	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)	9.476E+01	1.000E+02	---	T(6)
R011	Times for calculations (yr)	1.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.664E+02	1.000E+03	---	T(8)
R011	Times for calculations (yr)	3.000E+02	0.000E+00	---	T(9)
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	3.700E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Pu-238	7.400E-02	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-239	3.140E+00	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): Pu-241	2.520E+00	0.000E+00	---	S1(9)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): Pu-241	not used	0.000E+00	---	W1(9)
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)	1.500E+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)	2.270E+02	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)	9.700E-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)	6.190E+08	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	Romberg failures occurred	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.300E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	6.100E+01	1.000E+02	---	HCSZ

R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	9.140E+00	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)	3.050E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+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)	2.270E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.541E-04	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.779E-03	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.779E-03	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for Pu-241				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.779E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)

R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	1.500E+03	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+03	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	4.500E+02	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.423E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.000E+00	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.481E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.186E-03	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.880E-03	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.346E-04	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	3.200E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.469E-04	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-230				

R016	Contaminated zone (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	3.300E+03	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	3.200E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.469E-04	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.407E-01	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.407E-01	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.407E-01	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)
R017	Inhalation rate (m**3/yr)	not used	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	not used	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	not used	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	not used	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	not used	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	not used	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	not used	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)

0

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	not used	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+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	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	not used	1.500E-01	---	DM

R019	Depth of roots (m)	not used	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	0.000E+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	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	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

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
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
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	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)

STOR	Livestock fodder	4.500E+01	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	32	---	---	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	suppressed
2 -- inhalation (w/o radon)	suppressed
3 -- plant ingestion	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	suppressed
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g

Area:	64.90 square meters	Am-241	3.700E+00
Thickness:	0.15 meters	Pu-238	7.400E-02
Cover Depth:	0.00 meters	Pu-239	3.140E+00
		Pu-241	2.520E+00

0

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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
TDOSE(t):	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.556E-12	1.525E-12	2.563E-10	2.108E-10	6.809E-11
M(t):	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.223E-14	6.100E-14	1.025E-11	8.431E-12	2.724E-12

0Maximum TDOSE(t): 2.563E-10 mrem/yr at t = 166.4 ± 0.3 years

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.664E+02 years
Water Independent Pathways (Inhalation excludes radon)

0

Radio-Nuclide 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.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.664E+02 years
Water Dependent Pathways

0

Radio-Nuclide 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.
Am-241	1.239E-10	0.4833	1.268E-10	0.4946	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.507E-10	0.9779
Pu-238	7.403E-13	0.0029	1.568E-13	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.971E-13	0.0035
Pu-239	2.093E-14	0.0001	4.498E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.543E-14	0.0001
Pu-241	2.349E-12	0.0092	2.404E-12	0.0094	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.753E-12	0.0185
Total	1.270E-10	0.4954	1.294E-10	0.5046	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.563E-10	1.0000

0*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 = 0.000E+00 years

0
0 Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground mrem/yr	Ground fract.	Inhalation mrem/yr	Inhalation fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	Soil mrem/yr	Soil fract.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0

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

0
0 Water Dependent Pathways

Radio- Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 14
Summary : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.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 = 1.000E+00 years

0
0 Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground mrem/yr	Ground fract.	Inhalation mrem/yr	Inhalation fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	Soil mrem/yr	Soil fract.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0

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

0
0 Water Dependent Pathways

Radio- Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.

Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0*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)

0
0

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.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0

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

0
0

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.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0*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)

0
0

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.
Am-241	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

Pu-238	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
Pu-239	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
Pu-241	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

0

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

0

0

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.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 17
Summary : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.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 = 3.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

0

0

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.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0

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

0

0

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.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0*Sum of all water independent and dependent pathways.
1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 18
Summary : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.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 = 9.476E+01 years
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 9.476E+01 years
0 Water Dependent Pathways
0

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.
Am-241	1.580E-15	0.0010	3.343E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.914E-15	0.0012
Pu-238	1.262E-12	0.8112	2.672E-13	0.1718	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.529E-12	0.9830
Pu-239	2.026E-14	0.0130	4.302E-15	0.0028	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.456E-14	0.0158
Pu-241	1.237E-17	0.0000	2.617E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.499E-17	0.0000
Total	1.284E-12	0.8252	2.719E-13	0.1748	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.556E-12	1.0000

0*Sum of all water independent and dependent pathways.
1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 19
Summary : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.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 = 1.000E+02 years
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0

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

0
0 Water Dependent Pathways

Radio-Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.
Am-241	2.041E-15	0.0013	4.319E-16	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.473E-15	0.0016
Pu-238	1.236E-12	0.8103	2.617E-13	0.1716	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.497E-12	0.9820
Pu-239	2.062E-14	0.0135	4.383E-15	0.0029	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.500E-14	0.0164
Pu-241	1.874E-17	0.0000	3.965E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.271E-17	0.0000
Total	1.258E-12	0.8252	2.665E-13	0.1748	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.525E-12	1.0000

0*Sum of all water independent and dependent pathways.
1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 20
Summary : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.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 = 1.664E+02 years

0
0 Water Independent Pathways (Inhalation excludes radon)

Radio-Nuclide	Ground mrem/yr	Ground fract.	Inhalation mrem/yr	Inhalation fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	Soil mrem/yr	Soil fract.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.664E+02 years

0
0 Water Dependent Pathways

Radio-Nuclide	Water mrem/yr	Water fract.	Fish mrem/yr	Fish fract.	Radon mrem/yr	Radon fract.	Plant mrem/yr	Plant fract.	Meat mrem/yr	Meat fract.	Milk mrem/yr	Milk fract.	All Pathways* mrem/yr	All Pathways* fract.
Am-241	1.239E-10	0.4833	1.268E-10	0.4946	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.507E-10	0.9779
Pu-238	7.403E-13	0.0029	1.568E-13	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.971E-13	0.0035
Pu-239	2.093E-14	0.0001	4.498E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.543E-14	0.0001
Pu-241	2.349E-12	0.0092	2.404E-12	0.0094	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.753E-12	0.0185
Total	1.270E-10	0.4954	1.294E-10	0.5046	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.563E-10	1.0000

0*Sum of all water independent and dependent pathways.
1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 21
Summary : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.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 = 3.000E+02 years
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0

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
0 Water Dependent Pathways
0

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.
Am-241	1.016E-10	0.4821	1.040E-10	0.4934	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.056E-10	0.9755
Pu-238	2.536E-13	0.0012	5.378E-14	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.074E-13	0.0015
Pu-239	2.090E-14	0.0001	4.592E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.549E-14	0.0001
Pu-241	2.383E-12	0.0113	2.439E-12	0.0116	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.822E-12	0.0229
Total	1.043E-10	0.4947	1.065E-10	0.5053	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.108E-10	1.0000

0*Sum of all water independent and dependent pathways.
1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 22
Summary : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.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 = 1.000E+03 years
0 Water Independent Pathways (Inhalation excludes radon)
0

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.
Am-241	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
Pu-238	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
Pu-239	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
Pu-241	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

0

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
0 Water Dependent Pathways
0

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.

Am-241	3.286E-11	0.4827	3.364E-11	0.4940	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.650E-11	0.9767
Pu-238	1.214E-15	0.0000	1.104E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.318E-15	0.0000
Pu-239	2.084E-14	0.0003	4.993E-15	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.584E-14	0.0004
Pu-241	7.708E-13	0.0113	7.889E-13	0.0116	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.560E-12	0.0229
Total	3.366E-11	0.4943	3.443E-11	0.5057	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.809E-11	1.0000

0*Sum of all water independent and dependent pathways.

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

0 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	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.775E-11	5.557E-11	1.797E-11
Am-241	U-233	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.173E-16	6.682E-16	1.400E-15	1.132E-15	3.641E-16
Am-241	Th-229+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.170E-20	3.111E-20	8.278E-19	2.937E-18	8.624E-18
Am-241	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.174E-16	6.683E-16	6.775E-11	5.557E-11	1.797E-11
0Pu-238	Pu-238	1.840E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Pu-238	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.066E-11	2.024E-11	1.212E-11	4.153E-12	1.532E-14
Pu-238	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.380E-17	9.351E-17	2.901E-16	4.772E-16	5.237E-16
Pu-238	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.643E-22	6.897E-18	7.968E-17
Pu-238	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.641E-16	1.540E-14
Pu-238	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.066E-11	2.024E-11	1.212E-11	4.154E-12	3.133E-14
0Pu-239	Pu-239	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.812E-15	7.952E-15	8.053E-15	8.004E-15	7.840E-15
Pu-239	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.535E-18	3.154E-18	1.085E-17	2.514E-17	8.280E-17
Pu-239	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.503E-18	8.222E-18	3.427E-17	8.802E-17	3.055E-16
Pu-239	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.821E-15	7.963E-15	8.098E-15	8.118E-15	8.229E-15
0Pu-241	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-241	Np-237+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.886E-12	1.913E-12	6.189E-13
Pu-241	U-233	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.940E-18	9.000E-18	4.439E-17	3.891E-17	1.251E-17
Pu-241	Th-229+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.090E-22	3.551E-22	1.628E-20	8.559E-20	2.887E-19
Pu-241	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.940E-18	9.000E-18	1.886E-12	1.913E-12	6.189E-13
0Pu-241+D	Pu-241+D	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-241+D	Np-237+D	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.241E-16	5.500E-19	6.196E-34
Pu-241+D	U-233	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.503E-21	1.003E-20	2.711E-21	4.257E-24	4.808E-39
Pu-241+D	Th-229+D	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.797E-25	5.035E-25	8.605E-24	1.008E-23	8.970E-24
Pu-241+D	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.504E-21	1.003E-20	3.241E-16	5.500E-19	8.970E-24

The DSR includes contributions from associated (half-life ó 180 days) daughters.

