

**DECOMMISSIONING FUNDING PLAN  
BP CHEMICALS, INC.  
LIMA, OHIO  
LICENSE NO. SUB-908**

**COST ESTIMATE**

**Revised  
September 10, 1996**

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**DECOMMISSIONING FUNDING PLAN COST ESTIMATE  
SUMMARY**

(Revised September 10, 1996)

<u>ITEM</u>	<u>TASK \$</u>	<u>TOTAL \$</u>
1.0 Mixed Waste Pond Closure		8,952,517
1.1 Planning and Preparation	1,083,280	
1.2 Decommissioning	7,272,937	
1.3 Package, Ship and Dispose	0	
1.4 Restoration	200,000	
1.5 Final Rad Survey	396,300	
2.0 Corrective Action		2,249,385
2.1 Planning and Preparation	287,260	
2.2 Decommissioning	1,262,650	
2.3 Package, Ship and Dispose	0	
2.4 Restoration	250,000	
2.5 Final Rad Survey	449,475	
3.0 CAT-21 Cleanup		2,496,210
3.1 Planning and Preparation	360,160	
3.2 Decommissioning	1,069,150	
3.3 Package, Ship and Dispose	172,800	
3.4 Restoration	71,650	
3.5 Final Rad Survey	822,450	
Subtotal, All Projects		13,698,112
Contingency @ 25%		3,424,528
<b>Grand Total</b>		<b>17,122,640</b>

## **TABLE I**

### **COST ESTIMATE**

# Decommissioning Funding Plan Cost Estimate

	Revision	Unit	Qty	Unit	Cost	Site Manager	Rad Super	Rad Tech	Laborer	Total Cost
	Note #				\$	@ \$85/hr	@ \$70/hr	@ \$50/hr	@ \$35/hr	\$
<b>1.0 MIXED WASTE POND CLOSURE</b>										
<b>1.1 Planning and Preparation</b>										
Travel						16	16	48	0	4,880
Train						80	80	240	0	24,400
Contractor Mobilization	A	I.s.	1		500,000					500,000
Construct Decon Area		s.y.	200		61					12,200
Construct Temporary Stormwater Controls		I.s.	1		48,300					48,300
Survey Grid System and Lift Coordinates		day	200		200					40,000
Pump Water from Ponds		day	200		2,000					400,000
Clarifier		ea.	1		8,000					8,000
Bar Filter		ea.	2		5,000					10,000
Piping		I.s.	1		5,000					5,000
Frac Tanks		mo.	5		500					2,500
Construction Management		I.s.	1		13,000					13,000
Water System Operation										
Decon Large Debris		I.s.	1		15,000					15,000
<b>Activity Total</b>										<b>1,083,280</b>
<b>1.2 Decommissioning</b>										
Health, Safety & Radiation Monitoring						200	1000	2000	2000	257,000
Construction Management		I.s.	1		1,275,000					1,275,000
Construction Engineering		I.s.	1		150,800					150,800



## Decommissioning Funding Plan Cost Estimate

	Revision	Unit	Qty	Unit	Cost	Site	Rad	Rad	Laborer	Total
	Note #				\$	Manager	Super	Tech		Cost
	B	I.s.	1		250,000	@ \$85/hr	@ \$70/hr	@ \$50/hr	@ \$35/hr	\$
Relocate Existing Utilities										250,000
Construct Liner - Cell #1										
Piping		I.f.	540		6.60					3,564
Stone		c.y.	60		17					1,020
Fabric		s.f.	2960		0.50					1,480
100 Mil HDPE		s.f.	2310		0.85					1,964
Sumps		ea	2		2,500					5,000
Alarm		ea	2		2,000					4,000
Pump		ea	2		1,000					2,000
Compacted Clay		c.y.	9600		8.00					76,800
60 Mil HDPE		s.f.	138000		0.60					82,800
Fabric		s.f.	69000		0.50					34,500
Geonet		s.f.	138000		0.50					69,000
Type D Sand		c.y.	2075		6.00					12,450
Anchor Trench		I.f.	1000		60					60,000
Construct Liner - Cell #2										
Piping	C	I.f.	600		6.60					3,960
Stone	C	c.y.	80		17					1,360
Fabric	C	s.f.	3200		0.50					1,600
100 Mil HDPE	C	s.f.	3200		0.85					2,720
Sumps		ea	2		2,500					5,000
Alarm		ea	2		2,000					4,000
Pump		ea	2		1,000					2,000
Compacted Clay	C	c.y.	15000		8.00					120,000
60 Mil HDPE	C	s.f.	212000		0.60					127,200
Fabric	C	s.f.	115000		0.50					57,500

# Decommissioning Funding Plan Cost Estimate

	Revision	Unit	Qty	Unit	Cost	Site Manager	Rad Super	Rad Tech	Laborer	Total Cost
	Note #				\$	@ \$85/hr	@ \$70/hr	@ \$50/hr	@ \$35/hr	\$
Geonet	C	s.f.	212000		0.50					106,000
Type D Sand	C	c.y.	3600		6.00					21,600
Anchor Trench	C	l.f.	1300		60					78,000
Leachate Storage Tank										
Tank & Foundation		l.s.	1		20,000					20,000
Pumps		ea.	3		2,500					7,500
Filters		ea.	2		1,500					3,000
Piping		l.f.	800		45					36,000
Fittings		ea.	60		125					7,500
Instrumentation		ea.	10		400					4,000
Dredge Sludge to S/S Area										
Celite & Deepwell Ponds		c.y.	6352		15					95,280
V-1 Pond		c.y.	9900		15					148,500
Burn Pond		c.y.	14720		15					220,800
Sludge Stabilization (S/S)										
Pilot Test	B	l.s.	1		95,000					95,000
Celite & Deepwell Ponds	A	c.y.	6352		85					539,920
V-1 Pond	D,A	c.y.	9900		66					653,400
Burn Pond	D,A	c.y.	14720		78					1,148,160
Place Stabilized Sludge in Cell										
Celite & Deepwell Ponds	E	c.y.	9528		8.00					76,224
V-1 Pond	E	c.y.	14850		8.00					118,800
Burn Pond	E	c.y.	25760		8.00					206,080
Excavate & Place Soil in Cells										
Celite Stockpile	F	c.y.	15000		5.00					75,000
Celite Pond	F	c.y.	15000		10					150,000

## Decommissioning Funding Plan Cost Estimate

	Revision	Unit	Qty	Unit	Cost	Site	Rad	Super	Rad	Tech	Laborer	Total
	Note #				\$	@ \$85/hr	@ \$70/hr	@ \$50/hr	@ \$35/hr			\$
Deepwell & Burn Ponds	F	c.y.	25000		10							250,000
Construct Cap - Cell #1												
Subgrade Preparation		c.y.	2075		6.00							12,450
Compacted Clay		c.y.	5550		8.00							44,400
60 Mil HDPE		s.f.	81200		0.60							48,720
Fabric		s.f.	81200		0.50							40,600
Type D Sand		c.y.	2380		14							33,320
Select Backfill		c.y.	2780		6.40							17,792
Drain Pipe		l.f.	380		6.60							2,508
Topsoil		c.y.	2120		5.40							11,448
Grading		c.y.	2120		3.60							7,632
Seed & Mulch		acre	2		2,470							4,940
Construct Cap - Cell #2												
Subgrade Preparation	C	c.y.	3400		6.00							20,400
Compacted Clay	C	c.y.	7060		8.00							56,480
60 Mil HDPE	C	s.f.	95200		0.60							57,120
Fabric	C	s.f.	95200		0.50							47,600
Type D Sand	C	c.y.	3630		14							50,820
Select Backfill	C	c.y.	5300		6.40							33,920
Drain Pipe	C	l.f.	600		6.60							3,960
Topsoil	C	c.y.	2600		5.40							14,040
Grading	C	c.y.	2600		3.60							9,360
Seed & Mulch	C	acre	3.5		2,470							8,645
Interceptor Ditch												
Cell #1		l.f.	550		10							5,500
Cell #2	C	l.f.	920		10							9,200

# Decommissioning Funding Plan Cost Estimate

	Revision	Unit	Qty	Unit	Cost	Site	Rad	Rad	Rad	Laborer	Total
	Note #				\$	Manager	Super	Tech			Cost
						@ \$85/hr	@ \$70/hr	@ \$50/hr		@ \$35/hr	\$
Borrow Material Testing											
Density		day	140		150						21,000
Proctor		ea.	50		100						5,000
Sieves & Limits		ea.	50		75.00						3,750
Volatile Organics		ea.	50		300						15,000
TPH		ea.	50		75.00						3,750
Permeability Testing											
Field ASTM D 3385		ea.	10		450						4,500
Lab		ea.	14		400						5,600
<b>Activity Total</b>											<b>7,272,937</b>
1.3 Package, Ship & Dispose - not applicable											
1.4 Restoration											
Backfill & Compact	B	c.y.	20000		10.00						200,000
<b>Activity Total</b>											<b>200,000</b>
1.5 Final Rad Survey											
Soil Sampling & Surveys						120	240	480			67,800
Stabilization Samples		ea.	100		1,200						120,000
Chemical Samples		ea.	100		1,000						100,000
Radiological		ea.	450		130						58,500
Certification Report		l.s.	1		50,000						50,000
<b>Activity Total</b>											<b>396,300</b>

# Decommissioning Funding Plan Cost Estimate

	Revision	Unit	Qty	Unit	Cost	Site Manager	Rad Super	Rad Tech	Laborer	Total Cost
	Note #				\$	@ \$85/hr	@ \$70/hr	@ \$50/hr	@ \$35/hr	\$
<b>2.0 CORRECTIVE ACTION</b>										
<b>2.1 Planning &amp; Preparation</b>										
RFI Workplan/QA Plan	G		(Complete)			32	32	96	0	9,760
Travel										
Train						160	160	480	0	48,800
Health, Safety & Radiation Monitoring						120	120	240	240	39,000
Drilling and Soil Sampling	G		(Complete)							0
Chemical Analysis	G		(Complete)							0
Radiological Analysis	G		(Complete)							0
Data Validation	G		(Complete)							0
Characterization Reports	G		(Complete)							0
RFI/CMS	G		(Complete)							0
Safety Analysis Report	G		(Complete)							0
Sampling Plan	G		(Complete)							0
Pathways Analysis	G		(Complete)							0
Health and Safety Plan	G		(Complete)							0
Prepare NRC License	G		(Complete)							0
Amendment Application										
Revise Financial Assurance	G	I.s.	1		15,000					15,000
Cost Estimate										
CAMU/Permit Modification	G		(Complete)							0
Contractor Mobilization		I.s.	1		85,000					85,000
Construct Decon Area		s.y.	200		61					12,200
Temp. Stormwater Controls	A	I.s.	1		50,000					50,000



# Decommissioning Funding Plan Cost Estimate

	Revision Note #	Unit	Qty	Unit Cost	Site Manager @ \$85/hr	Rad Super @ \$70/hr	Rad Tech @ \$50/hr	Laborer @ \$35/hr	Total Cost \$
Frac Tanks		mo.	5	500					2,500
Construction Management	A	I.s.	1	25,000					25,000
<b>Activity Total</b>									<b>287,260</b>
<b>2.2 Decommissioning</b>									
Health, Safety & Radiation Monitoring					100	200	600		73,500
Construction Management		I.s.	1	75,000					75,000
Construction Engineering		I.s.	1	50,000					50,000
<b>Relocate Existing Utilities</b>	B	I.s.	1	100,000					100,000
Excavate SWMU 102 Soil	D	c.y.	29000	25					725,000
Construct Liner - Cell #3		(No Longer Required)							
Piping	H	I.f.	0	7.00					0
Stone	H	c.y.	0	17					0
Fabric	H	s.f.	0	0.50					0
100 mil HDPE	H	s.f.	0	0.85					0
Sumps	H	ea.	0	2,500					0
Alarm	H	ea.	0	2,000					0
Pump	H	ea.	0	1,000					0
Compacted Clay	H	c.y.	0	8.00					0
60 mil HDPE	H	s.f.	0	0.60					0
Fabric	H	s.f.	0	0.50					0
Geonet	H	s.f.	0	0.50					0
Type D Sand	H	c.y.	0	6.00					0
Anchor Trench	H	I.f.	0	65					0

