APPENDIX B

RADIOLOGICAL DOSE AND RISK ASSESSMENT

Appendix B is an electronic appendix found on CD.

Table B-1: Default Values Related to RESRAD Input Parameters for Various Receptors

Menu	Parameter	User Input	Default Value	Parameter Name	Data Source
R011	Area of contaminated zone (m**2)	1.00E+04	1.00E+04	AREA	
R011	Thickness of contaminated zone (m)	2.0 (All Depth Soil) 0.15 m (Surface Soil)	2.00E+00	THICK0	
R011	Length parallel to aquifer flow (m)	not used	1.00E+02	LCZPAQ	No groundwater pathway
R011	Basic radiation dose limit (mrem/yr)	2.50E+01	2.50E+01	BRDL	
R011	Time since placement of material (yr)	0.000E+00	0.00E+00	TI	
R012	Initial principal radionuclide (pCi/g):U-234	1.000E+00	0.00E+00	S1(6)	
R012	Initial principal radionuclide (pCi/g):U-235	1.000E+00	0.00E+00	S1(7)	
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.00E+00	S1(8)	
R012	Concentration in groundwater (pCi/L): U-234	not used	0.00E+00	W1(6)	
R012	Concentration in groundwater (pCi/L): U-235	not used	0.00E+00	W1(7)	
R012	Concentration in groundwater (pCi/L): U-238	not used	0.00E+00	W1(8)	
R013	Cover Depth (m)	0.000E+00	0.00E+00	COVER0	No cover is assumed
R013	Density of cover material (g/cm**3)	not used	1.50E+00	DENSCV	No cover is assumed
R013	Cover erosion rate (m/y)	not used	1.00E-03	VCV	No cover is assumed
R013	Density of contaminated zone (g/cm**3)	1.500E+00	1.50E+00	DENSCZ	
R013	Contaminated zone erosion rate (m/y)	1.00E-03	1.00E-03	VCZ	
R013	Contaminated zone total porosity	4.000E-01	4.00E-01	TPCZ	
R013	Contaminated zone field capacity	2.000E-01	2.00E-01	FCCZ	
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.00E+01	HCCZ	
R013	Contaminated zone b parameter	5.300E+00	5.30E+00	BCZ	
R013	Average annual wind speed (m/sec)	2.000E+00	2.00E+00	WIND	
R013	Humidity in air (g/m**3)	not used	8.00E+00	HUMID	No C-14 radionuclide involved
R013	Evapotranspiration coefficient	5.000E-01	5.00E-01	EVAPTR	
R013	Precipitation (m/yr)	1.00E+00	1.00E+00	PRECIP	
R013	Irrigation (m/yr)	2.000E-01	2.00E-01	RI	
R013	Irrigation mode	Overhead	Overhead	IDITCH	Common mode of irrigation
R013	Runoff coefficient	2.000E-01	2.00E-01	RUNOFF	
R013	Watershed area for nearby stream or pond (m**2)	not used	1.00E+06	WAREA	No groundwater pathways
R013	Accuracy for water/soil computations	not used	1.00E-03	EPS	No groundwater pathways
R014	Density of saturated zone (g/cm**3)	not used	1.50E+00	DENSAQ	
R014	Saturated zone total porosity	not used	4.00E-01	TPSZ	
R014	Saturated zone effective porosity	not used	2.00E-01	EPSZ	