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

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	3.690E+11	4.499E+11	1.391E+12
Pu-238	*1.712E+13	*1.712E+13	*1.712E+13	*1.712E+13	*1.712E+13	1.210E+12	1.235E+12	2.062E+12	6.018E+12	*1.712E+13
Pu-239	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10
Pu-241	*1.030E+14	*1.030E+14	*1.030E+14	*1.030E+14	*1.030E+14	*1.030E+14	*1.030E+14	1.325E+13	1.307E+13	4.039E+13

*At specific activity limit

0

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 = 166.4 ± 0.3 years

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	3.700E+00	165.2 ± 0.3	6.775E-11	3.690E+11	6.775E 11	3.690E+11
Pu-238	7.400E-02	92.2 ± 0.2	2.073E-11	1.206E+12	1.212E-11	2.062E+12
Pu-239	3.140E+00	1.000E+03	8.229E-15	*6.214E+10	8.098E-15	*6.214E+10
Pu-241	2.520E+00	206.3 ± 0.4	2.152E-12	1.162E+13	1.886E-12	1.325E+13

*At specific activity limit

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 25
Summary : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.rad

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated
DOSE(j,t), mrem/yr

0Nuclide (j)	Parent (i)	THF(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0Np-237	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.507E-10	2.056E-10	6.650E-11
Np-237	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.752E-12	4.822E-12	1.560E-12
Np-237	Pu-241	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.167E-16	1.386E-18	0.000E+00
Np-237	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.554E-10	2.104E-10	6.806E-11
0U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.914E-15	2.472E-15	5.180E-15	4.188E-15	1.347E-15
U-233	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.497E-17	2.268E-17	1.119E-16	9.805E-17	3.153E-17
U-233	Pu-241	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.143E-20	2.528E-20	6.832E-21	1.073E-23	0.000E+00
U-233	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.929E-15	2.495E-15	5.292E-15	4.286E-15	1.379E-15
0Th-229	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.030E-20	1.151E-19	3.063E-18	1.087E-17	3.191E-17
Th-229	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.267E-22	8.948E-22	4.102E-20	2.157E-19	7.276E-19
Th-229	Pu-241	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.568E-25	1.269E-24	2.168E-23	2.539E-23	2.260E-23
Th-229	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.083E-20	1.160E-19	3.104E-18	1.108E-17	3.264E-17
0Pu-238	Pu-238	1.840E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Pu-238	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0U-234	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.529E-12	1.497E-12	8.971E-13	3.073E-13	1.134E-15
0Th-230	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.461E-18	6.920E-18	2.147E-17	3.531E-17	3.875E-17
0Ra-226	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.216E-23	5.104E-19	5.896E-18
0Pb-210	Pu-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.395E-17	1.140E-15
0Pu-239	Pu-239	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0U-235	Pu-239	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.453E-14	2.497E-14	2.529E-14	2.513E-14	2.462E-14
0Pa-231	Pu-239	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.960E-18	9.904E-18	3.407E-17	7.892E-17	2.600E-16
0Ac-227	Pu-239	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.042E-17	2.582E-17	1.076E-16	2.764E-16	9.594E-16
0Pu-241	Pu-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-241	Pu-241	2.450E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-241	ΣDOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	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
S(j,t), pCi/g

0Nuclide (j)	Parent (i)	THF(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	9.476E+01	1.000E+02	1.664E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.700E+00	3.693E+00	3.679E+00	3.632E+00	3.499E+00	3.103E+00	3.073E+00	2.716E+00	2.119E+00	5.772E-01
Am-241	Pu-241	1.000E+00	0.000E+00	3.938E-03	1.123E-02	3.150E-02	6.073E-02	6.978E-02	6.927E-02	6.171E-02	4.816E-02	1.312E-02
Am-241	ΣS(j):		3.700E+00	3.697E+00	3.691E+00	3.663E+00	3.560E+00	3.172E+00	3.142E+00	2.778E+00	2.167E+00	5.903E-01
0Np-237	Am-241	1.000E+00	0.000E+00	1.148E-06	3.165E-06	7.994E-06	1.253E-05	1.211E-05	1.199E-05	1.060E-05	8.274E-06	2.254E-06
Np-237	Pu-241	1.000E+00	0.000E+00	6.255E-10	5.145E-09	4.212E-08	1.715E-07	2.686E-07	2.675E-07	2.408E-07	1.881E-07	5.122E-08
Np-237	Pu-241	2.450E-05	0.000E+00	1.870E-11	4.904E-11	1.025E-10	8.319E-11	4.873E-12	3.775E-12	1.412E-13	1.799E-16	1.205E-31
Np-237	ΣS(j):		0.000E+00	1.149E-06	3.170E-06	8.037E-06	1.270E-05	1.238E-05	1.226E-05	1.085E-05	8.462E-06	2.305E-06
0U-233	Am-241	1.000E+00	0.000E+00	2.430E-12	1.886E-11	1.280E-10	3.515E-10	3.811E-10	3.776E-10	3.340E-10	2.606E-10	7.097E-11
U-233	Pu-241	1.000E+00	0.000E+00	8.904E-16	2.097E-14	4.893E-13	4.029E-12	8.351E-12	8.339E-12	7.581E-12	5.922E-12	1.613E-12
U-233	Pu-241	2.450E-05	0.000E+00	3.990E-17	2.993E-16	1.776E-15	2.907E-15	2.291E-16	1.783E-16	6.785E-18	8.661E-21	5.800E-36
U-233	ΣS(j):		0.000E+00	2.431E-12	1.888E-11	1.285E-10	3.555E-10	3.895E-10	3.859E-10	3.415E-10	2.665E-10	7.258E-11
0Th-229	Am-241	1.000E+00	0.000E+00	7.794E-17	1.883E-15	4.825E-14	5.367E-13	2.843E-12	3.019E-12	5.048E-12	8.117E-12	1.194E-11
Th-229	Pu-241	1.000E+00	0.000E+00	2.131E-20	1.547E-18	1.322E-16	4.183E-15	4.711E-14	5.105E-14	9.756E-14	1.689E-13	2.622E-13
Th-229	Pu-241	2.450E-05	0.000E+00	1.285E-21	3.028E-20	7.081E-19	5.884E-18	1.285E-17	1.290E-17	1.260E-17	1.143E-17	6.800E-18
Th-229	ΣS(j):		0.000E+00	7.796E-17	1.884E-15	4.838E-14	5.409E-13	2.890E-12	3.070E-12	5.145E-12	8.286E-12	1.221E-11
0Pu-238	Pu-238	1.840E-09	1.362E-10	1.348E-10	1.323E-10	1.236E-10	1.018E-10	5.442E-11	5.173E-11	2.720E-11	7.465E-12	8.524E-15
Pu-238	Pu-238	1.000E+00	7.400E-02	7.329E-02	7.188E-02	6.717E-02	5.535E-02	2.957E-02	2.811E-02	1.478E-02	4.057E-03	4.633E-06
Pu-238	ΣS(j):		7.400E-02	7.329E-02	7.188E-02	6.717E-02	5.535E-02	2.957E-02	2.811E-02	1.478E-02	4.057E-03	4.633E-06
0U-234	Pu-238	1.000E+00	0.000E+00	1.947E-07	5.055E-07	1.061E-06	1.174E-06	6.398E-07	6.081E-07	3.198E-07	8.777E-08	1.002E-10
0Th-230	Pu-238	1.000E+00	0.000E+00	8.983E-13	7.340E-12	5.987E-11	2.720E-10	7.659E-10	7.927E-10	1.021E-09	1.140E-09	7.754E-10
0Ra-226	Pu-238	1.000E+00	0.000E+00	1.313E-16	3.296E-15	9.642E-14	1.518E-12	1.652E-11	1.823E-11	4.340E-11	1.009E-10	2.948E-10
0Pb-210	Pu-238	1.000E+00	0.000E+00	1.021E-18	7.689E-17	7.457E-15	3.334E-13	8.522E-12	9.684E-12	2.893E-11	7.872E-11	2.583E-10
0Pu-239	Pu-239	1.000E+00	3.140E+00	3.134E+00	3.123E+00	3.084E+00	2.974E+00	2.646E+00	2.621E+00	2.324E+00	1.826E+00	5.152E-01
0U-235	Pu-239	1.000E+00	0.000E+00	2.882E-09	7.546E-09	1.641E-08	2.076E-08	1.876E-08	1.858E-08	1.648E-08	1.294E-08	3.652E-09
0Pa-231	Pu-239	1.000E+00	0.000E+00	3.120E-14	2.562E-13	2.131E-12	1.030E-11	3.569E-11	3.753E-11	5.825E-11	8.768E-11	1.049E-10
0Ac-227	Pu-239	1.000E+00	0.000E+00	3.323E-16	8.232E-15	2.300E-13	3.166E-12	2.374E-11	2.555E-11	4.693E-11	7.844E-11	1.018E-10
0Pu-241	Pu-241	1.000E+00	2.520E+00	2.397E+00	2.169E+00	1.530E+00	5.637E-01	2.225E-02	1.713E-02	6.227E-04	7.910E-07	5.297E-22