# Decommissioning Funding Plan Cost Estimate

	Revision	Unit	Qty	Unit	Cost	Site	Rad	Rad	Rad	Laborer	Total
	Note #					Manager	Super	Tech			Cost
					\$	@ \$85/hr	@ \$70/hr	@ \$50/hr		@ \$35/hr	\$
Leachate Storage Tank		(No Longer Required)									
Tank & Foundation	H	l.s.	0		7,500						0
Pump	H	ea.	0		2,500						0
Filter	H	ea.	0		1,500						0
Piping	H	l.f.	0		45						0
Fittings	H	ea.	0		125						0
Instrumentation	H	ea.	0		400						0
Dredge Sludge to S/S Area	D	c.y.	0		40						0
Sludge Stabilization (S/S)	D	c.y.	0		87						0
Place Stabilized Sludge	D,H	c.y.	0		8.00						0
in Cell #3											
Transfer Soil to Cell #3	D,H	c.y.	29000		8.00				(Transfer Soil to Cell #2)		232,000
Construct Cap - Cell #3		(No Longer Required)									
Subgrade Preparation	H	c.y.	0		6.00						0
Compacted Clay	H	c.y.	0		8.00						0
60 mil HDPE	H	s.f.	0		0.60						0
Fabric	H	s.f.	0		0.50						0
Type D Sand	H	c.y.	0		20						0
Type Select Backfill	H	c.y.	0		6.00						0
Drain Pipe	H	l.f.	0		7.00						0
Topsoil	H	c.y.	0		5.00						0
Grading	H	c.y.	0		4.00						0
Seed & Mulch	H	acre	0		2,500						0
Interceptor Ditch - Cell #3	H	l.f.	0		10						0
Borrow Material Testing											
Density	H	day	0		150.0						0



# Decommissioning Funding Plan Cost Estimate

	Revision	Unit	Qty	Unit	Site Manager	Rad Super	Rad Tech	Laborer	Total Cost
	Note #				@ \$85/hr	@ \$70/hr	@ \$50/hr	@ \$35/hr	\$
Proctor	H	ea.	3	100.0					0
Sieve & Limits	H	ea.	0	75.0					0
Volatile Organics	H	ea.	0	300.0					0
TPH	H	ea.	0	75.0					0
Permeability Testing									
Field ASTM D 3385		ea.	7	450					3,150
Lab Permeability		ea.	10	400					4,000
<b>Activity Total</b>									<b>1,262,650</b>
<b>2.3 Package, Ship &amp; Dispose - Not Applicable</b>									
<b>2.4 Restoration</b>									
Backfill & Compact	D	c.y.	25000	10					250,000
<b>Activity Total</b>									<b>250,000</b>
<b>2.5 Final Rad Survey</b>									
Soil Sampling and Surveys					192	320	640		93,120
Stabilization Samples	D	ea.	0	1,200					0
Chemical Samples		ea.	200	1,000					200,000
Radiological Testing	D	ea.	750	130					97,500
Certification Report		l.s.	1	58,855					58,855
<b>Activity total</b>									<b>449,475</b>

# Decommissioning Funding Plan Cost Estimate

		Revision	Unit	Qty	Unit	Site	Rad	Rad	Rad	Laborer	Total
		Note #			Cost	Manager	Super	Tech			Cost
					\$	@ \$85/hr	@ \$70/hr	@ \$50/hr		@ \$35/hr	\$
3.0	CAT-21 DECON PROJECT										
3.1	Planning & Preparation										
	Safety Analysis Report	G		(Complete)							0
	Sampling Plan	G		(Complete)							0
	Pathway Analysis	G		(Complete)							0
	Health and Safety Plan	G		(Complete)							0
	Travel					32	32	96	0		9,760
	Train					40	40	80	0		10,200
	Contractor Mobilization		I.s.	1	85,000						85,000
	Construct Decon Area		s.y.	200	61						12,200
	Health, Safety and Radiation					40	40	80	80		13,000
	Monitoring										
	Radiological Survey	G		(Complete)							0
	Drilling and Soil Sampling	G		(Complete)							0
	Chemical Analysis	G		(Complete)							0
	Radiological Analysis	G		(Complete)							0
	Data Validation	G		(Complete)							0
	Characterization Reports	G		(Complete)							0
	Design Onsite Disposal Cell	G		(Complete)							0
	Prepare NRC License	G		(Complete)							0
	Amendment Application										
	Legal Support for Licensing	I	I.s.	1	25,000						25,000
	Revise Financial Assurance	I	I.s.	1	15,000						15,000
	Cost Estimate										
	BPCI Project Management		m.h.	2500	45						112,500

## Decommissioning Funding Plan Cost Estimate

	Revision Note #	Unit	Qty	Unit Cost	Site Manager @ \$85/hr	Rad Super @ \$70/hr	Rad Tech @ \$50/hr	Laborer	Total Cost
Construct Temporary Stormwater Controls	A	l.s.	1	50,000				@ \$35/hr	\$ 50,000
Frac Tanks		mo.	5	500					2,500
Construction Management	A	l.s.	1	25,000					25,000
<b>Activity Total</b>									<b>360,160</b>
<b>3.2 Decommissioning</b>									
Health, Safety & Radiation Monitoring					250	540	1080		150,850
Construction Management		l.s.	1	125,000					125,000
Construction Engineering		l.s.	1	70,000					70,000
Dismantle B-2 Reactor		l.s.	1	227,500					227,500
<b>Relocate Existing Utilities</b>		l.s.	1	<b>100,000</b>					<b>100,000</b>
Excavate AN-1 Soil		c.y.	10000	25					250,000
Empty & Crush Drums		ea.	1700	35					59,500
Construct Liner - Cell #4		(No Longer Required)							
Excavate Hole	H	c.y.	0	6.00					0
Piping	H	l.f.	0	7.00					0
Stone	H	c.y.	0	17					0
Fabric	H	s.f.	0	0.50					0
100 mil HDPE	H	s.f.	0	0.85					0
Sumps	H	ea.	0	2,500					0
Alarm	H	ea.	0	2,000					0
Pump	H	ea.	0	1,000					0
Compacted Clay	H	c.y.	0	8.00					0
60 mil HDPE	H	s.f.	0	0.60					0

# Decommissioning Funding Plan Cost Estimate

	Revision Note #	Unit	Qty	Unit Cost	Site Manager @ \$85/hr	Rad Super @ \$70/hr	Rad Tech @ \$50/hr	Laborer @ \$35/hr	Total Cost \$
Fabric	H	s.f.	0	0.50					0
Geonet	H	s.f.	0	0.50					0
Type D Sand	H	c.y.	0	6.00					0
Anchor Trench	H	l.f.	0	65					0
Leachate Storage Tank		(No Longer Required)							
Tank & Foundation	H	l.s.	0	25,000					0
Pump	H	ea.	0	2,500					0
Filter	H	ea.	0	1,500					0
Piping	H	l.f.	0	45					0
Fittings	H	ea.	0	125					0
Instrumentation	H	ea.	0	400					0
Transfer Wastes to Cell #4								(Transfer Wastes to Cell #2)	
Contaminated Soil	D	c.y.	10000	8.00					80,000
Drum Waste	A	ea.	1700	0.00				(Included in "Empty & Crush Drums")	0
Debris		c.y.	50	8					400
Construct Cap - Cell #4		(No Longer Required)							
Subgrade Preparation	H	c.y.	0	6.00					0
Compacted Clay	H	c.y.	0	8.00					0
60 mil HDPE	H	s.f.	0	0.60					0
Fabric	H	s.f.	0	0.50					0
Type D Sand	H	c.y.	0	20					0
Type Select Backfill	H	c.y.	0	6.00					0
Drain Pipe	H	l.f.	0	7.00					0
Topsoil	H	c.y.	0	5.00					0
Grading	H	c.y.	0	4.00					0
Seed & Mulch	H	acre	0	2,500					0

# Decommissioning Funding Plan Cost Estimate

	Revision Note #	Unit	Qty	Unit Cost	Site Manager @ \$85/hr	Rad Super @ \$70/hr	Rad Tech @ \$50/hr	Laborer @ \$35/hr	Total Cost \$
Interceptor Ditch - Cell #4	H	l.f.	0	10					0
Borrow Material Testing									
Density	H	day	0	150					0
Proctor	H	ea.	0	100					0
Sieve & Limits	H	ea.	0	75					0
Volatile Organics	H	ea.	0	300					0
TPH	H	ea.	0	75					0
Permeability Testing									
Field ASTM D 3385		ea.	6	450					2,700
Lab Permeability		ea.	8	400					3,200
<b>Activity Total</b>									<b>1,069,150</b>
<b>3.3 Package, Ship &amp; Dispose</b>									
LSA containers	D	ea.	0	300					0
B-2 Reactor		l.s.	1	172,800					172,800
Contaminated Soil	D	c.y.	0	1,350					0
<b>Activity Total</b>									<b>172,800</b>
<b>3.4 Restoration</b>									
Backfill & Compact		c.y.	8000	8.00					64,000
Stone & Gravel		c.y.	450	17.00					7,650
<b>Activity Total</b>									<b>71,650</b>
<b>3.5 Final Rad Survey</b>									
Soil sampling and surveys					150	300	500	500	76,250
Radiological testing		ea.	240	130					31,200

## Decommissioning Funding Plan Cost Estimate

		Revision	Unit	Qty	Unit	Site	Rad	Rad	Laborer	Total
		Note #			Cost	Manager	Super	Tech		Cost
					\$	@ \$85/hr	@ \$70/hr	@ \$50/hr	@ \$35/hr	\$
	Certification Report		I.s.	1	50,000					50,000
	Fees - NRC		m.h.	5000	133					665,000
	<b>Activity Total</b>									<b>822,450</b>
	<b>SUBTOTAL</b>									<b>13,698,112</b>
	<b>CONTINGENCY @ 25%</b>									<b>3,424,528</b>
	<b>GRAND TOTAL</b>									<b>17,122,640</b>

**TABLE II**

**REFERENCES & EXPLANATIONS**



## Decommissioning Funding Plan Cost Estimate

Ref Note #	Reference and Explanation
A	The unit cost for this item has been updated based on the contract pricing of the project general contractor, Severson Environmental Services, Inc.
B	This is an additional item of work identified since the previous submission of the Decommissioning Funding Plan Cost Estimate on September 18, 1995. The unit cost for this item is based on actual contract pricing provided by the general contractor or a revised cost estimate by the consulting engineer.
C	Revised quantities are based on the re-design and enlargement of Cell #2 as called out in the license amendment application submitted to NRC on August 2, 1996.
D	Revised Quantities are based on the Site Characterization Report submitted as a part of the license amendment application on August 2, 1996.
E	Revised quantities are based on bulking factors measured during laboratory scale stabilization testing of the sludges conducted in 1996 by Severson Environmental Services.
F	Revised quantities are based on the current estimate of contaminated soil underlying the mixed waste ponds and accounting for the portion of the Celite stockpile to be used for sludge stabilization.
G	This item has been completed since the previous submission of the Decommissioning Funding Plan Cost Estimate on September 18, 1995, and is therefore deleted from the current estimate.
H	This item has been deleted from the cost estimate as unnecessary because the enlargement of Cell #2.
I	The unit price for this item has been reduced because of work which has progressed on this item since the previous submission of the Decommissioning Funding Plan Cost Estimate on September 18, 1995.