Menu	Parameter	User Input	Default Value	Parameter Name	Data Source
R014	Saturated zone field capacity	not used	2.00E-01	FCSZ	
R014	Saturated zone hydraulic conductivity (m/yr)	not used	1.00E+02	HCSZ	
R014	Saturated zone hydraulic gradient	not used	2.00E-02	HGWT	
R014	Saturated zone b parameter	not used	5.30E+00	BSZ	
R014	Water table drop rate (m/yr)	not used	1.00E-03	VWT	
R014	Well pump intake depth (m below water table)	not used	1.00E+01	DWIBWT	
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	not used	ND	MODEL	
R014	Well pumping rate (m**3/yr)	not used	2.50E+02	UW	No drinking water pathway
R015	Number of unsaturated zone strata	not used	1	NS	No groundwater pathways
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.00E+01	DCNUCC(6)	
R016	Saturated zone (cm**3/g)	not used	5.00E+01	DCNUCS(6)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	ALEACH(6)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	SOLUBK(6)	RESRAD code Computed
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.00E+01	DCNUCC(7)	
R016	Saturated zone (cm**3/g)	not used	5.00E+01	DCNUCS(7)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	ALEACH(7)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	SOLUBK(7)	RESRAD code Computed
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.00E+01	DCNUCC(8)	
R016	Saturated zone (cm**3/g)	not used	5.00E+01	DCNUCS(8)	
R016	Leach rate (/yr)	0.000E+00	0.00E+00	ALEACH(8)	RESRAD code Computed
R016	Solubility constant	0.000E+00	0.00E+00	SOLUBK(8)	RESRAD code Computed
R017	Inhalation Rate (m**3/yr)	see table B-2	8.40E+03	INHALR	
R017	Mass loading for inhalation (g/m**3)	1.00E-04	1.00E-04	MLINH	
R017	Exposure duration	see table B-2	3.00E+01	ED	
R017	Shielding factor, inhalation	4.000E-01	4.00E-01	SHF3	
R017	Shielding factor, external gamma inhalation	7.000E-01	7.00E-01	SHF1	
R017	Fraction of time indoors	see table B-2	5.00E-01	FIND	
R017	Fraction of time spent outdoors (on site)	see table B-2	2.50E-01	FOTD	
R017	Shape factor flag, external gamma	1.000E+00	1.00E+00	FS	RESRAD Default
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.60E+02	DIET(1)	No food grown onsite
R018	Leafy vegetable consumption (kg/yr)	not used	1.40E+01	DIET(2)	No food grown onsite
R018	Milk consumption (L/yr)	not used	9.20E+01	DIET(3)	No milk animals onsite

Menu	Parameter	User Input	Default Value	Parameter Name	Data Source
R018	Meat and poultry consumption (kg/yr)	not used	6.30E+01	DIET(4)	No meat producing animals onsite
R018	Fish consumption (kg/yr)	not used	5.40E+00	DIET(5)	No fish derived from site
R018	Other seafood consumption (kg/yr)	not used	9.00E-01	DIET(6)	No shellfish derived from site
R018	Soil ingestion rate (g/yr)	see table B-2	3.65E+01	SOIL	
R018	Drinking water intake (L/yr)	not used	5.10E+02	DWI	No drinking water derived from the site
R018	Contamination fraction of drinking water	not used	1.00E+00	FDW	No drinking water derived from the site
R018	Contamination fraction of household water	not used	1.00E+00	FHHW	No household onsite
R018	Contamination fraction of livestock water	not used	1.00E+00	FLW	No livstock onsite
R018	Contamination fraction of irrigation water	not used	1.00E+00	FIRW	No irrigation water used
R018	Contamination fraction of aquatic food	not used	5.00E-01	FR9	No aquatic biota onsite
R018	Contamination fraction of plant food	not used	-1	FPLANT	No food grown onsite
R018	Contamination fraction of meat	not used	-1	FMEAT	No meat producing animals onsite
R018	Contamination fraction of milk	not used	-1	FMILK	No milk animals onsite
R019	Livestock fodder intake for meat (kg/day)	not used	6.80E+01	LFI5	No meat producing animals onsite
R019	Livestock fodder intake for milk (kg/day)	not used	5.50E+01	LFI6	No milk animals onsite
R019	Livestock water intake for meat (L/day)	not used	5.00E+01	LWI5	No meat producing animals onsite
R019	Livestock water intake for milk (L/day)	not used	1.60E+02	LWI6	No milk animals onsite
R019	Livestock soil intake (kg/day)	not used	5.00E-01	LSI	No livstock onsite
R019	Mass loading for foliar deposition (g/m**3)	not used	1.00E-04	MLFD	No irrigation water used
R019	Depth of soil mixing layer (m)	1.500E-01	1.50E-01	DM	No foodstuffs onsite
R019	Depth of roots (m)	not used	9.00E-01	DROOT	No foodstuffs onsite
R019	Drinking water fraction from ground water	not used	1.00E+00	FGWDW	No drinking water derived from site
R019	Household water fraction from ground water	not used	1.00E+00	FGWHH	No water onsite
R019	Livestock water fraction from ground water	not used	1.00E+00	FGWLW	No livstock onsite
R019	Irrigation fraction from ground water	not used	1.00E+00	FGWIR	No foodstuffs onsite
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.00E-01	YV(1)	No food grown onsite
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.50E+00	YV(2)	No food grown onsite
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.10E+00	YV(3)	No livstock onsite
R19B	Growing Season for Non-Leafy (years)	not used	1.70E-01	TE(1)	No food grown onsite
R19B	Growing Season for Leafy (years)	not used	2.50E-01	TE(2)	No food grown onsite
R19B	Growing Season for Fodder (years)	not used	8.00E-02	TE(3)	No livstock onsite
R19B	Translocation Factor for Non-Leafy	not used	1.00E-01	TIV(1)	No food grown onsite
R19B	Translocation Factor for Leafy	not used	1.00E+00	TIV(2)	No food grown onsite
R19B	Translocation Factor for Fodder	not used	1.00E+00	TIV(3)	No livstock onsite
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.50E-01	RDRY(1)	No food grown onsite