Pu-241	Pu-241	2.450E-05	6.174E-05	5.873E-05	5.315E-05	3.748E-05	1.381E-05	5.450E-07	4.196E-07	1.526E-08	1.938E-11	1.298E-26
Pu-241	ΣS(j):		2.520E+00	2.397E+00	2.170E+00	1.530E+00	5.637E-01	2.225E-02	1.713E-02	6.227E-04	7.910E-07	5.297E-22

THF(i) is the thread fraction of the parent nuclide.
0RESCALC.EXE execution time = 16.63 seconds
Total water/soil iteration failures = 4.000E+01.

Attachment 9. JN-4 Drainpipe Area Recreational Scenario Concentration File

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 1
Concent : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.rad

Table of Contents

Part IV: Concentration of Radionuclides

Concentration of radionuclides in different media

Time= 0.000E+00 2
Time= 1.000E+00 4
Time= 3.000E+00 6
Time= 1.000E+01 8
Time= 3.000E+01 10
Time= 9.476E+01 12
Time= 1.000E+02 14
Time= 1.664E+02 16
Time= 3.000E+02 18
Time= 1.000E+03 20

Concentration of radionuclides in environmental media
at t = 0.000E+00 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	3.700E+00	3.700E+00	3.691E-05	0.000E+00	0.000E+00
Np-237	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	7.400E-02	7.400E-02	7.383E-07	0.000E+00	0.000E+00
Pu-239	3.140E+00	3.140E+00	3.133E-05	0.000E+00	0.000E+00
Pu-241	2.520E+00	2.520E+00	2.514E-05	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-233	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 0.000E+00 years*

Radio-Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	0.000E+00	6.285E-01	6.362E-01	6.371E-01	6.371E-01	9.467E-02	3.770E-03	0.000E+00	0.000E+00
Np-237	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	0.000E+00	1.257E-02	1.272E-02	1.274E-02	1.274E-02	3.787E-03	3.770E-05	0.000E+00	0.000E+00
Pu-239	0.000E+00	5.334E-01	5.399E-01	5.407E-01	5.407E-01	1.607E-01	1.600E-03	0.000E+00	0.000E+00
Pu-241	0.000E+00	4.281E-01	4.333E-01	4.339E-01	4.339E-01	1.290E-01	1.284E-03	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-233	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+00 years

Radio-Nuclide	Contaminated Zone	Surface Soil*	Air Particulate	Well Water	Surface Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
Ac-227	3.323E-16	3.323E-16	3.315E-21	0.000E+00	0.000E+00
Am-241	3.697E+00	3.697E+00	3.688E-05	0.000E+00	0.000E+00
Np-237	1.149E-06	1.149E-06	1.146E-11	0.000E+00	0.000E+00

Pa-231	3.120E-14	3.120E-14	3.113E-19	0.000E+00	0.000E+00
Pb-210	1.021E-18	1.021E-18	1.019E-23	0.000E+00	0.000E+00
Pu-238	7.329E-02	7.329E-02	7.312E-07	0.000E+00	0.000E+00
Pu-239	3.134E+00	3.134E+00	3.127E-05	0.000E+00	0.000E+00
Pu-241	2.397E+00	2.397E+00	2.392E-05	0.000E+00	0.000E+00
Ra-226	1.313E-16	1.313E-16	1.310E-21	0.000E+00	0.000E+00
Th-229	7.796E-17	7.796E-17	7.778E-22	0.000E+00	0.000E+00
Th-230	8.983E-13	8.983E-13	8.962E-18	0.000E+00	0.000E+00
U-233	2.431E-12	2.431E-12	2.425E-17	0.000E+00	0.000E+00
U-234	1.947E-07	1.947E-07	1.943E-12	0.000E+00	0.000E+00
U-235	2.882E-09	2.882E-09	2.875E-14	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+00 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	1.857E-16	1.450E-16	2.255E-16	2.596E-16	1.483E-16	3.592E-18	0.000E+00	0.000E+00
Am-241	0.000E+00	6.281E-01	6.357E-01	6.367E-01	6.366E-01	9.460E-02	3.767E-03	0.000E+00	0.000E+00
Np-237	0.000E+00	3.755E-06	3.883E-06	3.250E-06	3.446E-06	7.668E-07	3.815E-09	0.000E+00	0.000E+00
Pa-231	0.000E+00	4.994E-14	5.271E-14	3.882E-14	4.358E-14	8.365E-14	1.417E-16	0.000E+00	0.000E+00
Pb-210	0.000E+00	2.428E-18	1.789E-18	2.710E-18	3.308E-18	6.273E-19	2.145E-19	0.000E+00	0.000E+00
Pu-238	0.000E+00	1.245E-02	1.260E-02	1.263E-02	1.262E-02	3.751E-03	3.734E-05	0.000E+00	0.000E+00
Pu-239	0.000E+00	5.325E-01	5.389E-01	5.399E-01	5.398E-01	1.604E-01	1.597E-03	0.000E+00	0.000E+00
Pu-241	0.000E+00	4.073E-01	4.122E-01	4.140E-01	4.129E-01	1.227E-01	1.221E-03	0.000E+00	0.000E+00
Ra-226	0.000E+00	7.955E-16	8.831E-16	5.055E-16	6.056E-16	9.113E-17	9.846E-17	0.000E+00	0.000E+00
Th-229	0.000E+00	1.641E-17	1.357E-17	2.592E-17	2.907E-17	6.164E-18	4.116E-19	0.000E+00	0.000E+00
Th-230	0.000E+00	1.691E-13	1.557E-13	1.846E-13	2.026E-13	5.797E-14	3.789E-15	0.000E+00	0.000E+00
U-233	0.000E+00	1.585E-12	1.077E-12	2.454E-12	2.649E-12	6.109E-13	8.130E-13	0.000E+00	0.000E+00
U-234	0.000E+00	8.095E-08	8.283E-08	7.354E-08	7.763E-08	3.370E-08	6.083E-08	0.000E+00	0.000E+00
U-235	0.000E+00	1.198E-09	1.226E-09	1.088E-09	1.149E-09	4.987E-10	9.003E-10	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+00 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	8.232E-15	8.232E-15	8.213E-20	0.000E+00	0.000E+00
Am-241	3.691E+00	3.691E+00	3.682E-05	0.000E+00	0.000E+00
Np-237	3.170E-06	3.170E-06	3.163E-11	0.000E+00	0.000E+00
Pa-231	2.562E-13	2.562E-13	2.556E-18	0.000E+00	0.000E+00
Pb-210	7.689E-17	7.689E-17	7.671E-22	0.000E+00	0.000E+00
Pu-238	7.188E-02	7.188E-02	7.171E-07	0.000E+00	0.000E+00
Pu-239	3.123E+00	3.123E+00	3.116E-05	0.000E+00	0.000E+00
Pu-241	2.170E+00	2.170E+00	2.164E-05	0.000E+00	0.000E+00
Ra-226	3.296E-15	3.296E-15	3.288E-20	0.000E+00	0.000E+00
Th-229	1.884E-15	1.884E-15	1.880E-20	0.000E+00	0.000E+00
Th-230	7.340E-12	7.340E-12	7.323E-17	0.000E+00	0.000E+00
U-233	1.888E-11	1.888E-11	1.883E-16	0.000E+00	0.000E+00
U-234	5.055E-07	5.055E-07	5.043E-12	0.000E+00	0.000E+00
U-235	7.546E-09	7.546E-09	7.528E-14	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+00 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	3.877E-15	3.535E-15	4.464E-15	4.676E-15	1.398E-15	8.731E-17	0.000E+00	0.000E+00
Am-241	0.000E+00	6.270E-01	6.346E-01	6.356E-01	6.355E-01	9.443E-02	3.761E-03	0.000E+00	0.000E+00
Np-237	0.000E+00	1.063E-05	1.074E-05	1.021E-05	1.037E-05	2.256E-06	1.078E-08	0.000E+00	0.000E+00
Pa-231	0.000E+00	4.263E-13	4.340E-13	3.957E-13	4.093E-13	7.550E-13	8.892E-16	0.000E+00	0.000E+00
Pb-210	0.000E+00	1.494E-16	1.318E-16	1.740E-16	1.855E-16	4.287E-17	1.478E-17	0.000E+00	0.000E+00
Pu-238	0.000E+00	1.221E-02	1.236E-02	1.239E-02	1.238E-02	3.679E-03	3.662E-05	0.000E+00	0.000E+00
Pu-239	0.000E+00	5.306E-01	5.370E-01	5.379E-01	5.379E-01	1.598E-01	1.591E-03	0.000E+00	0.000E+00
Pu-241	0.000E+00	3.686E-01	3.730E-01	3.747E-01	3.737E-01	1.110E-01	1.105E-03	0.000E+00	0.000E+00
Ra-226	0.000E+00	2.153E-14	2.228E-14	1.877E-14	1.979E-14	2.848E-15	2.732E-15	0.000E+00	0.000E+00
Th-229	0.000E+00	3.402E-16	3.253E-16	3.886E-16	4.064E-16	1.110E-16	6.384E-18	0.000E+00	0.000E+00
Th-230	0.000E+00	1.291E-12	1.265E-12	1.358E-12	1.400E-12	4.081E-13	2.261E-14	0.000E+00	0.000E+00