**APPENDIX B**

**ANALYSIS OF  
LONG-TERM RADIOLOGICAL IMPACTS  
ON-SITE DISPOSAL**

# ANALYSIS OF LONG TERM RADIOLOGICAL IMPACTS ON-SITE DISPOSAL

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## 1.0 INTRODUCTION

Subsequent to the United States Nuclear Regulatory Commission (USNRC) approval of the RESRAD analysis performed for the Mixed Waste Pond Closure activities (License Amendment 9, May 8, 1996), Site Characterization (Appendix H) was performed in SWMU 102, SWMU 98, the AN-1 areas and the Drum Storage Area. Soil with depleted uranium contamination above the unrestricted release criteria (35 pCi/g) was discovered in SWMU 102 and the AN-1 areas with average concentrations of 128 pCi/g and 107 pCi/g, respectively.

This document presents the results of the pathway analysis (RESRAD Version 5.62) performed to determine potential long term radiological impacts from the addition of soils containing depleted uranium contamination from SWMU 102 and the AN-1 Area, into the Burn Pond Closure Cell.

## 2.0 OBJECTIVE

The objective of this analysis was to determine the potential long term radiological impacts from the addition of contaminated soil from SWMU 102 and the AN-1 Area into the Burn Pond Closure Cell.

## 3.0 DISCUSSION

The analysis was performed utilizing the previous (March 13, 1995 and revised Appendix A, June 4, 1995) RESRAD analysis performed for the Mixed Waste Pond Closure activities with minor modifications. The modifications are:

- 1). Changing the radioactivity input for soils from approximately 10 pCi/g total uranium (TU) to 128 pCi/g<sup>1</sup> TU based on soils characterization data from SWMU 102 (Appendix H)
- 2). Changing the contaminated zone thickness from 5.8 meters to 10 meters (approximate maximum design thickness) and
- 3). Changing the contaminated zone area from 6,687 m<sup>2</sup> to 8,000 m<sup>2</sup> (approximate maximum design)

<sup>1</sup> Assuming 128 pCi/g as the average depleted uranium concentration for the entire waste layer is an over-conservatism. Due to mixing of the soils from the different areas (settling ponds, SWMU 102 and the AN-1 areas) the actual average concentration and therefore the calculated dose will be less.

## ANALYSIS OF LONG TERM RADIOLOGICAL IMPACTS ON-SITE DISPOSAL

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### 4.0 RESULTS

The maximum exposure during the first 1,000 years is calculated to be 3.9 millirem per year, Table 1 (29.4 millirem per year without cover material, Table 2). This is assuming that no maintenance activities occur, the liner fails and the cover erodes at  $1.0 \times 10^{-3}$  m/yr. Summary output from the RESRAD program is provided in Attachment 1.

### 5.0 CONCLUSIONS

The results of the long term analysis from the addition of depleted uranium contaminated soils from SWMU 102 and the AN-1 areas into the Burn Pond Cell indicate that the total maximum anticipated dose is 3.9 millirem per year (29.4 millirem per year without cover), which is less than 100 mrem/yr limit established by the NRC for exposure to the general public. The results of the previous analysis performed for the Mixed Waste Pond Closure Project (License Amendment 9, May 8, 1996) for the Burn Pond Cell is 0.248 millirem per year (1.99 millirem per year without cover). Therefore, it has been determined that the potential radiological impacts are minimal as a result of the addition of contaminated soil from SWMU 102 and the AN-1 Area into the Burn Pond Closure Cell.

**TABLE 1**  
**Results of Residual Soils**  
**In The Burn Pond Closure Cell (With Cover)**  
**(mrem/year)**

WATER INDEPENDENT	YEARS AFTER CLOSURE					
	0	100	300	500	800	1000
Ground	4.51E-12	2.93E-11	1.27E-09	5.52E-08	1.54E-05	6.44E-04
Inhalation	0	0	0	0	0	0
Radon	0	7.36E-04	7.85E-03	2.58E-02	7.41E-02	1.25E-01
Plant	0	0	0	0	1.80E+00	3.72E+00
Meat	0	0	0	0	1.61E-02	3.56E-02
Milk	0	0	0	0	2.45E-02	5.03E-02
Soil	0	0	0	0	0	0
WATER DEPENDENT						
WATER	0	0	0	0	0	0
FISH	0	0	0	0	0	0
RADON	0	0	0	0	0	0
PLANT	0	0	0	0	0	0
MEAT	0	0	0	0	0	0
MILK	0	0	0	0	0	0
Total	4.51E-12	7.36E-04	7.85E-03	2.58E-02	1.92E+00	3.93E+00

**TABLE 2**  
**Results of Residual Soils**  
**In The Burn Pond Closure Cell (Without Cover)**  
**(mrem/year)**

WATER INDEPENDENT	YEARS AFTER CLOSURE					
	0	100	300	500	800	1000
Ground	7.45E+00	7.44E+00	7.46E+00	7.50E+00	7.62E+00	7.73E+00
Inhalation	1.39E+01	1.14E+01	1.14E+01	1.14E+01	1.14E+01	1.14E+01
Radon	0	1.87E-03	1.63E-02	4.39E-02	1.08E-01	1.63E-01
Plant	7.60E+00	7.62E+00	7.71E+00	7.84E+00	8.14E+00	8.39E+00
Meat	2.00E-01	2.04E-01	2.11E-01	2.20E-01	2.35E-01	2.47E-01
Milk	4.92E-01	4.91E-01	4.91E-01	4.91E-01	4.94E-01	4.97E-01
Soil	9.54E-01	9.54E-01	9.56E-01	9.59E-01	9.66E-01	9.71E-01
WATER DEPENDENT						
WATER	0	0	0	0	0	0
FISH	0	0	0	0	0	0
RADON	0	0	0	0	0	0
PLANT	0	0	0	0	0	0
MEAT	0	0	0	0	0	0
MILK	0	0	0	0	0	0
Total	2.81E+01	2.81E+01	2.82E+01	2.85E+01	2.90E+01	2.94E+01

## **ATTACHMENT 1**

### **SUMMARY REPORTS FOR RESRAD ANALYSIS OF BURN POND CLOSURE CELL (With and Without Cover)**



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Summary : BP, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

File : F102.DAT

## Dose Conversion Factor (and Related) Parameter Summary

File: DCSFAC.BIN

Menu *	Parameter	Current Value	Default	Parameter Name
*****				
B-1 *	Dose conversion factors for inhalation, mrem/pCi:			
B-1 *	Ac-227+D	6.720E+00	6.720E+00	DCF2( 1)
B-1 *	Pa-231	1.280E+00	1.280E+00	DCF2( 2)
B-1 *	Pb-210+D	2.320E-02	2.320E-02	DCF2( 3)
B-1 *	Ra-226+D	8.600E-03	8.600E-03	DCF2( 4)
B-1 *	Th-230	3.260E-01	3.260E-01	DCF2( 5)
B-1 *	U-234	1.320E-01	1.320E-01	DCF2( 6)
B-1 *	U-235+D	1.230E-01	1.230E-01	DCF2( 7)
B-1 *	U-238+D	1.180E-01	1.180E-01	DCF2( 8)
D-1 *	Dose conversion factors for ingestion, mrem/pCi:			
D-1 *	Ac-227+D	1.480E-02	1.480E-02	DCF3( 1)
D-1 *	Pa-231	1.060E-02	1.060E-02	DCF3( 2)
D-1 *	Pb-210+D	7.270E-03	7.270E-03	DCF3( 3)
D-1 *	Ra-226+D	1.330E-03	1.330E-03	DCF3( 4)
D-1 *	Th-230	5.480E-04	5.480E-04	DCF3( 5)
D-1 *	U-234	2.830E-04	2.830E-04	DCF3( 6)
D-1 *	U-235+D	2.670E-04	2.670E-04	DCF3( 7)
D-1 *	U-238+D	2.690E-04	2.690E-04	DCF3( 8)
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 *	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF( 2,1)
D-34 *	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF( 2,2)
D-34 *	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF( 2,3)
D-34 *				
D-34 *	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF( 3,1)
D-34 *	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF( 3,2)
D-34 *	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF( 3,3)
D-34 *				
D-34 *	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF( 4,1)
D-34 *	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF( 4,2)
D-34 *	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF( 4,3)
D-34 *				
D-34 *	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF( 5,1)
D-34 *	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF( 5,2)
D-34 *	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF( 5,3)
D-34 *				
D-34 *	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF( 6,1)
D-34 *	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF( 6,2)
D-34 *	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF( 6,3)
D-34 *				
D-34 *	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF( 7,1)
D-34 *	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF( 7,2)
D-34 *	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF( 7,3)
D-34 *				

Menu	Parameter	Current Value	Default	Parameter Name
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF( 8,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF( 8,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF( 8,3)
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	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC( 2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC( 2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC( 3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC( 3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC( 4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC( 4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC( 5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC( 5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC( 6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC( 6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC( 7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC( 7,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC( 8,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC( 8,2)