Menu	Parameter	User Input	Default Value	Parameter Name	Data Source
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.50E-01	RDRY(2)	No food grown onsite
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.50E-01	RDRY(3)	No livstock onsite
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.50E-01	RWET(1)	No food grown onsite
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.50E-01	RWET(2)	No food grown onsite
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.50E-01	RWET(3)	No livstock onsite
R19B	Weathering Removal Constant for Vegetation	not used	2.00E+01	WLAM	No food grown onsite
C14	C-12 concentration in water (g/cm**3)	not used	2.00E-05	C12WTR	C-14 not a constituent at the site
C14	C-12 concentration in contaminated soil (g/g)	not used	3.00E-02	C12CZ	C-14 not a constituent at the site
C14	Fraction of vegetation carbon from soil	not used	2.00E-02	CSOIL	C-14 not a constituent at the site
C14	Fraction of vegetation carbon from air	not used	9.80E-01	CAIR	C-14 not a constituent at the site
C14	C-14 evasion layer thickness in soil (m)	not used	3.00E-01	DMC	C-14 not a constituent at the site
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.00E-07	EVSN	C-14 not a constituent at the site
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.00E-10	REVSN	C-14 not a constituent at the site
C14	Fraction of grain in beef cattle feed	not used	8.00E-01	AVFG4	C-14 not a constituent at the site
C14	Fraction of grain in milk cow feed	not used	2.00E-01	AVFG5	C-14 not a constituent at the site
C14	DCF Correction Factor for gaseous forms of C14	not used	8.89E+01	CO2F	C-14 not a constituent at the site
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.40E+01	STOR_T(1)	
STOR	Leafy vegetables	1.000E+00	1.00E+00	STOR_T(2)	
STOR	Milk	1.000E+00	1.00E+00	STOR_T(3)	
STOR	Meat and poultry	2.000E+01	2.00E+01	STOR_T(4)	
STOR	Fish	7.000E+00	7.00E+00	STOR_T(5)	
STOR	Crustacea and mollusks	7.000E+00	7.00E+00	STOR_T(6)	
STOR	Well water	1.000E+00	1.00E+00	STOR_T(7)	
STOR	Surface water	1.000E+00	1.00E+00	STOR_T(8)	
STOR	Livestock fodder	4.500E+00	4.50E+01	STOR_T(9)	
R021	Thickness of building foundation (m)	not used	1.50E-01	FLOOR1	Not applicable as radon is not an exposure pathway.
R021	Bulk density of building foundation (g/cm**3)	not used	2.40E+00	DENSFL	Not applicable as radon is not an exposure pathway.
R021	Total porosity of the cover material	not used	4.00E-01	TPCV	Not applicable as radon is not an exposure pathway.
R021	Total porosity of the building foundation	not used	1.00E-01	TPFL	Not applicable as radon is not an exposure pathway.