U-233	0.000E+00	9.601E-12	8.156E-12	1.271E-11	1.303E-11	3.939E-12	6.084E-12	0.000E+00	0.000E+00
U-234	0.000E+00	2.134E-07	2.153E-07	2.096E-07	2.126E-07	9.011E-08	1.586E-07	0.000E+00	0.000E+00
U-235	0.000E+00	3.186E-09	3.213E-09	3.127E-09	3.172E-09	1.345E-09	2.367E-09	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+01 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.300E-13	2.300E-13	2.294E-18	0.000E+00	0.000E+00
Am-241	3.663E+00	3.663E+00	3.655E-05	0.000E+00	0.000E+00
Np-237	8.037E-06	8.037E-06	8.018E-11	0.000E+00	0.000E+00
Pa-231	2.131E-12	2.131E-12	2.126E-17	0.000E+00	0.000E+00
Pb-210	7.457E-15	7.457E-15	7.439E-20	0.000E+00	0.000E+00
Pu-238	6.717E-02	6.717E-02	6.702E-07	0.000E+00	0.000E+00
Pu-239	3.084E+00	3.084E+00	3.077E-05	0.000E+00	0.000E+00
Pu-241	1.530E+00	1.530E+00	1.526E-05	0.000E+00	0.000E+00
Ra-226	9.642E-14	9.642E-14	9.619E-19	0.000E+00	0.000E+00
Th-229	4.838E-14	4.838E-14	4.827E-19	0.000E+00	0.000E+00
Th-230	5.987E-11	5.987E-11	5.973E-16	0.000E+00	0.000E+00
U-233	1.285E-10	1.285E-10	1.282E-15	0.000E+00	0.000E+00
U-234	1.061E-06	1.061E-06	1.059E-11	0.000E+00	0.000E+00
U-235	1.641E-08	1.641E-08	1.637E-13	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+01 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg

Ac-227	0.000E+00	1.008E-13	9.819E-14	1.069E-13	1.083E-13	1.370E-14	2.418E-15	0.000E+00	0.000E+00
Am-241	0.000E+00	6.223E-01	6.299E-01	6.309E-01	6.308E-01	9.373E-02	3.733E-03	0.000E+00	0.000E+00
Np-237	0.000E+00	2.716E-05	2.723E-05	2.696E-05	2.705E-05	5.839E-06	2.753E-08	0.000E+00	0.000E+00
Pa-231	0.000E+00	3.592E-12	3.612E-12	3.529E-12	3.559E-12	6.483E-12	6.602E-15	0.000E+00	0.000E+00
Pb-210	0.000E+00	1.321E-14	1.269E-14	1.418E-14	1.444E-14	3.841E-15	1.363E-15	0.000E+00	0.000E+00
Pu-238	0.000E+00	1.141E-02	1.155E-02	1.158E-02	1.157E-02	3.438E-03	3.422E-05	0.000E+00	0.000E+00
Pu-239	0.000E+00	5.239E-01	5.302E-01	5.312E-01	5.311E-01	1.578E-01	1.571E-03	0.000E+00	0.000E+00
Pu-241	0.000E+00	2.599E-01	2.630E-01	2.642E-01	2.635E-01	7.829E-02	7.794E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	6.466E-13	6.528E-13	6.231E-13	6.320E-13	8.994E-14	8.293E-14	0.000E+00	0.000E+00
Th-229	0.000E+00	8.345E-15	8.328E-15	8.671E-15	8.782E-15	2.569E-15	1.338E-16	0.000E+00	0.000E+00
Th-230	0.000E+00	1.026E-11	1.030E-11	1.052E-11	1.061E-11	3.133E-12	1.608E-13	0.000E+00	0.000E+00
U-233	0.000E+00	5.872E-11	5.502E-11	6.797E-11	6.840E-11	2.465E-11	4.078E-11	0.000E+00	0.000E+00
U-234	0.000E+00	4.504E-07	4.521E-07	4.532E-07	4.541E-07	1.910E-07	3.333E-07	0.000E+00	0.000E+00
U-235	0.000E+00	6.965E-09	6.991E-09	7.004E-09	7.020E-09	2.954E-09	5.155E-09	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+01 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	3.166E-12	3.166E-12	3.158E-17	0.000E+00	0.000E+00
Am-241	3.560E+00	3.560E+00	3.552E-05	0.000E+00	0.000E+00
Np-237	1.270E-05	1.270E-05	1.267E-10	0.000E+00	0.000E+00
Pa-231	1.030E-11	1.030E-11	1.028E-16	0.000E+00	0.000E+00
Pb-210	3.334E-13	3.334E-13	3.327E-18	0.000E+00	0.000E+00
Pu-238	5.535E-02	5.535E-02	5.522E-07	0.000E+00	0.000E+00
Pu-239	2.974E+00	2.974E+00	2.967E-05	0.000E+00	0.000E+00
Pu-241	5.637E-01	5.637E-01	5.624E-06	0.000E+00	0.000E+00
Ra-226	1.518E-12	1.518E-12	1.515E-17	0.000E+00	0.000E+00
Th-229	5.409E-13	5.409E-13	5.396E-18	0.000E+00	0.000E+00
Th-230	2.720E-10	2.720E-10	2.714E-15	0.000E+00	0.000E+00
U-233	3.555E-10	3.555E-10	3.547E-15	0.000E+00	0.000E+00
U-234	1.174E-06	1.174E-06	1.171E-11	0.000E+00	0.000E+00
U-235	2.076E-08	2.076E-08	2.071E-13	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,

i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+01 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	1.358E-12	1.350E-12	1.395E-12	1.400E-12	8.841E-14	3.319E-14	0.000E+00	0.000E+00
Am-241	0.000E+00	6.048E-01	6.121E-01	6.131E-01	6.131E-01	9.109E-02	3.628E-03	0.000E+00	0.000E+00
Np-237	0.000E+00	4.302E-05	4.305E-05	4.303E-05	4.304E-05	9.276E-06	4.359E-08	0.000E+00	0.000E+00
Pa-231	0.000E+00	1.743E-11	1.747E-11	1.736E-11	1.740E-11	3.160E-11	3.091E-14	0.000E+00	0.000E+00
Pb-210	0.000E+00	5.740E-13	5.661E-13	5.916E-13	5.948E-13	1.670E-13	5.992E-14	0.000E+00	0.000E+00
Pu-238	0.000E+00	9.404E-03	9.517E-03	9.538E-03	9.533E-03	2.833E-03	2.820E-05	0.000E+00	0.000E+00
Pu-239	0.000E+00	5.053E-01	5.114E-01	5.123E-01	5.123E-01	1.522E-01	1.515E-03	0.000E+00	0.000E+00
Pu-241	0.000E+00	9.577E-02	9.693E-02	9.736E-02	9.711E-02	2.885E-02	2.872E-04	0.000E+00	0.000E+00
Ra-226	0.000E+00	1.025E-11	1.028E-11	1.015E-11	1.019E-11	1.446E-12	1.319E-12	0.000E+00	0.000E+00
Th-229	0.000E+00	9.222E-14	9.302E-14	9.401E-14	9.431E-14	2.793E-14	1.407E-15	0.000E+00	0.000E+00
Th-230	0.000E+00	4.631E-11	4.678E-11	4.708E-11	4.717E-11	1.400E-11	7.020E-13	0.000E+00	0.000E+00
U-233	0.000E+00	1.578E-10	1.519E-10	1.743E-10	1.744E-10	6.663E-11	1.124E-10	0.000E+00	0.000E+00
U-234	0.000E+00	4.988E-07	5.001E-07	5.043E-07	5.041E-07	2.117E-07	3.688E-07	0.000E+00	0.000E+00
U-235	0.000E+00	8.819E-09	8.844E-09	8.909E-09	8.909E-09	3.743E-09	6.522E-09	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 9.476E+01 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.374E-11	2.374E-11	2.368E-16	1.092E-12	9.038E-19
Am-241	3.172E+00	3.172E+00	3.165E-05	0.000E+00	0.000E+00
Np-237	1.238E-05	1.238E-05	1.235E-10	0.000E+00	0.000E+00
Pa-231	3.569E-11	3.569E-11	3.560E-16	1.317E-12	1.090E-18
Pb-210	8.522E-12	8.522E-12	8.502E-17	0.000E+00	0.000E+00
Pu-238	2.957E-02	2.957E-02	2.951E-07	0.000E+00	0.000E+00