Summary : BP, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

File : F102.DAT

## Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	8.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.000E+01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	8.200E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	1.000E+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)	1.000E+02	3.000E+00	---	T( 3)
R011	Times for calculations (yr)	3.000E+02	1.000E+01	---	T( 4)
R011	Times for calculations (yr)	5.000E+02	3.000E+01	---	T( 5)
R011	Times for calculations (yr)	8.000E+02	1.000E+02	---	T( 6)
R011	Times for calculations (yr)	1.000E+03	3.000E+02	---	T( 7)
R011	Times for calculations (yr)	1.200E+03	1.000E+03	---	T( 8)
R011	Times for calculations (yr)	1.300E+03	0.000E+00	---	T( 9)
R011	Times for calculations (yr)	1.500E+03	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	3.580E+01	0.000E+00	---	S1( 6)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1( 7)
R012	Initial principal radionuclide (pCi/g): U-238	9.090E+01	0.000E+00	---	S1( 8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1( 6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1( 7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1( 8)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	2.030E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	2.030E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.200E-01	4.000E-01	---	TPCZ
R013	Contaminated zone effective porosity	6.000E-02	2.000E-01	---	EPCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.000E-02	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.040E+01	5.300E+00	---	BCZ
R013	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	1.000E-02	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	8.980E-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	6.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.200E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	6.000E-02	2.000E-01	---	EPSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.600E-01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	4.776E+01	1.000E+01	---	DWIBWT
R014	Model: Dispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	1.500E+02	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
*****					
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	2.030E+00	1.500E+00	---	DENS(1)
R015	Unsat. zone 1, total porosity	4.200E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	6.000E-02	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	1.040E+01	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.000E-02	1.000E+01	---	HCUZ(1)
*****					
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCC( 6)
R016	Unsat. zone 1 (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCU( 6,1)
R016	Saturated zone (cm**3/g)	5.000E+00	5.000E+01	---	DCNUCS( 6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.704E-05	ALEACH( 6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 6)
*****					
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCC( 7)
R016	Unsat. zone 1 (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCU( 7,1)
R016	Saturated zone (cm**3/g)	5.000E+00	5.000E+01	---	DCNUCS( 7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.704E-05	ALEACH( 7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 7)
*****					
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCC( 8)
R016	Unsat. zone 1 (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCU( 8,1)
R016	Saturated zone (cm**3/g)	5.000E+00	5.000E+01	---	DCNUCS( 8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.704E-05	ALEACH( 8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 8)
*****					
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.400E+03	2.000E+01	---	DCNUCC( 1)
R016	Unsat. zone 1 (cm**3/g)	2.400E+03	2.000E+01	---	DCNUCU( 1,1)
R016	Saturated zone (cm**3/g)	5.000E+00	2.000E+01	---	DCNUCS( 1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.136E-05	ALEACH( 1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 1)
*****					
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	2.700E+03	5.000E+01	---	DCNUCC( 2)
R016	Unsat. zone 1 (cm**3/g)	2.700E+03	5.000E+01	---	DCNUCU( 2,1)
R016	Saturated zone (cm**3/g)	5.000E+00	5.000E+01	---	DCNUCS( 2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.010E-05	ALEACH( 2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 2)
*****					
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC( 3)
R016	Unsat. zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU( 3,1)
R016	Saturated zone (cm**3/g)	5.000E+00	1.000E+02	---	DCNUCS( 3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.957E-05	ALEACH( 3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
*****					
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC( 4)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU( 4,1)
R016	Saturated zone (cm**3/g)	5.000E+00	7.000E+01	---	DCNUCS( 4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.997E-06	ALEACH( 4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCC( 5)
R016	Unsaturated zone 1 (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCU( 5,1)
R016	Saturated zone (cm**3/g)	5.000E+00	6.000E+04	---	DCNUCS( 5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.702E-06	ALEACH( 5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 5)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.000E-04	2.000E-04	---	MLINH
R017	Dilution length for airborne dust, inhalation (m)	3.000E+00	3.000E+00	---	LM
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	1 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)



Summary : BP, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

File : F102.DAT

## Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017 * Fractions of annular areas within AREA:					
R017 * Ring 1		not used	1.000E+00	---	FRACA( 1)
R017 * Ring 2		not used	2.732E-01	---	FRACA( 2)
R017 * Ring 3		not used	0.000E+00	---	FRACA( 3)
R017 * Ring 4		not used	0.000E+00	---	FRACA( 4)
R017 * Ring 5		not used	0.000E+00	---	FRACA( 5)
R017 * Ring 6		not used	0.000E+00	---	FRACA( 6)
R017 * Ring 7		not used	0.000E+00	---	FRACA( 7)
R017 * Ring 8		not used	0.000E+00	---	FRACA( 8)
R017 * Ring 9		not used	0.000E+00	---	FRACA( 9)
R017 * Ring 10		not used	0.000E+00	---	FRACA(10)
R017 * Ring 11		not used	0.000E+00	---	FRACA(11)
R017 * Ring 12		not used	0.000E+00	---	FRACA(12)
R018 * Fruits, vegetables and grain consumption (kg/yr)					
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		1.000E+00	1.000E+00	---	FHHW
R018 * Contamination fraction of livestock water		1.000E+00	1.000E+00	---	PLW
R018 * Contamination fraction of irrigation water		1.000E+00	1.000E+00	---	PIRW
R018 * Contamination fraction of aquatic food		5.000E-01	5.000E-01	---	FR9
R018 * Contamination fraction of plant food	-1	-1	0.500E+00	0.500E+00	FPLANT
R018 * Contamination fraction of meat	-1	-1	0.400E+00	0.400E+00	FMEAT
R018 * Contamination fraction of milk	-1	-1	0.400E+00	0.400E+00	FMILK
R019 * Livestock fodder intake for meat (kg/day)					
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	---	MLPD
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	---	PGWDW
R019 * Household water fraction from ground water		1.000E+00	1.000E+00	---	PGWHH
R019 * Livestock water fraction from ground water		1.000E+00	1.000E+00	---	PGWLW
R019 * Irrigation fraction from ground water		1.000E+00	1.000E+00	---	PGWIR
C14 * C-12 concentration in water (g/cm**3)					
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	---	CSCIL
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 (l/sec)		not used	7.000E-07	---	EVSIN



Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
#####					
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
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)	1.500E-01	1.500E-01	---	FLOOR
R021	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	4.000E-01	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	1.000E-01	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	1.000E-01	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	5.000E-02	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	2.000E-06	2.000E-06	---	DIFCV
R021	in foundation material	2.000E-08	3.000E-07	---	DIFFL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMIX
R021	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R021	Average building air exchange rate (1/hr)	1.000E+00	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	FAI
R021	Building depth below ground surface (m)	1.000E+00	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	2.000E-01	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
#####					

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	active
#####	

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area: 8000.00 square meters		U-234	3.580E+01
Thickness: 10.00 meters		U-235	1.000E+00
Cover Depth: 1.50 meters		U-238	9.090E+01

Total Dose TDOSE(t), mrem/yr										
Basic Radiation Dose Limit = 10 mrem/yr										
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)										
t (years):	0.000E+00	1.000E+00	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03	1.200E+03	1.300E+03	1.500E+03
TDOSE(t):	4.512E-12	6.759E-08	7.356E-04	7.852E-03	2.583E-02	1.919E+00	3.931E+00	6.129E+00	7.431E+00	3.081E+01
M(t):	4.512E-13	6.759E-09	7.356E-05	7.852E-04	2.583E-03	1.919E-01	3.931E-01	6.129E-01	7.431E-01	3.081E+00

Maximum TDOSE(t): 3.081E+01 mrem/yr at t = 1.500E+03 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

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.381E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.376E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.512E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.512E-12	1.0000	0.000E+00	0.0000	0.000E+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 = 0.000E+00 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.381E-28	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.376E-19	0.0000
U-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	4.512E-12	1.0000
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	4.512E-12	1.0000

\*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	4.671E-18	0.0000	0.000E+00	0.0000	6.759E-08	0.9999	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.455E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.596E-12	0.0001	0.000E+00	0.0000	1.610E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE
Total	4.596E-12	0.0001	0.000E+00	0.0000	6.759E-08	0.9999	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.759E-08	0.9999
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.455E-19	0.0000
U-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	4.757E-12	0.0001
EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE
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	6.759E-08	1.0000

\*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	2.439E-13	0.0000	0.000E+00	0.0000	7.356E-04	0.9998	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.094E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	2.909E-11	0.0000	0.000E+00	0.0000	1.771E-07	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.934E-11	0.0000	0.000E+00	0.0000	7.356E-04	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.355E-04	0.9998
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.094E-17	0.0000
U-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	1.771E-07	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	7.356E-04	1.0000

\*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA		AAAAA		AAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	6.187E-11	0.0000	0.000E+00	0.0000	7.846E-03	0.9993	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	4.046E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	1.210E-09	0.0000	0.000E+00	0.0000	5.707E-06	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE
Total	1.272E-09	0.0000	0.000E+00	0.0000	7.852E-03	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA		AAAAA		AAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.846E-03	0.9993
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.046E-15	0.0000
U-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	5.708E-06	0.0007
EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE	EEEEEE
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	7.852E-03	1.0000

\*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 5.000E+02 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.
U-234	4.846E-09	0.0000	0.000E+00	0.0000	2.580E-02	0.9988	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.796E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	5.032E-08	0.0000	0.000E+00	0.0000	3.148E-05	0.0012	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.516E-08	0.0000	0.000E+00	0.0000	2.583E-02	1.0000	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 = 5.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.580E-02	0.9988
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.796E-13	0.0000
U-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	3.153E-05	0.0012
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	2.583E-02	1.0000

\*Sum of all water independent and dependent pathways.



Summary : BP, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

File : F102.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 8.000E+02 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.
U-234	1.859E-06	0.0000	0.000E+00	0.0000	7.390E-02	0.0385	5.769E-01	0.3007	4.861E-03	0.0025	8.038E-03	0.0042	0.000E+00	0.0000
U-235	2.459E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.821E-02	0.0303	3.449E-03	0.0018	1.870E-04	0.0001	0.000E+00	0.0000
U-238	1.350E-05	0.0000	0.000E+00	0.0000	1.457E-04	0.0001	1.169E+00	0.6092	7.829E-03	0.0041	1.631E-02	0.0085	0.000E+00	0.0000
Total	1.536E-05	0.0000	0.000E+00	0.0000	7.405E-02	0.0386	1.804E+00	0.9402	1.614E-02	0.0084	2.454E-02	0.0128	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 = 8.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.637E-01	0.3459
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.185E-02	0.0322
U-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	1.193E+00	0.6218
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	1.919E+00	1.0000

\*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide														
U-234	8.198E-05	0.0000	0.000E+00	0.0000	1.244E-01	0.0317	1.249E+00	0.3178	1.142E-02	0.0029	1.739E-02	0.0044	0.000E+00	0.0000
U-235	5.145E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.388E-01	0.0353	8.539E-03	0.0022	3.775E-04	0.0001	0.000E+00	0.0000
U-238	5.612E-04	0.0001	0.000E+00	0.0000	3.087E-04	0.0001	2.331E+00	0.5931	1.562E-02	0.0040	3.254E-02	0.0083	0.000E+00	0.0000
Total	6.437E-04	0.0002	0.000E+00	0.0000	1.248E-01	0.0317	3.719E+00	0.9462	3.558E-02	0.0091	5.031E-02	0.0128	0.000E+00	0.0000

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

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide														
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.403E+00	0.3568
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.477E-01	0.0376
U-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	2.380E+00	0.6056
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.931E+00	1.0000

\*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
 As mrem/yr and Fraction of Total Dose At t = 1.200E+03 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide														
U-234	3.333E+03	0.0005	0.000E+00	0.0000	1.934E-01	0.0316	2.043E+00	0.3333	2.013E-02	0.0033	2.842E-02	0.0046	0.000E+00	0.0000
U-235	1.163E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.413E-01	0.0394	1.525E-02	0.0025	5.714E-04	0.0001	0.000E+00	0.0000
U-238	2.334E-02	0.0038	0.000E+00	0.0000	5.794E-04	0.0001	3.488E+00	0.5691	2.338E-02	0.0038	4.869E-02	0.0079	0.000E+00	0.0000
Total	2.679E-02	0.0044	0.000E+00	0.0000	1.940E-01	0.0317	5.772E+00	0.9417	5.875E-02	0.0096	7.768E-02	0.0127	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
 As mrem/yr and Fraction of Total Dose At t = 1.200E+03 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide														
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.268E+00	0.3733
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.573E-01	0.0420
U-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	3.584E+00	0.5847
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	6.129E+00	1.0000

\*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
 As mrem/yr and Fraction of Total Dose At t = 1.300E+03 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide														
U-234	2.079E-02	0.0028	0.000E+00	0.0000	2.361E-01	0.0318	2.492E+00	0.3353	2.541E-02	0.0034	3.466E-02	0.0047	0.000E+00	0.0000
U-235	1.798E-03	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	3.008E-01	0.0405	1.920E-02	0.0026	6.696E-04	0.0001	0.000E+00	0.0000
U-238	1.505E-01	0.0203	0.000E+00	0.0000	7.684E-04	0.0001	4.064E+00	0.5470	2.724E-02	0.0037	5.673E-02	0.0076	0.000E+00	0.0000
Total	1.731E-01	0.0233	0.000E+00	0.0000	2.368E-01	0.0319	6.857E+00	0.9228	7.185E-02	0.0097	9.206E-02	0.0124	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
 As mrem/yr and Fraction of Total Dose At t = 1.300E+03 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide														
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.809E+00	0.3780
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.224E-01	0.0434
U-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	4.299E+00	0.5786
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	7.431E+00	1.0000

\*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
 As mrem/yr and Fraction of Total Dose At t = 1.500E+03 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	7.991E-01	0.0259	3.470E+00	0.1125	3.409E-01	0.0111	3.514E+00	0.1141	9.166E-02	0.0030	1.656E-01	0.0054	3.048E-01	0.0099
U-235	4.570E-01	0.0148	2.637E-01	0.0086	0.000E+00	0.0000	4.363E-01	0.0142	5.008E-02	0.0016	3.944E-03	0.0001	2.815E-02	0.0009
U-238	6.838E+00	0.2219	7.685E+00	0.2494	1.288E-03	0.0000	5.227E+00	0.1697	1.380E-01	0.0045	3.379E-01	0.0110	6.555E-01	0.0213
Total	8.094E+00	0.2627	1.142E+01	0.3706	3.422E-01	0.0111	9.177E+00	0.2979	2.797E-01	0.0091	5.075E-01	0.0165	9.885E-01	0.0321

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
 As mrem/yr and Fraction of Total Dose At t = 1.500E+03 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.687E+00	0.2820
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.239E+00	0.0402
U-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	2.088E+01	0.6778
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.081E+01	1.0000

\*Sum of all water independent and dependent pathways.