Menu	Parameter	User Input	Default Value	Parameter Name	Data Source
R021	Volumetric water content of the cover material	not used	5.00E-02	PH2OCV	Not applicable as radon is not an exposure pathway.
R021	Volumetric water content of the foundation	not used	3.00E-02	PH2OFL	Not applicable as radon is not an exposure pathway.
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.00E-06	DIFCV	Not applicable as radon is not an exposure pathway.
R021	in foundation material	not used	3.00E-07	DIFFL	Not applicable as radon is not an exposure pathway.
R021	in contaminated zone soil	not used	2.00E-06	DIFCZ	Not applicable as radon is not an exposure pathway.
R021	Radon vertical dimension of mixing (m)	not used	2.00E+00	HMIX	Not applicable as radon is not an exposure pathway.
R021	Average building air exchange rate (1/hr)	not used	5.00E-01	REXG	Not applicable as radon is not an exposure pathway.
R021	Height of the building (room) (m)	not used	2.50E+00	HRM	Not applicable as radon is not an exposure pathway.
R021	Building interior area factor	not used	0.00E+00	FAI	Not applicable as radon is not an exposure pathway.
R021	Building depth below ground surface (m)	not used	-1.00E+00	DMFL	Not applicable as radon is not an exposure pathway.
R021	Emanating power of Rn-222 gas	not used	2.50E-01	EMANA(1)	Not applicable as radon is not an exposure pathway.
R021	Emanating power of Rn-220 gas	not used	1.50E-01	EMANA(2)	Not applicable as radon is not an exposure pathway.
TITL	Number of graphical time points	32	---	NPTS	default value from RESRAD code for scenario chosen
TITL	Maximum number of integration points for dose	17	---	LYMAX	default value from RESRAD code for scenario chosen
TITL	Maximum number of integration points for risk	513	---	KYMAX	

Notes:

a) Dose conversion factors used in RESRAD runs are RESRAD default and follow Heast 2001 Morbidity; values are not shown in above table

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

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

Table B-2: Assigned Values Related to Non-Default RESRAD Default Parameters for Different Receptors

Parameters	Unit	Current/ Future Maintenance Worker	Future Remediation Worker	Future Cultural Monitor/ Trespasser/ Visitor Adult	Future Site Worker
Particulate Inhalation Rate[1]	m^3/hr	1.4	3	0.83	0.83
	m^3/yr	12,300	26,300	7,300	7,300
Soil Ingestion Rate	mg/day	100	330	100	50
	g/yr	36.5	120.45	36.5	18.25
Exposure Duration	yr	6.6	1	30	25
Exposure Frequency	days/yr	10	180	26	250
Indoor Exposure Time	hrs/day	0	0	0	7
Outdoor Exposure Time	hrs/day	8	8	8	1
Indoor Time Fraction	unitless	0	0	0	0.2
Outdoor Time Fraction	unitless	0.0091	0.164	0.024	0.0285

[1] The upper value in RESRAD model is 20,000 m^3/yr. Hence, 20,000 m^3/yr was used for all applicable receptor scenarios.

Table B-3-1: Results of Dose Assessments to Maintenance Worker

Nuclide	EPC (pCi/g)	DSR ((mrem/yr)/(pCi/g))[1]								Dose (mrem/yr)							
		T=0 Year				T=1000				T=0 Year				T=1000			
		External Gamma	**Inhalation**	**Soil Ingestion**	Total	**External Gamma**	**Inhalation**	**Soil Ingestion**	**Total**	**External Gamma**	**Inhalation**	**Soil Ingestion**	Total	**External Gamma**	**Inhalation**	**Soil Ingestion**	**Total**
U-234	10.57	3.5E-06	2.5E-04	9.4E-05	3.5E-04	3.2E-05	1.1E-05	4.8E-06	4.8E-05	3.7E-05	2.6E-03	9.9E-04	3.7E-03	3.4E-04	1.1E-04	5.0E-05	5.0E-04
U-235	0.6	6.6E-03	2.3E-04	8.9E-05	6.9E-03	2.5E-04	1.8E-05	9.0E-06	2.8E-04	3.9E-03	1.4E-04	5.3E-05	4.1E-03	1.5E-04	1.1E-05	5.4E-06	1.7E-04
U-238	56.63	1.3E-03	2.2E-04	8.9E-05	1.6E-03	4.7E-05	8.1E-06	3.2E-06	5.8E-05	7.4E-02	1.3E-02	5.0E-03	9.1E-02	2.7E-03	4.6E-04	1.8E-04	3.3E-03
								Total Dose		0.1	0.0	0.0	**0.1**	0.0	0.001	0.00	**0.004**