Pu-239	2.646E+00	2.646E+00	2.640E-05	0.000E+00	0.000E+00
Pu-241	2.225E-02	2.225E-02	2.219E-07	0.000E+00	0.000E+00
Ra-226	1.652E-11	1.652E-11	1.648E-16	0.000E+00	0.000E+00
Th-229	2.890E-12	2.890E-12	2.883E-17	1.278E-14	1.058E-20
Th-230	7.659E-10	7.659E-10	7.641E-15	7.606E-12	6.295E-18
U-233	3.895E-10	3.895E-10	3.886E-15	1.269E-08	1.050E-14
U-234	6.398E-07	6.398E-07	6.383E-12	1.058E-05	8.753E-12
U-235	1.876E-08	1.876E-08	1.871E-13	1.789E-07	1.481E-13

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 13
Concent : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.rad

Concentration of radionuclides in foodstuff media
at t = 9.476E+01 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	9.037E-19	1.049E-11	1.192E-11	1.225E-11	1.227E-11	4.481E-13	2.543E-13	1.354E-17	9.025E-16
Am-241	0.000E+00	5.389E-01	5.455E-01	5.464E-01	5.463E-01	8.117E-02	3.233E-03	0.000E+00	0.000E+00
Np-237	0.000E+00	4.194E-05	4.195E-05	4.199E-05	4.199E-05	9.047E-06	4.250E-08	0.000E+00	0.000E+00
Pa-231	1.099E-18	6.094E-11	6.274E-11	6.368E-11	6.372E-11	1.112E-10	1.098E-13	1.149E-17	1.234E-16
Pb-210	0.000E+00	1.454E-11	1.446E-11	1.476E-11	1.478E-11	4.227E-12	1.523E-12	0.000E+00	0.000E+00
Pu-238	0.000E+00	5.024E-03	5.085E-03	5.096E-03	5.094E-03	1.514E-03	1.507E-05	0.000E+00	0.000E+00
Pu-239	0.000E+00	4.495E-01	4.549E-01	4.557E-01	4.557E-01	1.354E-01	1.348E-03	0.000E+00	0.000E+00
Pu-241	0.000E+00	3.779E-03	3.825E-03	3.842E-03	3.832E-03	1.138E-03	1.133E-05	0.000E+00	0.000E+00
Ra-226	0.000E+00	1.118E-10	1.119E-10	1.116E-10	1.117E-10	1.584E-11	1.440E-11	0.000E+00	0.000E+00
Th-229	1.329E-20	5.127E-13	5.290E-13	7.925E-13	7.937E-13	1.541E-13	7.998E-15	1.246E-18	6.421E-18
Th-230	6.510E-18	1.341E-10	1.451E-10	1.674E-10	1.675E-10	3.982E-11	2.013E-12	6.440E-16	3.235E-15
U-233	1.050E-14	4.547E-09	2.118E-08	2.298E-08	2.304E-08	8.147E-10	2.095E-09	1.049E-13	6.296E-13
U-234	8.753E-12	3.926E-06	1.779E-05	1.947E-05	1.946E-05	7.389E-07	1.850E-06	8.753E-11	5.252E-10
U-235	1.481E-13	6.978E-08	3.043E-07	3.324E-07	3.324E-07	1.392E-08	3.378E-08	1.481E-12	8.885E-12

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 14
Concent : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.rad

Concentration of radionuclides in environmental media
at t = 1.000E+02 years

Radio-Nuclide	Contaminat-ted Zone pCi/g	Surface Soil* pCi/g	Air Par-ticulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.555E-11	2.555E-11	2.549E-16	1.386E-12	1.147E-18
Am-241	3.142E+00	3.142E+00	3.135E-05	0.000E+00	0.000E+00
Np-237	1.226E-05	1.226E-05	1.223E-10	0.000E+00	0.000E+00
Pa-231	3.753E-11	3.753E-11	3.744E-16	1.651E-12	1.367E-18
Pb-210	9.684E-12	9.684E-12	9.662E-17	0.000E+00	0.000E+00
Pu-238	2.811E-02	2.811E-02	2.805E-07	0.000E+00	0.000E+00
Pu-239	2.621E+00	2.621E+00	2.615E-05	0.000E+00	0.000E+00
Pu-241	1.713E-02	1.713E-02	1.709E-07	0.000E+00	0.000E+00
Ra-226	1.823E-11	1.823E-11	1.819E-16	0.000E+00	0.000E+00
Th-229	3.070E-12	3.070E-12	3.063E-17	1.892E-14	1.566E-20
Th-230	7.927E-10	7.927E-10	7.908E-15	9.759E-12	8.077E-18
U-233	3.859E-10	3.859E-10	3.850E-15	1.652E-08	1.367E-14
U-234	6.081E-07	6.081E-07	6.067E-12	1.037E-05	8.584E-12
U-235	1.858E-08	1.858E-08	1.854E-13	1.824E-07	1.510E-13

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

1RESRAD, Version 6.3 T½ Limit = 180 days 11/30/2007 12:00 Page 15
Concent : JN-4 Drainpipe Area Recreationist (Aquatic Pathways)
File : recreational_JN-4_drainpipe_aquatic_pathways.rad

Concentration of radionuclides in foodstuff media
at t = 1.000E+02 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	1.147E-18	1.137E-11	1.318E-11	1.357E-11	1.358E-11	4.786E-13	2.748E-13	1.719E-17	1.146E-15
Am-241	0.000E+00	5.337E-01	5.402E-01	5.411E-01	5.410E-01	8.039E-02	3.201E-03	0.000E+00	0.000E+00
Np-237	0.000E+00	4.154E-05	4.156E-05	4.160E-05	4.159E-05	8.961E-06	4.210E-08	0.000E+00	0.000E+00
Pa-231	1.375E-18	6.417E-11	6.641E-11	6.742E-11	6.746E-11	1.171E-10	1.157E-13	1.427E-17	1.539E-16
Pb-210	0.000E+00	1.652E-11	1.643E-11	1.677E-11	1.679E-11	4.802E-12	1.731E-12	0.000E+00	0.000E+00
Pu-238	0.000E+00	4.776E-03	4.834E-03	4.844E-03	4.842E-03	1.439E-03	1.432E-05	0.000E+00	0.000E+00
Pu-239	0.000E+00	4.452E-01	4.506E-01	4.514E-01	4.514E-01	1.341E-01	1.335E-03	0.000E+00	0.000E+00
Pu-241	0.000E+00	2.910E-03	2.945E-03	2.958E-03	2.950E-03	8.765E-04	8.725E-06	0.000E+00	0.000E+00
Ra-226	0.000E+00	1.234E-10	1.235E-10	1.231E-10	1.233E-10	1.748E-11	1.589E-11	0.000E+00	0.000E+00
Th-229	1.919E-20	5.505E-13	5.734E-13	9.171E-13	9.183E-13	1.651E-13	8.642E-15	1.811E-18	9.301E-18
Th-230	8.287E-18	1.394E-10	1.533E-10	1.755E-10	1.756E-10	4.122E-11	2.082E-12	8.218E-16	4.124E-15
U-233	1.367E-14	5.867E-09	2.751E-08	2.991E-08	2.998E-08	1.039E-09	2.690E-09	1.366E-13	8.195E-13
U-234	8.584E-12	3.843E-06	1.743E-05	1.909E-05	1.909E-05	7.215E-07	1.808E-06	8.585E-11	5.151E-10
U-235	1.510E-13	7.090E-08	3.099E-07	3.387E-07	3.387E-07	1.410E-08	3.426E-08	1.509E-12	9.057E-12

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.664E+02 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	4.693E-11	4.693E-11	4.682E-16	5.861E-12	4.850E-18
Am-241	2.778E+00	2.778E+00	2.771E-05	0.000E+00	0.000E+00
Np-237	1.085E-05	1.085E-05	1.082E-10	6.730E-05	5.570E-11
Pa-231	5.825E-11	5.825E-11	5.812E-16	5.807E-12	4.806E-18
Pb-210	2.893E-11	2.893E-11	2.886E-16	0.000E+00	0.000E+00
Pu-238	1.478E-02	1.478E-02	1.475E-07	0.000E+00	0.000E+00
Pu-239	2.324E+00	2.324E+00	2.319E-05	0.000E+00	0.000E+00
Pu-241	6.227E-04	6.227E-04	6.213E-09	0.000E+00	0.000E+00
Ra-226	4.340E-11	4.340E-11	4.330E-16	0.000E+00	0.000E+00
Th-229	5.145E-12	5.145E-12	5.133E-17	6.093E-13	5.042E-19
Th-230	1.021E-09	1.021E-09	1.018E-14	3.131E-11	2.591E-17
U-233	3.415E-10	3.415E-10	3.407E-15	3.582E-08	2.965E-14
U-234	3.198E-07	3.198E-07	3.191E-12	6.222E-06	5.150E-12
U-235	1.648E-08	1.648E-08	1.644E-13	1.849E-07	1.531E-13