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

Parent	Product	Branch	DSR(j,t) (mrem/yr)/(pCi/g)										
(i)	(j)	Fraction	t=	0.000E+00	1.000E+00	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03	1.200E+03	1.300E+03	1.500E+03
U-234	U-234	1.000E+00	3.859E-30	4.014E-30	1.977E-28	5.186E-25	1.361E-21	1.374E-02	2.737E-02	4.090E-02	4.762E-02	1.668E-01	
U-234	Th-230	1.000E+00	0.000E+00	1.092E-33	4.675E-30	2.771E-26	9.128E-23	7.545E-05	1.880E-04	3.372E-04	4.255E-04	3.990E-03	
U-234	Ra-226	1.000E+00	0.000E+00	1.888E-09	2.054E-05	2.192E-04	7.206E-04	3.249E-03	7.073E-03	1.304E-02	1.735E-02	4.882E-02	
U-234	Pb-210	1.000E+00	0.000E+00	4.120E-37	7.380E-30	1.15E-25	4.089E-22	1.475E-03	4.547E-03	9.641E-03	1.306E-02	2.301E-02	
U-234	ΔDSR(j)		3.859E-30	1.888E-09	2.054E-05	2.192E-04	7.206E-04	1.854E-02	3.918E-02	6.391E-02	7.846E-02	2.426E-01	
U-235	U-235	1.000E+00	2.376E-19	2.443E-19	3.905E-18	1.055E-15	2.853E-13	1.299E-02	2.590E-02	3.881E-02	4.661E-02	5.763E-01	
U-235	Pa-231	1.000E+00	0.000E+00	1.055E-21	1.083E-18	3.589E-16	6.609E-14	3.738E-02	9.300E-02	1.666E-01	2.101E-01	3.717E-01	
U-235	Ac-227	1.000E+00	0.000E+00	1.280E-22	5.951E-18	2.632E-15	5.282E-13	1.147E-02	2.876E-02	5.185E-02	6.573E-02	2.912E-01	
U-235	ΔDSR(j)		2.376E-19	2.455E-19	1.094E-17	4.046E-15	8.796E-13	6.185E-02	1.47E-01	2.573E-01	3.224E-01	1.239E+00	
U-238	U-238	1.000E+00	4.963E-14	5.057E-14	3.201E-13	1.331E-11	5.535E-10	1.309E-02	2.610E-02	3.926E-02	4.708E-02	2.289E-01	
U-238	U-234	1.000E+00	0.000E+00	1.138E-35	5.604E-32	4.413E-28	1.930E-24	3.120E-05	7.771E-05	1.394E-04	1.758E-04	7.109E-04	
U-238	Th-230	1.000E+00	0.000E+00	1.548E-39	6.627E-34	1.179E-29	6.469E-26	8.556E-08	2.665E-07	5.736E-07	7.840E-07	8.482E-06	
U-238	Ra-226	1.000E+00	0.000E+00	1.771E-15	1.948E-09	6.278E-08	3.463E-07	2.523E-06	6.910E-06	1.538E-05	2.224E-05	7.266E-05	
U-238	Pb-210	1.000E+00	0.000E+00	4.333E-42	5.866E-34	2.999E-29	1.853E-25	1.102E-06	4.305E-06	1.108E-05	1.634E-05	3.352E-05	
U-238	ΔDSR(j)		4.963E-14	5.234E-14	1.948E-09	6.279E-08	3.469E-07	1.313E-02	2.619E-02	3.943E-02	4.730E-02	2.297E-01	

Branch Fraction is the cumulative factor for the j'th principal radionuclide daughter: CUMBRF(j) = BRF(1)\*BRF(2)\* ... BRF(j).  
 The DSR includes contributions from associated (half-life  $\mu$  0.5 yr) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g  
 Basic Radiation Dose Limit = 10 mrem/yr

Nuclide	(i)	t=	0.000E+00	1.000E+00	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03	1.200E+03	1.300E+03	1.500E+03
U-234		*6.245E+09	5.297E+09	4.868E+05	4.563E+04	1.388E+04	5.394E+02	2.552E+02	1.565E+02	1.275E+02	4.121E+01	
U-235		*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	1.617E+02	6.772E+01	3.887E+01	3.102E+01	8.070E+00	
U-238		*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	7.619E+02	3.819E+02	2.536E+02	2.114E+02	4.353E+01	

\*At specific activity limit

Summed Dose/Source Ratios DER(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 = 1.500E+03 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	pCi/g	(years)		(pCi/g)		(pCi/g)
U-234	3.580E+01	1.500E+03	2.426E-01	4.121E+01	2.426E-01	4.121E+01
U-235	1.000E+00	1.500E+03	1.239E+00	8.070E+00	1.239E+00	8.070E+00
U-238	9.090E+01	1.500E+03	2.297E-01	4.353E+01	2.297E-01	4.353E+01

Summary : BP, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

File : F102.DAT

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

Nuclide	Parent	BRF(i)	DOSE(j,t), mrem/yr											
(j)	(i)		t=	0.000E+00	1.000E+00	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03	1.200E+03	1.300E+03	1.500E+03	
U-234	U-234	1.000E+00	1.381E-28	1.437E-28	7.076E-27	1.857E-23	4.872E-20	4.919E-01	9.799E-01	1.464E+00	1.705E+00	5.972E+00		
U-234	U-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	4.011E-26	1.755E-22	2.836E-03	7.064E-03	1.267E-02	1.598E-02	6.462E-02		
U-234	DOSE(j):		1.381E-28	1.437E-28	7.076E-27	1.861E-23	4.889E-20	4.948E-01	9.870E-01	1.477E+00	1.721E+00	6.037E+00		
Th-230	U-234	1.000E+00	0.000E+00	0.000E+00	1.674E-28	9.922E-25	3.268E-21	2.701E-03	6.730E-03	1.207E-02	1.523E-02	1.428E-01		
Th-230	U-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	1.071E-27	5.880E-24	7.777E-06	2.422E-05	5.214E-05	7.127E-05	7.710E-04		
Th-230	DOSE(j):		0.000E+00	0.000E+00	1.674E-28	9.933E-25	3.274E-21	2.709E-03	6.754E-03	1.212E-02	1.530E-02	1.436E-01		
Ra-226	U-234	1.000E+00	0.000E+00	6.759E-08	7.355E-04	7.846E-03	2.580E-02	1.163E-01	2.532E-01	4.667E-01	6.211E-01	1.748E+00		
Ra-226	U-238	1.000E+00	0.000E+00	1.610E-13	1.771E-07	5.707E-06	3.148E-05	2.294E-04	6.281E-04	1.398E-03	2.022E-03	6.605E-03		
Ra-226	DOSE(j):		0.000E+00	6.759E-08	7.356E-04	7.852E-03	2.583E-02	1.165E-01	2.538E-01	4.681E-01	6.231E-01	1.754E+00		
Pb-210	U-234	1.000E+00	0.000E+00	0.000E+00	2.642E-28	4.100E-24	1.464E-20	5.281E-02	1.628E-01	3.452E-01	4.677E-01	8.238E-01		
Pb-210	U-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	2.726E-27	1.684E-23	1.002E-04	3.914E-04	1.007E-03	1.485E-03	3.047E-03		
Pb-210	DOSE(j):		0.000E+00	0.000E+00	2.642E-28	4.103E-24	1.466E-20	5.291E-02	1.632E-01	3.462E-01	4.692E-01	8.268E-01		
U-235	U-235	1.000E+00	2.376E-19	2.443E-19	3.905E-18	1.055E-15	2.853E-13	1.299E-02	2.590E-02	3.881E-02	4.661E-02	5.763E-01		
Pa-231	U-235	1.000E+00	0.000E+00	1.055E-21	1.083E-18	3.589E-16	6.609E-14	3.738E-02	9.300E-02	1.666E-01	2.101E-01	3.717E-01		
Ac-227	U-235	1.000E+00	0.000E+00	1.280E-22	5.951E-18	2.632E-15	5.282E-13	1.147E-02	2.878E-02	5.185E-02	6.573E-02	2.912E-01		
U-238	U-238	1.000E+00	4.512E-12	4.596E-12	2.909E-11	1.210E-09	5.031E-08	1.170E+00	2.372E+00	3.569E+00	4.280E+00	2.081E+01		

BRF(i) is the branch fraction of the parent nuclide.



Summary : BP, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

File : F102.DAT

Individual Nuclide Soil Concentration  
Parent Nuclide and Branch Fraction Indicated