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.664E+02 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	4.850E-18	2.201E-11	2.970E-11	3.089E-11	3.091E-11	8.374E-13	5.220E-13	7.272E-17	4.847E-15
Am-241	0.000E+00	4.719E-01	4.776E-01	4.784E-01	4.783E-01	7.107E-02	2.830E-03	0.000E+00	0.000E+00

Np-237	5.570E-11	6.013E-05	1.484E-04	1.589E-04	1.589E-04	1.960E-05	1.247E-07	1.671E-09	2.228E-08
Pa-231	4.815E-18	1.007E-10	1.085E-10	1.102E-10	1.102E-10	1.845E-10	1.826E-13	4.867E-17	5.323E-16
Pb-210	0.000E+00	4.928E-11	4.909E-11	4.991E-11	4.994E-11	1.433E-11	5.166E-12	0.000E+00	0.000E+00
Pu-238	0.000E+00	2.512E-03	2.542E-03	2.548E-03	2.546E-03	7.566E-04	7.532E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	3.949E-01	3.997E-01	4.004E-01	4.003E-01	1.190E-01	1.184E-03	0.000E+00	0.000E+00
Pu-241	0.000E+00	1.058E-04	1.071E-04	1.075E-04	1.073E-04	3.187E-05	3.173E-07	0.000E+00	0.000E+00
Ra-226	0.000E+00	2.939E-10	2.941E-10	2.936E-10	2.937E-10	4.165E-11	3.785E-11	0.000E+00	0.000E+00
Th-229	5.119E-19	1.133E-12	1.924E-12	2.763E-12	2.764E-12	2.903E-13	1.559E-14	5.095E-17	2.553E-16
Th-230	2.604E-17	1.850E-10	2.278E-10	2.454E-10	2.454E-10	5.306E-11	2.671E-12	2.599E-15	1.301E-14
U-233	2.965E-14	1.253E-08	5.946E-08	6.522E-08	6.522E-08	2.180E-09	5.694E-09	2.966E-13	1.781E-12
U-234	5.150E-12	2.286E-06	1.044E-05	1.144E-05	1.144E-05	4.249E-07	1.071E-06	5.151E-11	3.090E-10
U-235	1.531E-13	7.090E-08	3.132E-07	3.425E-07	3.425E-07	1.387E-08	3.400E-08	1.531E-12	9.183E-12

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+02 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	7.844E-11	7.844E-11	7.825E-16	1.511E-11	1.250E-17
Am-241	2.167E+00	2.167E+00	2.162E-05	0.000E+00	0.000E+00
Np-237	8.462E-06	8.462E-06	8.442E-11	5.549E-05	4.592E-11
Pa-231	8.768E-11	8.768E-11	8.747E-16	1.352E-11	1.119E-17
Pb-210	7.872E-11	7.872E-11	7.854E-16	4.745E-12	3.927E-18
Pu-238	4.057E-03	4.057E-03	4.048E-08	0.000E+00	0.000E+00
Pu-239	1.826E+00	1.826E+00	1.821E-05	0.000E+00	0.000E+00
Pu-241	7.910E-07	7.910E-07	7.892E-12	0.000E+00	0.000E+00
Ra-226	1.009E-10	1.009E-10	1.006E-15	4.612E-13	3.817E-19
Th-229	8.286E-12	8.286E-12	8.266E-17	2.206E-12	1.826E-18
Th-230	1.140E-09	1.140E-09	1.137E-14	5.182E-11	4.288E-17
U-233	2.665E-10	2.665E-10	2.659E-15	2.901E-08	2.401E-14
U-234	8.777E-08	8.777E-08	8.756E-13	2.132E-06	1.764E-12
U-235	1.294E-08	1.294E-08	1.291E-13	1.838E-07	1.521E-13

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

File : recreational_JN-4_drainpipe_aquatic_pathways.rad

Concentration of radionuclides in foodstuff media
at t = 3.000E+02 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	1.250E-17	3.860E-11	5.844E-11	6.124E-11	6.125E-11	1.372E-12	9.000E-13	1.875E-16	1.250E-14
Am-241	0.000E+00	3.682E-01	3.726E-01	3.732E-01	3.732E-01	5.545E-02	2.208E-03	0.000E+00	0.000E+00
Np-237	4.592E-11	4.795E-05	1.207E-04	1.294E-04	1.294E-04	1.581E-05	1.011E-07	1.378E-09	1.837E-08
Pa-231	1.120E-17	1.532E-10	1.711E-10	1.741E-10	1.741E-10	2.818E-10	2.798E-13	1.125E-16	1.235E-15
Pb-210	3.927E-18	1.356E-10	1.414E-10	1.441E-10	1.441E-10	3.960E-11	1.442E-11	1.177E-15	3.924E-16
Pu-238	0.000E+00	6.892E-04	6.976E-04	6.991E-04	6.988E-04	2.076E-04	2.067E-06	0.000E+00	0.000E+00
Pu-239	0.000E+00	3.102E-01	3.139E-01	3.145E-01	3.144E-01	9.343E-02	9.302E-04	0.000E+00	0.000E+00
Pu-241	0.000E+00	1.344E-07	1.360E-07	1.366E-07	1.363E-07	4.048E-08	4.030E-10	0.000E+00	0.000E+00
Ra-226	3.817E-19	6.832E-10	6.841E-10	6.837E-10	6.839E-10	9.693E-11	8.811E-11	1.911E-17	9.557E-17
Th-229	1.832E-18	2.209E-12	5.103E-12	6.053E-12	6.054E-12	4.756E-13	2.534E-14	1.830E-16	9.156E-16
Th-230	4.293E-17	2.118E-10	2.819E-10	2.947E-10	2.947E-10	5.932E-11	2.981E-12	4.291E-15	2.146E-14
U-233	2.401E-14	1.015E-08	4.816E-08	5.283E-08	5.282E-08	1.764E-09	4.608E-09	2.402E-13	1.442E-12
U-234	1.764E-12	7.740E-07	3.567E-06	3.910E-06	3.908E-06	1.416E-07	3.599E-07	1.764E-11	1.059E-10
U-235	1.521E-13	6.901E-08	3.099E-07	3.390E-07	3.390E-07	1.317E-08	3.272E-08	1.521E-12	9.128E-12

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+03 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	1.018E-10	1.018E-10	1.015E-15	5.254E-11	4.348E-17
Am-241	5.903E-01	5.903E-01	5.889E-06	0.000E+00	0.000E+00
Np-237	2.305E-06	2.305E-06	2.300E-11	1.795E-05	1.485E-11
Pa-231	1.049E-10	1.049E-10	1.047E-15	4.466E-11	3.696E-17
Pb-210	2.583E-10	2.583E-10	2.577E-15	8.523E-11	7.054E-17
Pu-238	4.633E-06	4.633E-06	4.622E-11	0.000E+00	0.000E+00
Pu-239	5.152E-01	5.152E-01	5.140E-06	0.000E+00	0.000E+00
Pu-241	5.297E-22	5.297E-22	5.285E-27	0.000E+00	0.000E+00
Ra-226	2.948E-10	2.948E-10	2.941E-15	5.363E-12	4.439E-18

Th-229	1.221E-11	1.221E-11	1.218E-16	6.525E-12	5.400E-18
Th-230	7.754E-10	7.754E-10	7.736E-15	5.697E-11	4.715E-17
U-233	7.258E-11	7.258E-11	7.242E-16	9.334E-09	7.725E-15
U-234	1.002E-10	1.002E-10	9.998E-16	7.866E-09	6.510E-15
U-235	3.652E-09	3.652E-09	3.644E-14	1.800E-07	1.490E-13