Nuclide Parent			S(j,t), pCi/g											
(j)	(i)	BRF(i)	t= 0.000E+00 1.000E+00 1.000E+02 3.000E+02 5.000E+02 8.000E+02 1.000E+03 1.200E+03 1.300E+03 1.500E+03											
U-234 U-234 1.000E+00			3.580E+01	3.580E+01	3.573E+01	3.559E+01	3.545E+01	3.524E+01	3.510E+01	3.496E+01	3.489E+01	3.475E+01		
U-234 U-238 1.000E+00			0.000E+00	2.577E-04	2.572E-02	7.688E-02	1.277E-01	2.031E-01	2.530E-01	3.025E-01	3.271E-01	3.760E-01		
U-234 OS(j):			3.580E+01	3.580E+01	3.575E+01	3.566E+01	3.557E+01	3.544E+01	3.535E+01	3.526E+01	3.521E+01	3.512E+01		
Th-230 U-234 1.000E+00			0.000E+00	3.223E-04	3.217E-02	9.619E-02	1.598E-01	2.544E-01	3.169E-01	3.790E-01	4.099E-01	4.714E-01		
Th-230 U-238 1.000E+00			0.000E+00	1.160E-09	1.158E-05	1.039E-04	2.875E-04	7.324E-04	1.340E-03	1.637E-03	1.918E-03	2.545E-03		
Th-230 OS(j):			0.000E+00	3.223E-04	3.218E-02	9.630E-02	1.601E-01	2.551E-01	3.180E-01	3.806E-01	4.112E-01	4.739E-01		
Ra-226 U-234 1.000E+00			0.000E+00	6.980E-08	6.872E-04	5.997E-03	1.616E-02	3.954E-02	5.997E-02	8.387E-02	9.702E-02	1.255E-01		
Ra-226 U-238 1.000E+00			0.000E+00	1.662E-13	1.655E-07	4.361E-06	1.972E-05	7.796E-05	1.488E-04	2.513E-04	3.158E-04	4.743E-04		
Ra-226 OS(j):			0.000E+00	6.980E-08	6.874E-04	6.001E-03	1.618E-02	3.961E-02	6.012E-02	8.413E-02	9.734E-02	1.260E-01		
Pb-210 U-234 1.000E+00			0.000E+00	7.176E-10	3.816E-04	4.861E-03	1.425E-02	3.659E-02	5.641E-02	7.973E-02	9.261E-02	1.206E-01		
Pb-210 U-238 1.000E+00			0.000E+00	1.916E-14	7.702E-08	3.232E-06	1.640E-05	6.942E-05	1.356E-04	2.325E-04	2.941E-04	4.460E-04		
Pb-210 OS(j):			0.000E+00	7.176E-10	3.817E-04	4.865E-03	1.427E-02	3.666E-02	5.654E-02	7.996E-02	9.290E-02	1.210E-01		
U-235 U-235 1.000E+00			1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.915E-01	9.865E-01	9.831E-01	9.798E-01	9.781E-01	9.748E-01		
Pa-231 U-235 1.000E+00			0.000E+00	2.116E-05	2.111E-03	6.302E-03	1.045E-02	1.660E-02	2.065E-02	2.467E-02	2.666E-02	3.061E-02		
Ac-227 U-235 1.000E+00			0.000E+00	3.332E-07	1.476E-03	5.644E-03	9.799E-03	1.596E-02	2.001E-02	2.403E-02	2.602E-02	2.998E-02		
U-238 U-238 1.000E+00			9.090E+01	9.090E+01	9.075E+01	9.044E+01	9.013E+01	8.967E+01	8.936E+01	8.906E+01	8.891E+01	8.861E+01		

BRF(i) is the branch fraction of the parent nuclide.

**BURN POND CLOSURE CELL**  
**(Without Cover)**

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Dose Conversion Factor (and Related) Parameter Summary  
File: DOSFAC.BIN

Menu	Parameter	Current Value	Default	Parameter Name
*****				
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.720E+00	6.720E+00	DCF2( 1)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2( 2)
B-1	Pb-210+D	2.320E-02	2.320E-02	DCF2( 3)
B-1	Ra-226+D	8.600E-03	8.600E-03	DCF2( 4)
B-1	Th-230	3.260E-01	3.260E-01	DCF2( 5)
B-1	U-234	1.320E-01	1.320E-01	DCF2( 6)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2( 7)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2( 8)
"				
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.480E-02	DCF3( 1)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3( 2)
D-1	Pb-210+D	7.270E-03	7.270E-03	DCF3( 3)
D-1	Ra-226+D	1.330E-03	1.330E-03	DCF3( 4)
D-1	Th-230	5.480E-04	5.480E-04	DCF3( 5)
D-1	U-234	2.830E-04	2.830E-04	DCF3( 6)
D-1	U-235+D	2.670E-04	2.670E-04	DCF3( 7)
D-1	U-238+D	2.690E-04	2.690E-04	DCF3( 8)
"				
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	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF( 2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF( 2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF( 2,3)
D-34	"			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF( 3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF( 3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF( 3,3)
D-34	"			
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF( 4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF( 4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF( 4,3)
D-34	"			
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF( 5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF( 5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF( 5,3)
D-34	"			
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF( 6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF( 6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF( 6,3)
D-34	"			
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF( 7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF( 7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF( 7,3)
D-34	"			

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

File: DOSFAC.BIN

Menu	Parameter	Current Value	Default	Parameter Name
*****				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTP( 8,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTP( 8,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTP( 8,3)
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	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC( 2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC( 2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC( 3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC( 3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC( 4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC( 4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC( 5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC( 5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC( 6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC( 6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC( 7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC( 7,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC( 8,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC( 8,2)
*****				

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
=====					
R011	Area of contaminated zone (m**2)	8.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.000E+01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	8.200E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	1.000E+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)	1.000E+03	3.000E+00	---	T( 3)
R011	Times for calculations (yr)	3.000E+02	1.000E+01	---	T( 4)
R011	Times for calculations (yr)	5.000E+02	3.000E+01	---	T( 5)
R011	Times for calculations (yr)	8.000E+02	1.000E+02	---	T( 6)
R011	Times for calculations (yr)	1.000E+03	3.000E+02	---	T( 7)
R011	Times for calculations (yr)	1.200E+03	1.000E+03	---	T( 8)
R011	Times for calculations (yr)	1.300E+03	0.000E+00	---	T( 9)
R011	Times for calculations (yr)	1.500E+03	0.000E+00	---	T(10)
=====					
R012	Initial principal radionuclide (pCi/g): U-234	3.580E+01	0.000E+00	---	S1( 6)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1( 7)
R012	Initial principal radionuclide (pCi/g): U-238	9.090E+01	0.000E+00	---	S1( 8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1( 6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1( 7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1( 8)
=====					
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)	2.030E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.200E-01	4.000E-01	---	TPCZ
R013	Contaminated zone effective porosity	6.000E-02	2.000E-01	---	EPCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.000E-02	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.040E+01	5.300E+00	---	BCZ
R013	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	1.000E-02	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	8.580E-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	6.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
=====					
R014	Density of saturated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.200E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	6.000E-02	2.000E-01	---	EPSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.600E-01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HQWT
R014	Saturated zone b parameter	5.300E+00	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)	4.776E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	1.500E+02	2.500E+02	---	UW



Summary : NC, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

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## Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	2.030E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.200E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	6.000E-02	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	1.040E+01	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.000E-02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCC( 6)
R016	Unsat. zone 1 (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCU( 6,1)
R016	Saturated zone (cm**3/g)	5.000E+00	5.000E+01	---	DCNUCS( 6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.704E-05	ALEACH( 6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCC( 7)
R016	Unsat. zone 1 (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCU( 7,1)
R016	Saturated zone (cm**3/g)	5.000E+00	5.000E+01	---	DCNUCS( 7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.704E-05	ALEACH( 7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCC( 8)
R016	Unsat. zone 1 (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCU( 8,1)
R016	Saturated zone (cm**3/g)	5.000E+00	5.000E+01	---	DCNUCS( 8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.704E-05	ALEACH( 8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.400E+03	2.000E+01	---	DCNUCC( 1)
R016	Unsat. zone 1 (cm**3/g)	2.400E+03	2.000E+01	---	DCNUCU( 1,1)
R016	Saturated zone (cm**3/g)	5.000E+00	2.000E+01	---	DCNUCS( 1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.136E-05	ALEACH( 1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	2.700E+03	5.000E+01	---	DCNUCC( 2)
R016	Unsat. zone 1 (cm**3/g)	2.700E+03	5.000E+01	---	DCNUCU( 2,1)
R016	Saturated zone (cm**3/g)	5.000E+00	5.000E+01	---	DCNUCS( 2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.010E-05	ALEACH( 2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 2)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC( 3)
R016	Unsat. zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU( 3,1)
R016	Saturated zone (cm**3/g)	5.000E+00	1.000E+02	---	DCNUCS( 3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.957E-05	ALEACH( 3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 3)

Summary : NC, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

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## Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
*****					
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC( 4)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU( 4,1)
R016	Saturated zone (cm**3/g)	5.000E+00	7.000E+01	---	DCNUCS( 4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.997E-06	ALEACH( 4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCC( 5)
R016	Unsaturated zone 1 (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCU( 5,1)
R016	Saturated zone (cm**3/g)	5.000E+00	6.000E+04	---	DCNUCS( 5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.702E-06	ALEACH( 5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 5)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.000E-04	2.000E-04	---	MLINH
R017	Dilution length for airborne dust, inhalation (m)	3.000E+00	3.000E+00	---	LM
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	1 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)

Summary : NC, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

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## Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
*****					
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA( 1)
R017	Ring 2	not used	2.732E-01	---	FRACA( 2)
R017	Ring 3	not used	0.000E+00	---	FRACA( 3)
R017	Ring 4	not used	0.000E+00	---	FRACA( 4)
R017	Ring 5	not used	0.000E+00	---	FRACA( 5)
R017	Ring 6	not used	0.000E+00	---	FRACA( 6)
R017	Ring 7	not used	0.000E+00	---	FRACA( 7)
R017	Ring 8	not used	0.000E+00	---	FRACA( 8)
R017	Ring 9	not used	0.000E+00	---	FRACA( 9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
*****					
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+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	---	PDW
R018	Contamination fraction of household water	1.000E+00	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	PLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIW
R018	Contamination fraction of aquatic food	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.400E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.400E+00	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	---	PGWDW
R019	Household water fraction from ground water	1.000E+00	1.000E+00	---	PGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	PGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	PGWIR
*****					
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
=====					
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
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)	1.500E-01	1.500E-01	---	FLOOR
R021	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	1.000E-01	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	5.000E-02	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	2.000E-08	3.000E-07	---	DIFFL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMIX
R021	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R021	Average building air exchange rate (1/hr)	1.000E+00	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	FAI
R021	Building depth below ground surface (m)	1.000E+00	-1.000E+00	---	DMPL
R021	Emanating power of Rn-222 gas	2.000E-01	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
=====					

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	active
=====	

Summary : NC, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
AAAAAAAAAAAAAAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAAAAAAAAAAAAAA	
Area:	8000.00 square meters	U-234	3.580E+01
Thickness:	10.00 meters	U-235	1.000E+00
Cover Depth:	0.00 meters	U-238	9.090E+01

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 10 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

AAAAAAAAAAAAAAAAAAAAAAAAAAAA

t (years):	0.000E+00	1.000E+00	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03	1.200E+03	1.300E+03	1.500E+03
TDOSE(t):	2.809E+01	2.809E+01	2.811E+01	2.823E+01	2.846E+01	2.897E+01	2.941E+01	2.992E+01	3.020E+01	3.081E+01
M(t):	2.809E+00	2.809E+00	2.811E+00	2.823E+00	2.846E+00	2.897E+00	2.941E+00	2.992E+00	3.020E+00	3.081E+00

Maximum TDOSE(t): 3.081E+01 mrem/yr at t = 1.500E+03 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

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	AAAAAA		AAAAAA		AAAAAA		AAAAAA		AAAAAA		AAAAAA		AAAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	8.332E-03	0.0003	3.457E+00	0.1231	0.000E+00	0.0000	2.210E+00	0.0787	5.832E-02	0.0021	1.430E-01	0.0051	2.773E-01	0.0099
U-235	4.305E-01	0.0153	8.997E-02	0.0032	0.000E+00	0.0000	5.823E-02	0.0021	1.537E-03	0.0001	3.767E-03	0.0001	7.309E-03	0.0003
U-238	7.012E+00	0.2496	7.846E+00	0.2793	0.000E+00	0.0000	5.333E+00	0.1899	1.408E-01	0.0050	3.450E-01	0.0123	6.694E-01	0.0238
Total	7.450E+00	0.2652	1.139E+01	0.4056	0.000E+00	0.0000	7.601E+00	0.2706	2.006E-01	0.0071	4.917E-01	0.0175	9.540E-01	0.0340

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

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	AAAAAA		AAAAAA		AAAAAA		AAAAAA		AAAAAA		AAAAAA		AAAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.153E+00	0.2191
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.913E-01	0.0210
U-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	2.135E+01	0.7599
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	2.809E+01	1.0000

\*Sum of all water independent and dependent pathways.



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

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	8.332E-03	0.0003	3.457E+00	0.1231	1.895E-07	0.0000	2.210E+00	0.0787	5.832E-02	0.0021	1.429E-01	0.0051	2.773E-01	0.0099
U-235	4.305E-01	0.0153	8.999E-02	0.0032	0.000E+00	0.0000	5.843E-02	0.0021	1.571E-03	0.0001	3.767E-03	0.0001	7.315E-03	0.0003
U-238	7.012E+00	0.2496	7.846E+00	0.2793	4.514E-13	0.0000	5.333E+00	0.1809	1.408E-01	0.0050	3.450E-01	0.0123	6.694E-01	0.0238
Total	7.450E+00	0.2652	1.139E+01	0.4056	1.895E-07	0.0000	7.601E+00	0.2706	4.307E-01	0.0071	4.917E-01	0.0175	9.540E-01	0.0340

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

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.153E+00	0.2191
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.915E-01	0.0211
U-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	2.135E+01	0.7599
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	2.809E+01	1.0000

\*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	1.267E-02	0.0005	3.457E-02	0.1230	1.866E-03	0.0001	2.212E+00	0.0787	5.837E-02	0.0021	1.428E-01	0.0051	2.774E-01	0.0099
U-235	4.316E-01	0.0154	9.905E-02	0.0035	0.000E+00	0.0000	8.240E-02	0.0029	4.882E-03	0.0002	3.776E-03	0.0001	8.507E-03	0.0003
U-238	7.000E+00	0.2490	7.835E+00	0.2788	4.494E-07	0.0000	5.325E+00	0.1895	1.406E-01	0.0050	3.445E-01	0.0123	6.684E-01	0.0238
Total	7.444E+00	0.2648	1.139E+01	0.4053	1.867E-03	0.0001	7.620E+00	0.2711	2.038E-01	0.0073	4.911E-01	0.0175	9.543E-01	0.0340

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

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.163E+00	0.2193
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.302E-01	0.0224
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.3000	0.000E+00	0.0000	0.000E+00	0.0000	2.131E+01	0.7583
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	2.811E+01	1.0000

\*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	4.612E-02	0.0016	3.459E+00	0.1225	1.629E-02	0.0006	2.260E+00	0.0800	5.955E-02	0.0021	1.433E-01	0.0051	2.783E-01	0.0099
U-235	4.354E-01	0.0154	1.232E-01	0.0044	0.000E+00	0.0000	1.344E-01	0.0048	1.153E-02	0.0004	3.800E-03	0.0001	1.139E-02	0.0004
U-238	6.976E+00	0.2471	7.813E+00	0.2768	1.184E-05	0.0000	5.311E+00	0.1881	1.402E-01	0.0050	3.436E-01	0.0122	6.666E-01	0.0236
Total	7.457E+00	0.2641	1.140E+01	0.4036	1.630E-02	0.0006	7.705E+00	0.2729	2.113E-01	0.0075	4.907E-01	0.0174	9.563E-01	0.0339

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

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.263E+00	0.2218
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.196E-01	0.0255
U-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	2.125E+01	0.7527
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	2.823E+01	1.0000

\*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 5.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	1.101E-01	0.0039	3.461E+00	0.1216	4.388E-02	0.0015	2.361E+00	0.0830	6.212E-02	0.0022	1.449E-01	0.0051	2.804E-01	0.0099
U-235	4.391E-01	0.0154	1.472E-01	0.0052	0.000E+00	0.0000	1.859E-01	0.0065	1.811E-02	0.0006	3.825E-03	0.0001	1.425E-02	0.0005
U-238	6.952E+00	0.2443	7.792E+00	0.2738	5.351E-05	0.0000	5.296E+00	0.1861	1.398E-01	0.0049	3.426E-01	0.0120	6.647E-01	0.0234
Total	7.502E+00	0.2636	1.140E+01	0.4006	4.373E-02	0.0015	7.843E+00	0.2756	2.200E-01	0.0077	4.913E-01	0.0173	9.594E-01	0.0337

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 5.000E+02 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.463E+00	0.2271
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.084E-01	0.0284
U-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	2.119E+01	0.7445
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	2.846E+01	1.0000

\*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 8.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide														
U-234	2.574E-01	0.0089	3.464E+00	0.1196	1.074E-01	0.0037	2.602E+00	0.0898	6.629E-02	0.0024	1.490E-01	0.0051	2.855E-01	0.0099
U-235	4.446E-01	0.0153	1.827E-01	0.0063	0.000E+00	0.0000	2.624E-01	0.0091	2.787E-02	0.0010	3.862E-03	0.0001	1.849E-02	0.0006
U-238	6.917E+00	0.2388	7.759E+00	0.2679	2.117E-04	0.0000	5.274E+00	0.1821	1.392E-01	0.0048	3.412E-01	0.0118	6.619E-01	0.0229
Total	7.619E+00	0.2630	1.141E+01	0.3938	1.076E-01	0.0037	8.139E+00	0.2810	2.354E-01	0.0081	4.941E-01	0.0171	9.659E-01	0.0333

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 8.000E+02 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide														
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.934E+00	0.2394
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.399E-01	0.0324
U-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	2.109E+01	0.7282
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	2.897E+01	1.0000

\*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide														
U-234	3.862E-01	0.0131	3.465E+00	0.1178	1.629E-01	0.0055	2.817E+00	0.0958	7.379E-02	0.0025	1.529E-01	0.0052	2.901E-01	0.0099
U-235	4.482E-01	0.0152	2.062E-01	0.0070	0.000E+00	0.0000	3.127E-01	0.0106	3.429E-02	0.0012	3.886E-03	0.0001	2.129E-02	0.0007
U-238	6.894E+00	0.2344	7.738E+00	0.2631	4.040E-04	0.0000	5.260E+00	0.1789	1.388E-01	0.0047	3.402E-01	0.0116	6.601E-01	0.0224
Total	7.729E+00	0.2628	1.141E+01	0.3880	1.633E-01	0.0056	8.390E+00	0.2853	2.469E-01	0.0084	4.970E-01	0.0169	9.714E-01	0.0330

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

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
Nuclide														
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.349E+00	0.2499
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.026E+00	0.0349
U-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	2.103E+01	0.7152
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	2.941E+01	1.0000

\*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 1.200E+03 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	5.368E-01	0.0179	3.467E+00	0.1159	2.278E-01	0.0076	3.070E+00	0.1026	8.027E-02	0.0027	1.575E-01	0.0053	2.954E-01	0.0099
U-235	4.517E-01	0.0151	2.294E-01	0.0077	0.000E+00	0.0000	3.625E-01	0.0121	4.066E-02	0.0014	3.909E-03	0.0001	2.405E-02	0.0008
U-238	6.871E+00	0.2297	7.717E+00	0.2579	6.823E-04	0.0000	5.246E+00	0.1754	1.385E-01	0.0046	3.393E-01	0.0113	6.582E-01	0.0220
Total	7.860E+00	0.2627	1.141E+01	0.3815	2.285E-01	0.0076	8.679E+00	0.2901	2.594E-01	0.0087	5.007E-01	0.0167	9.777E-01	0.0327

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 1.200E+03 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.		mrem/yr fract.	
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.836E+00	0.2619
U-235	0.000E+00	0.0000	0.000E+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+00	0.0372
U-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	2.097E+01	0.7009
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	2.992E+01	1.0000

\*Sum of all water independent and dependent pathways.



Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 1.300E+03 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr		mrem/yr		mrem/yr		mrem/yr		mrem/yr		mrem/yr		mrem/yr	
Nuclide	fract.		fract.		fract.		fract.		fract.		fract.		fract.	
U-234	6.196E-01	0.0205	3.468E+00	0.1148	2.635E-01	0.0087	3.210E+00	0.1063	8.386E-02	0.0028	1.600E-01	0.0053	2.984E-01	0.0099
U-235	4.535E-01	0.0150	2.409E-01	0.0080	0.000E+00	0.0000	3.872E-01	0.0128	4.381E-02	0.0015	3.921E-03	0.0001	2.543E-02	0.0008
U-238	6.860E+00	0.2272	7.706E+00	0.2552	8.577E-04	0.0000	5.240E+00	0.1735	1.383E-01	0.0046	3.388E-01	0.0112	6.573E-01	0.0211
Total	7.933E+00	0.2627	1.142E+01	0.3780	2.643E-01	0.0088	8.837E+00	0.2926	2.660E-01	0.0088	5.028E-01	0.0166	9.812E-01	0.0125

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 1.300E+03 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr		mrem/yr		mrem/yr		mrem/yr		mrem/yr		mrem/yr		mrem/yr	
Nuclide	fract.		fract.		fract.		fract.		fract.		fract.		fract.	
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.104E+00	0.2683
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.155E+00	0.0382
U-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	2.094E+01	0.6934
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.020E+01	1.0000

\*Sum of all water independent and dependent pathways.

Summary : NC, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

File : F102NC.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 1.500E+03 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.
U-234	7.991E-01	0.0259	3.470E+00	0.1126	3.408E-01	0.0111	3.514E+00	0.1141	9.166E-02	0.0030	1.656E-01	0.0054	3.048E-01	0.0099
U-235	4.570E-01	0.0148	2.637E-01	0.0086	0.000E+00	0.0000	4.363E-01	0.0142	5.008E-02	0.0016	3.944E-03	0.0001	2.815E-02	0.0009
U-238	6.838E+00	0.2219	7.685E+00	0.2494	1.288E-03	0.0000	5.227E+00	0.1697	1.380E-01	0.0045	3.379E-01	0.0110	6.555E-01	0.0213
Total	8.094E+00	0.2627	1.142E+01	0.3706	3.421E-01	0.0111	9.177E+00	0.2979	2.797E-01	0.0091	5.075E-01	0.0165	9.885E-01	0.0321

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)  
As mrem/yr and Fraction of Total Dose At t = 1.500E+03 years

## Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.687E+00	0.2820
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.239E+00	0.0402
U-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	2.088E+01	0.6778
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.081E+01	1.0000

\*Sum of all water independent and dependent pathways.