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+03 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	4.348E-17	6.144E-11	1.303E-10	1.391E-10	1.391E-10	1.887E-12	1.339E-12	6.520E-16	4.346E-14
Am-241	0.000E+00	1.003E-01	1.015E-01	1.017E-01	1.017E-01	1.510E-02	6.015E-04	0.000E+00	0.000E+00
Np-237	1.485E-11	1.405E-05	3.758E-05	4.040E-05	4.040E-05	4.797E-06	3.123E-08	4.456E-10	5.941E-09
Pa-231	3.697E-17	1.932E-10	2.520E-10	2.598E-10	2.598E-10	3.618E-10	3.711E-13	3.702E-16	4.069E-15
Pb-210	7.053E-17	4.688E-10	5.794E-10	5.981E-10	5.981E-10	1.395E-10	5.272E-11	2.115E-14	7.050E-15
Pu-238	0.000E+00	7.870E-07	7.965E-07	7.983E-07	7.979E-07	2.371E-07	2.360E-09	0.000E+00	0.000E+00
Pu-239	0.000E+00	8.752E-02	8.858E-02	8.874E-02	8.873E-02	2.636E-02	2.625E-04	0.000E+00	0.000E+00
Pu-241	0.000E+00	9.000E-23	9.109E-23	9.149E-23	9.125E-23	2.711E-23	2.699E-25	0.000E+00	0.000E+00
Ra-226	4.439E-18	1.998E-09	2.006E-09	2.007E-09	2.007E-09	2.841E-10	2.586E-10	2.220E-16	1.110E-15
Th-229	5.402E-18	4.339E-12	1.291E-11	1.414E-11	1.414E-11	7.420E-13	4.001E-14	5.402E-16	2.701E-15
Th-230	4.715E-17	1.514E-10	2.276E-10	2.369E-10	2.369E-10	4.067E-11	2.049E-12	4.715E-15	2.357E-14
U-233	7.725E-15	3.258E-09	1.549E-08	1.699E-08	1.699E-08	5.650E-10	1.478E-09	7.729E-14	4.640E-13
U-234	6.510E-15	2.761E-09	1.307E-08	1.433E-08	1.432E-08	4.822E-10	1.258E-09	6.511E-14	3.907E-13
U-235	1.490E-13	6.376E-08	2.997E-07	3.281E-07	3.281E-07	1.127E-08	2.921E-08	1.490E-12	8.940E-12

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 10. Swimming Dose Assessment for Combined Upper Areas and Filter Bed Areas

Swimming Dose Assessment for Combined Upper Areas and Filter Bed Areas

Assumes that person swims for 60 minutes/day for 7 days per week while at Girl Scout camp.
Length of swim from Exposure Factors Handbook, Section 15.4.1 (EPA/600/C-99/001, 1999)
Dose conversion factors from Federal Guidance Report No. 12, Table III.2. "+P" denotes that short-lived progeny are included in the DCF.
50 mL/hr of incidental water ingestion during swimming also assumed, based on EPA's swimmer exposure assessment model, page 9.
Surface water concentration from RESRAD *.con file.

94.76 Years

Immersion in Surface Water

Radionuclide	Surface Water Concentration (pCi/L)	Water Immersion EDE DCF (Sv-m3/Bq-s)	Exposure Time (days)	Exposure Time (min/day)	Total Exposure Time (sec.)	L/m3	mrem/Sv	Bq/pCi	EDE (mrem)
Ac-227+P	6.91E-17	4.06E-17	7	60	25200	1000	100000	0.037	2.61E-22
Am-241	0.00E+00	1.88E-18	7	60	25200	1000	100000	0.037	0.00E+00
Co-60	0.00E+00	2.74E-16	7	60	25200	1000	100000	0.037	0.00E+00
Cs-137+P	0.00E+00	5.92E-17	7	60	25200	1000	100000	0.037	0.00E+00
Eu-152	0.00E+00	1.23E-16	7	60	25200	1000	100000	0.037	0.00E+00
Eu-154	0.00E+00	1.33E-16	7	60	25200	1000	100000	0.037	0.00E+00
Gd-152	0.00E+00	0.00E+00	7	60	25200	1000	100000	0.037	0.00E+00
Np-237+P	0.00E+00	2.28E-17	7	60	25200	1000	100000	0.037	0.00E+00
Pa-231	1.10E-16	3.78E-18	7	60	25200	1000	100000	0.037	3.87E-23
Pb-210+P	0.00E+00	1.95E-19	7	60	25200	1000	100000	0.037	0.00E+00
Pu-238	0.00E+00	1.14E-20	7	60	25200	1000	100000	0.037	0.00E+00
Pu-239	0.00E+00	9.60E-21	7	60	25200	1000	100000	0.037	0.00E+00
Pu-241	0.00E+00	1.62E-22	7	60	25200	1000	100000	0.037	0.00E+00
Ra-226+P	0.00E+00	1.93E-16	7	60	25200	1000	100000	0.037	0.00E+00
Sr-90+P	6.09E-05	3.78E-19	7	60	25200	1000	100000	0.037	2.14E-12
Th-229+P	3.07E-18	3.28E-17	7	60	25200	1000	100000	0.037	9.38E-24
Th-230	1.26E-15	3.94E-20	7	60	25200	1000	100000	0.037	4.61E-24
U-233	2.33E-12	3.64E-20	7	60	25200	1000	100000	0.037	7.89E-21
U-234	2.63E-09	1.75E-20	7	60	25200	1000	100000	0.037	4.30E-18
U-235+P	3.21E-11	1.71E-17	7	60	25200	1000	100000	0.037	5.12E-17
Total									2.14E-12

Incidental Ingestion of Surface Water While Swimming

Radionuclide	Ingestion DCF mrem/pCi	mL/hr	Time (hr/day)	(days)	EDE (mrem)	Total EDE (mrem)
Ac-227+D	1.48E-02	50	1	7	3.58E-19	3.58E-19
Am-241	3.64E-03	50	1	7	0.00E+00	0.00E+00
Co-60	2.69E-05	50	1	7	0.00E+00	0.00E+00
Cs-137+D	5.00E-05	50	1	7	0.00E+00	0.00E+00
Eu-152	6.48E-06	50	1	7	0.00E+00	0.00E+00
Eu-154	9.55E-06	50	1	7	0.00E+00	0.00E+00
Gd-152	1.61E-04	50	1	7	0.00E+00	0.00E+00
Np-237+D	4.44E-03	50	1	7	0.00E+00	0.00E+00
Pa-231	1.06E-02	50	1	7	4.07E-19	4.07E-19
Pb-210+D	7.28E-03	50	1	7	0.00E+00	0.00E+00
Pu-238	3.20E-03	50	1	7	0.00E+00	0.00E+00
Pu-239	3.54E-03	50	1	7	0.00E+00	0.00E+00
Pu-241	6.84E-05	50	1	7	0.00E+00	0.00E+00
Ra-226+D	1.32E-03	50	1	7	0.00E+00	0.00E+00
Sr-90+D	1.53E-04	50	1	7	3.26E-09	3.26E-09
Th-229+D	4.03E-03	50	1	7	4.32E-21	4.33E-21
Th-230	5.48E-04	50	1	7	2.41E-19	2.41E-19
U-233	2.89E-04	50	1	7	2.35E-16	2.35E-16
U-234	2.83E-04	50	1	7	2.61E-13	2.61E-13
U-235+D	2.67E-04	50	1	7	3.01E-15	3.06E-15
					3.26E-09	3.26E-09

166.4 Years

Immersion in Surface Water

Radionuclide	Surface Water Concentration (pCi/L)	Water Immersion EDE DCF (Sv-m3/Bq-s)	Exposure Time (days)	Exposure Time (min/day)	Total Exposure Time (sec.)	L/m3	mrem/Sv	Bq/pCi	EDE (mrem)
Ac-227+P	9.09E-16	4.06E-17	7	60	25200	1000	100000	0.037	3.44E-21
Am-241	0.00E+00	1.88E-18	7	60	25200	1000	100000	0.037	0.00E+00
Co-60	0.00E+00	2.74E-16	7	60	25200	1000	100000	0.037	0.00E+00
Cs-137+P	0.00E+00	5.92E-17	7	60	25200	1000	100000	0.037	0.00E+00
Eu-152	0.00E+00	1.23E-16	7	60	25200	1000	100000	0.037	0.00E+00
Eu-154	0.00E+00	1.33E-16	7	60	25200	1000	100000	0.037	0.00E+00
Gd-152	0.00E+00	0.00E+00	7	60	25200	1000	100000	0.037	0.00E+00
Np-237+P	2.28E-08	2.28E-17	7	60	25200	1000	100000	0.037	4.86E-14
Pa-231	1.18E-15	3.78E-18	7	60	25200	1000	100000	0.037	4.15E-22
Pb-210+P	0.00E+00	1.95E-19	7	60	25200	1000	100000	0.037	0.00E+00
Pu-238	0.00E+00	1.14E-20	7	60	25200	1000	100000	0.037	0.00E+00
Pu-239	0.00E+00	9.60E-21	7	60	25200	1000	100000	0.037	0.00E+00
Pu-241	0.00E+00	1.62E-22	7	60	25200	1000	100000	0.037	0.00E+00
Ra-226+P	0.00E+00	1.93E-16	7	60	25200	1000	100000	0.037	0.00E+00
Sr-90+P	9.16E-06	3.78E-19	7	60	25200	1000	100000	0.037	3.22E-13
Th-229+P	2.95E-16	3.28E-17	7	60	25200	1000	100000	0.037	9.02E-22
Th-230	1.58E-14	3.94E-20	7	60	25200	1000	100000	0.037	5.80E-23
U-233	2.99E-11	3.64E-20	7	60	25200	1000	100000	0.037	1.01E-19
U-234	7.08E-09	1.75E-20	7	60	25200	1000	100000	0.037	1.16E-17
U-235+P	1.15E-10	1.71E-17	7	60	25200	1000	100000	0.037	1.83E-16
									3.71E-13