Summary : NC, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

File : F102NC.DAT

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

Parent (i)	Product (j)	Branch Fraction	t=	0.000E+00	1.000E+00	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03	1.200E+03	1.300E+03	1.500E+03
U-234	U-234	1.000E+00	1.719E-01	1.719E-01	1.715E-01	1.709E-01	1.702E-01	1.692E-01	1.685E-01	1.678E-01	1.675E-01	1.668E-01	
U-234	Th-230	1.000E+00	0.000E+00	2.768E-06	2.723E-04	8.142E-04	1.352E-03	2.153E-03	2.682E-03	3.208E-03	3.469E-03	3.990E-03	
U-234	Ra-226	1.000E+00	0.000E+00	2.717E-08	2.673E-04	2.332E-03	6.284E-03	1.538E-02	2.333E-02	3.262E-02	3.773E-02	4.882E-02	
U-234	Pb-210	1.000E+00	0.000E+00	1.971E-10	7.307E-05	9.284E-04	2.721E-03	6.984E-03	1.076E-02	1.521E-02	1.767E-02	2.301E-02	
U-234	DSR(j)		1.719E-01	1.719E-01	1.721E-01	1.749E-01	1.805E-01	1.937E-01	2.053E-01	2.189E-01	2.264E-01	2.426E-01	
U-235	U-235	1.000E+00	5.913E-01	5.913E-01	5.903E-01	5.883E-01	5.863E-01	5.833E-01	5.813E-01	5.793E-01	5.783E-01	5.763E-01	
U-235	Pa-231	1.000E+00	0.000E+00	2.593E-04	2.563E-02	7.653E-02	1.269E-01	2.016E-01	2.508E-01	2.995E-01	3.237E-01	3.717E-01	
U-235	Ac-227	1.000E+00	0.000E+00	3.540E-06	1.434E-02	5.482E-02	9.518E-02	1.550E-01	1.944E-01	2.334E-01	2.527E-01	2.912E-01	
U-235	DSR(j)		5.913E-01	5.915E-01	6.302E-01	7.196E-01	8.084E-01	9.399E-01	1.026E+00	1.112E+00	1.155E+00	1.239E+00	
U-238	U-238	1.000E+00	2.348E-01	2.348E-01	2.344E-01	2.336E-01	2.328E-01	2.316E-01	2.309E-01	2.301E-01	2.297E-01	2.289E-01	
U-238	U-234	1.000E+00	0.000E+00	4.942E-07	4.864E-05	1.454E-04	2.414E-04	3.841E-04	4.784E-04	5.719E-04	6.184E-04	7.109E-04	
U-238	Th-230	1.000E+00	0.000E+00	3.982E-12	3.861E-08	3.462E-07	9.585E-07	2.441E-06	3.802E-06	5.456E-06	6.392E-06	8.482E-06	
U-238	Ra-226	1.000E+00	0.000E+00	2.549E-14	2.535E-08	6.681E-07	3.020E-06	1.194E-05	2.279E-05	3.849E-05	4.838E-05	7.266E-05	
U-238	Pb-210	1.000E+00	0.000E+00	1.490E-15	5.817E-09	2.432E-07	1.233E-06	5.218E-06	1.019E-05	1.748E-05	2.210E-05	3.352E-05	
U-238	DSR(j)		2.348E-01	2.348E-01	2.345E-01	2.338E-01	2.331E-01	2.320E-01	2.314E-01	2.307E-01	2.304E-01	2.297E-01	

Branch Fraction is the cumulative factor for the j'th principal radionuclide daughter: CUMBRF(j) = BRP(1)\*BRP(2)\* ... BRP(j).

The DSR includes contributions from associated (half-life  $\mu$  0.5 yr) daughters.

## Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 10 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03	1.200E+03	1.300E+03	1.500E+03
U-234	5.818E+01	5.818E+01	5.809E+01	5.717E+01	5.539E+01	5.163E+01	4.872E+01	4.569E+01	4.418E+01	4.121E+01	4.121E+01
U-235	1.691E+01	1.691E+01	1.587E+01	1.390E+01	1.237E+01	1.064E+01	9.742E+00	8.991E+00	8.660E+00	8.070E+00	8.070E+00
U-238	4.258E+01	4.259E+01	4.265E+01	4.278E+01	4.290E+01	4.309E+01	4.322E+01	4.335E+01	4.341E+01	4.353E+01	4.353E+01

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 = 1.500E+03 years

Nuclide (i)	Initial pCi/g	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
U-234	3.580E+01	1.500E+03	2.426E-01	4.121E+01	2.426E-01	4.121E+01
U-235	1.000E+00	1.500E+03	1.239E+00	8.070E+00	1.239E+00	8.070E+00
U-238	9.090E+01	0.000E+00	2.348E-01	4.258E+01	2.297E-01	4.353E+01

Summary : NC, BURN POND CELL, RESIDUAL SOILS (SWMU-102 AND AN-1) 10m THICK

File : F102NC.DAT

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

Nuclide Parent		BRF(i)	DOSE(j,t), mrem/yr											
{j}	{i}		t=	0.000E+00	1.000E+00	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03	1.200E+03	1.300E+03	1.500E+03	
U-234	U-234	1.000E+00	6.153E+00	6.153E+00	6.141E+00	6.117E+00	6.092E+00	6.056E+00	6.032E+00	6.008E+00	5.996E+00	5.972E+00	5.972E+00	
U-234	U-238	1.000E+00	0.000E+00	4.492E-05	4.422E-03	1.321E-02	2.194E-02	3.492E-02	4.348E-02	5.199E-02	5.622E-02	6.462E-02	6.462E-02	
U-234	DOSE(j):		6.153E+00	6.153E+00	6.145E+00	6.130E+00	6.114E+00	6.091E+00	6.076E+00	6.060E+00	6.052E+00	6.037E+00	6.037E+00	
Th-230	U-234	1.000E+00	0.000E+00	9.908E-05	9.750E-03	2.915E-02	4.842E-02	7.708E-02	9.602E-02	1.148E-01	1.242E-01	1.428E-01	1.428E-01	
Th-230	U-238	1.000E+00	0.000E+00	3.620E-10	3.510E-06	3.147E-05	8.713E-05	2.219E-04	3.456E-04	4.960E-04	5.811E-04	7.710E-04	7.710E-04	
Th-230	DOSE(j):		0.000E+00	9.908E-05	9.753E-03	2.918E-02	4.850E-02	7.730E-02	9.637E-02	1.153E-01	1.248E-01	1.436E-01	1.436E-01	
Ra-226	U-234	1.000E+00	0.000E+00	9.725E-07	9.569E-03	8.350E-02	2.250E-01	5.505E-01	8.351E-01	1.168E+00	1.351E+00	1.748E+00	1.748E+00	
Ra-226	U-238	1.000E+00	0.000E+00	2.317E-12	2.304E-06	6.073E-05	2.745E-04	1.086E-03	2.072E-03	3.498E-03	4.398E-03	6.605E-03	6.605E-03	
Ra-226	DOSE(j):		0.000E+00	9.725E-07	9.572E-03	8.356E-02	2.252E-01	5.516E-01	8.371E-01	1.171E+00	1.355E+00	1.754E+00	1.754E+00	
Pb-210	U-234	1.000E+00	0.000E+00	7.055E-09	2.616E-03	3.324E-02	9.740E-02	2.500E-01	3.853E-01	5.447E-01	6.326E-01	8.238E-01	8.238E-01	
Pb-210	U-238	1.000E+00	0.000E+00	1.355E-13	5.288E-07	2.211E-05	1.121E-04	4.744E-04	9.263E-04	1.589E-03	2.009E-03	3.047E-03	3.047E-03	
Pb-210	DOSE(j):		0.000E+00	7.055E-09	2.616E-03	3.326E-02	9.751E-02	2.505E-01	3.863E-01	5.463E-01	6.346E-01	8.268E-01	8.268E-01	
U-235	U-235	1.000E+00	5.913E-01	5.913E-01	5.903E-01	5.883E-01	5.863E-01	5.833E-01	5.813E-01	5.793E-01	5.783E-01	5.763E-01	5.763E-01	
Pa-231	U-235	1.000E+00	0.000E+00	2.593E-04	2.563E-02	7.653E-02	1.268E-01	2.016E-01	2.508E-01	2.995E-01	3.237E-01	3.717E-01	3.717E-01	
Ac-227	U-235	1.000E+00	0.000E+00	3.540E-06	1.434E-02	5.482E-02	9.518E-02	1.550E-01	1.944E-01	2.334E-01	2.527E-01	2.912E-01	2.912E-01	
U-238	U-238	1.000E+00	2.135E+01	2.135E+01	2.131E+01	2.124E+01	2.116E+01	2.106E+01	2.098E+01	2.091E+01	2.088E+01	2.081E+01	2.081E+01	

BRF(i) is the branch fraction of the parent nuclide.

Individual Nuclide Soil Concentration  
Parent Nuclide and Branch Fraction Indicated

Nuclide Parent		BRF(i)	S(j,t), pCi/g											
(j)	(i)		t= 0.000E+00 1.000E+00 1.000E+02 3.000E+02 5.000E+02 8.000E+02 1.000E+03 1.200E+03 1.300E+03 1.500E+03											
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U-234	U-238	1.000E+00	3.580E+01	3.580E+01	3.573E+01	3.559E+01	3.545E+01	3.524E+01	3.510E+01	3.496E+01	3.489E+01	3.475E+01	3.475E+01	3.475E+01
U-234	U-235	1.000E+00	0.000E+00	2.577E-04	2.572E-02	7.688E-02	1.277E-01	2.031E-01	2.530E-01	3.025E-01	3.271E-01	3.760E-01	3.760E-01	3.760E-01
U-234	CS (5)		3.580E+01	3.580E+01	3.575E+01	3.566E+01	3.557E+01	3.544E+01	3.535E+01	3.526E+01	3.521E+01	3.512E+01	3.512E+01	3.512E+01
Th-230	U-234	1.000E+00	0.000E+00	3.223E-04	3.217E-02	9.619E-02	1.598E-01	2.544E-01	3.169E-01	3.790E-01	4.099E-01	4.710E-01	4.710E-01	4.710E-01
Th-230	U-238	1.000E+00	0.000E+00	1.160E-09	1.158E-05	1.039E-04	2.875E-04	7.324E-04	1.140E-03	1.637E-03	1.918E-03	2.545E-03	2.545E-03	2.545E-03
Th-230	CS (5)		0.000E+00	3.223E-04	3.218E-02	9.630E-02	1.601E-01	2.551E-01	3.180E-01	3.806E-01	4.118E-01	4.739E-01	4.739E-01	4.739E-01
Ra-226	U-234	1.000E+00	0.000E+00	6.980E-08	6.872E-04	5.997E-03	1.616E-02	3.954E-02	5.997E-02	8.387E-02	1.702E-02	1.255E-01	1.255E-01	1.255E-01
Ra-226	U-238	1.000E+00	0.000E+00	1.662E-13	1.655E-07	4.361E-06	1.972E-05	7.796E-05	1.488E-04	2.513E-04	3.158E-04	4.743E-04	4.743E-04	4.743E-04
Ra-226	CS (5)		0.000E+00	6.980E-08	6.874E-04	6.001E-03	1.618E-02	3.961E-02	6.012E-02	8.413E-02	9.734E-02	1.260E-01	1.260E-01	1.260E-01
Pb-210	U-234	1.000E+00	0.000E+00	7.176E-10	3.816E-04	4.861E-03	1.425E-02	3.659E-02	5.641E-02	7.973E-02	9.261E-02	1.206E-01	1.206E-01	1.206E-01
Pb-210	U-238	1.000E+00	0.000E+00	1.916E-14	7.702E-08	3.232E-06	1.640E-05	6.942E-05	1.356E-04	2.325E-04	2.941E-04	4.460E-04	4.460E-04	4.460E-04
Pb-210	CS (5)		0.000E+00	7.176E-10	3.817E-04	4.865E-03	1.427E-02	3.666E-02	5.654E-02	7.996E-02	9.290E-02	1.210E-01	1.210E-01	1.210E-01
U-235	U-235	1.000E+00	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.915E-01	9.865E-01	9.831E-01	9.798E-01	9.781E-01	9.748E-01	9.748E-01	9.748E-01
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-03	2.111E-03	6.302E-03	1.045E-02	1.660E-02	2.065E-02	2.467E-02	2.666E-02	3.061E-02	3.061E-02	3.061E-02
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	1.476E-03	5.644E-03	9.799E-03	1.596E-02	2.001E-02	2.403E-02	2.602E-02	2.998E-02	2.998E-02	2.998E-02
U-238	U-238	1.000E+00	9.090E+01	9.090E+01	9.075E+01	9.044E+01	9.013E+01	8.967E+01	8.936E+01	8.906E+01	8.891E+01	8.861E+01	8.861E+01	8.861E+01
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BRF(i) is the branch fraction of the parent nuclide.														

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