Incidental Ingestion of Surface Water While Swimming

Radionuclide	Ingestion DCF mrem/pCi	mL/hr	Time (hr/day)	(days)	EDE (mrem)	Total EDE (mrem)
Ac-227+D	1.48E-02	50	1	7	4.71E-18	4.71E-18
Am-241	3.64E-03	50	1	7	0.00E+00	0.00E+00
Co-60	2.69E-05	50	1	7	0.00E+00	0.00E+00
Cs-137+D	5.00E-05	50	1	7	0.00E+00	0.00E+00
Eu-152	6.48E-06	50	1	7	0.00E+00	0.00E+00
Eu-154	9.55E-06	50	1	7	0.00E+00	0.00E+00
Gd-152	1.61E-04	50	1	7	0.00E+00	0.00E+00
Np-237+D	4.44E-03	50	1	7	3.55E-11	3.56E-11
Pa-231	1.06E-02	50	1	7	4.37E-18	4.37E-18
Pb-210+D	7.28E-03	50	1	7	0.00E+00	0.00E+00
Pu-238	3.20E-03	50	1	7	0.00E+00	0.00E+00
Pu-239	3.54E-03	50	1	7	0.00E+00	0.00E+00
Pu-241	6.84E-05	50	1	7	0.00E+00	0.00E+00
Ra-226+D	1.32E-03	50	1	7	0.00E+00	0.00E+00
Sr-90+D	1.53E-04	50	1	7	4.90E-10	4.90E-10
Th-229+D	4.03E-03	50	1	7	4.16E-19	4.17E-19
Th-230	5.48E-04	50	1	7	3.03E-18	3.03E-18
U-233	2.89E-04	50	1	7	3.02E-15	3.02E-15
U-234	2.83E-04	50	1	7	7.01E-13	7.01E-13
U-235+D	2.67E-04	50	1	7	1.07E-14	1.09E-14
					5.26E-10	5.26E-10

Attachment 11. Swimming Dose Assessment for JN-4 Drainpipe Area

Swimming Dose Assessment for JN-4 Drainpipe Area

Assumes that person swims for 60 minutes/day for 7 days per week while at Girl Scout camp.
Length of swim from Exposure Factors Handbook, Section 15.4.1 (EPA/600/C-99/001, 1999)
Dose conversion factors from Federal Guidance Report No. 12, Table III.2. "+P" denotes that short-lived progeny are included in the DCF.
50 mL/hr of incidental water ingestion during swimming also assumed, based on EPA's swimmer exposure assessment model, page 9.
Surface water concentrations from RESRAD *.con file.

94.76 Years

Immersion in Surface Water

Radionuclide	Surface Water Concentration (pCi/L)	Water Immersion EDE DCF (Sv-m3/Bq-s)	Exposure Time (days)	Exposure Time (min/day)	Total Exposure Time (sec.)	L/m3	mrem/Sv	Bq/pCi	EDE (mrem)
Ac-227+P	9.04E-19	4.06E-17	7	60	25200	1000	100000	0.037	3.42E-24
Am-241	0.00E+00	1.88E-18	7	60	25200	1000	100000	0.037	0.00E+00
Np-237+P	0.00E+00	2.28E-17	7	60	25200	1000	100000	0.037	0.00E+00
Pa-231	1.09E-18	3.78E-18	7	60	25200	1000	100000	0.037	3.84E-25
Pb-210+P	0.00E+00	1.95E-19	7	60	25200	1000	100000	0.037	0.00E+00
Pu-238	0.00E+00	1.14E-20	7	60	25200	1000	100000	0.037	0.00E+00
Pu-239	0.00E+00	9.60E-21	7	60	25200	1000	100000	0.037	0.00E+00
Pu-241	0.00E+00	1.62E-22	7	60	25200	1000	100000	0.037	0.00E+00
Ra-226+P	0.00E+00	1.93E-16	7	60	25200	1000	100000	0.037	0.00E+00
Th-229+P	1.06E-20	3.28E-17	7	60	25200	1000	100000	0.037	3.23E-26
Th-230	6.30E-18	3.94E-20	7	60	25200	1000	100000	0.037	2.31E-26
U-233	1.05E-14	3.64E-20	7	60	25200	1000	100000	0.037	3.56E-23
U-234	8.75E-12	1.75E-20	7	60	25200	1000	100000	0.037	1.43E-20
U-235+P	1.48E-13	1.71E-17	7	60	25200	1000	100000	0.037	2.36E-19
Total									2.50E-19

Incidental Ingestion of Surface Water While Swimming

Radionuclide	Ingestion DCF mrem/pCi	mL/hr	Time (hr/day)	(days)	EDE (mrem)	Total EDE (mrem)
Ac-227+D	1.48E-02	50	1	7	4.68E-21	4.69E-21
Am-241	3.64E-03	50	1	7	0.00E+00	0.00E+00
Np-237+D	4.44E-03	50	1	7	0.00E+00	0.00E+00
Pa-231	1.06E-02	50	1	7	4.04E-21	4.04E-21
Pb-210+D	7.28E-03	50	1	7	0.00E+00	0.00E+00
Pu-238	3.20E-03	50	1	7	0.00E+00	0.00E+00
Pu-239	3.54E-03	50	1	7	0.00E+00	0.00E+00
Pu-241	6.84E-05	50	1	7	0.00E+00	0.00E+00
Ra-226+D	1.32E-03	50	1	7	0.00E+00	0.00E+00
Th-229+D	4.03E-03	50	1	7	1.49E-23	1.49E-23
Th-230	5.48E-04	50	1	7	1.21E-21	1.21E-21
U-233	2.89E-04	50	1	7	1.06E-18	1.06E-18
U-234	2.83E-04	50	1	7	8.67E-16	8.67E-16
U-235+D	2.67E-04	50	1	7	1.39E-17	1.41E-17
					8.82E-16	8.82E-16

166.4 Years

Immersion in Surface Water

Radionuclide	Surface Water Concentration (pCi/L)	Water Immersion EDE DCF (Sv-m3/Bq-s)	Exposure Time (days)	Exposure Time (min/day)	Total Exposure Time (sec.)	L/m3	mrem/Sv	Bq/pCi	EDE (mrem)
Ac-227+P	4.85E-18	4.06E-17	7	60	25200	1000	100000	0.037	1.84E-23
Am-241	0.00E+00	1.88E-18	7	60	25200	1000	100000	0.037	0.00E+00
Np-237+P	5.57E-11	2.28E-17	7	60	25200	1000	100000	0.037	1.19E-16
Pa-231	4.81E-18	3.78E-18	7	60	25200	1000	100000	0.037	1.69E-24
Pb-210+P	0.00E+00	1.95E-19	7	60	25200	1000	100000	0.037	0.00E+00
Pu-238	0.00E+00	1.14E-20	7	60	25200	1000	100000	0.037	0.00E+00
Pu-239	0.00E+00	9.60E-21	7	60	25200	1000	100000	0.037	0.00E+00
Pu-241	0.00E+00	1.62E-22	7	60	25200	1000	100000	0.037	0.00E+00
Ra-226+P	0.00E+00	1.93E-16	7	60	25200	1000	100000	0.037	0.00E+00
Th-229+P	5.04E-19	3.28E-17	7	60	25200	1000	100000	0.037	1.54E-24
Th-230	2.59E-17	3.94E-20	7	60	25200	1000	100000	0.037	9.52E-26
U-233	2.97E-14	3.64E-20	7	60	25200	1000	100000	0.037	1.01E-22
U-234	5.15E-12	1.75E-20	7	60	25200	1000	100000	0.037	8.40E-21
U-235+P	1.53E-13	1.71E-17	7	60	25200	1000	100000	0.037	2.44E-19
									1.19E-16

Incidental Ingestion of Surface Water While Swimming

Radionuclide	Ingestion DCF mrem/pCi	mL/hr	Time (hr/day)	(days)	EDE (mrem)	Total EDE (mrem)
Ac-227+D	1.48E-02	50	1	7	2.51E-20	2.51E-20
Am-241	3.64E-03	50	1	7	0.00E+00	0.00E+00
Np-237+D	4.44E-03	50	1	7	8.66E-14	8.68E-14
Pa-231	1.06E-02	50	1	7	1.78E-20	1.78E-20
Pb-210+D	7.28E-03	50	1	7	0.00E+00	0.00E+00
Pu-238	3.20E-03	50	1	7	0.00E+00	0.00E+00
Pu-239	3.54E-03	50	1	7	0.00E+00	0.00E+00
Pu-241	6.84E-05	50	1	7	0.00E+00	0.00E+00
Ra-226+D	1.32E-03	50	1	7	0.00E+00	0.00E+00
Th-229+D	4.03E-03	50	1	7	7.11E-22	7.12E-22
Th-230	5.48E-04	50	1	7	4.97E-21	4.97E-21
U-233	2.89E-04	50	1	7	3.00E-18	3.00E-18
U-234	2.83E-04	50	1	7	5.10E-16	5.10E-16
U-235+D	2.67E-04	50	1	7	1.43E-17	1.46E-17
					8.72E-14	8.73E-14