Table B-3-2: Results of Risk Assessments to Maintenance Worker

Nuclide	EPC (pCi/g)	RSR (1/(pCi/g))[1]								Risk							
		T=0				T=1000				T=0 Year				T=1000			
		External Gamma	**Inhalation**	**Soil Ingestion**	Total	**External Gamma**	**Inhalation**	**Soil Ingestion**	**Total**	**External Gamma**	**Inhalation**	**Soil Ingestion**	Total	**External Gamma**	**Inhalation**	**Soil Ingestion**	**Total**
U-234	10.57	1.45E-11	3.44E-10	2.07E-10	5.66E-10	1.6E-10	1.4E-11	1.1E-11	1.9E-10	1.5E-10	3.6E-09	2.2E-09	6.0E-09	1.7E-09	1.5E-10	1.2E-10	2.0E-09
U-235	0.6	3.07E-08	3.09E-10	2.12E-10	3.12E-08	1.2E-09	1.4E-11	8.9E-12	1.2E-09	1.8E-08	1.9E-10	1.3E-10	1.9E-08	7.0E-10	8.2E-12	5.4E-12	7.2E-10
U-238	56.63	6.36E-09	2.92E-10	2.62E-10	6.92E-09	2.3E-10	1.1E-11	9.5E-12	2.5E-10	3.6E-07	1.7E-08	1.5E-08	3.9E-07	1.3E-08	6.0E-10	5.4E-10	1.4E-08
								Total Risk		4E-07	2E-08	2E-08	**4E-07**	2E-08	8E-10	7E-10	**2E-08**

[1] Results of Dose-to-Source Ratio (DSR) and Risk-to-Ratios (RSR) are presented in the following RESRAD files.

Table B-4-1: Results of Dose Assessments to Construction/Remediation Worker

Nuclide	EPC (pCi/g)	DSR ((mrem/yr)/(pCi/g))[1]								Dose (mrem/yr)							
		T=0 Year				T=1000				T=0 Year				T=1000			
		External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total
U-234	10.57	6.36E-05	7.34E-03	5.60E-03	1.30E-02	5.83E-04	3.12E-04	2.84E-04	1.18E-03	6.7E-04	7.8E-02	5.9E-02	1.4E-01	6.2E-03	3.3E-03	3.0E-03	1.2E-02
U-235	0.6	1.18E-01	6.84E-03	5.29E-03	1.31E-01	4.51E-03	5.40E-04	5.37E-04	5.58E-03	7.1E-02	4.1E-03	3.2E-03	7.8E-02	2.7E-03	3.2E-04	3.2E-04	3.3E-03
U-238	56.63	2.35E-02	6.56E-03	5.31E-03	3.54E-02	8.50E-04	2.38E-04	1.93E-04	1.28E-03	1.3E+00	3.7E-01	3.0E-01	2.0E+00	4.8E-02	1.3E-02	1.1E-02	7.3E-02
								Total Dose		1.4	0.5	0.4	**2.2**	0.1	0.017	0.01	**0.1**

Table B-4-2: Results of Risk Assessments to Construction/Remediation Worker

Nuclide	EPC (pCi/g)	RSR (1/(pCi/g))[1]								Risk							
		T=0				T=1000				T=0 Year				T=1000			
		External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total
U-234	10.57	3.99E-11	1.55E-09	1.89E-09	3.47E-09	4.42E-10	6.17E-11	9.90E-11	6.03E-10	4.2E-10	1.6E-08	2.0E-08	3.7E-08	4.7E-09	6.5E-10	1.0E-09	6.4E-09
U-235	0.6	8.48E-08	1.39E-09	1.93E-09	8.81E-08	3.23E-09	6.10E-11	8.15E-11	3.37E-09	5.1E-08	8.3E-10	1.2E-09	5.3E-08	1.9E-09	3.7E-11	4.9E-11	2.0E-09
U-238	56.63	1.76E-08	1.31E-09	2.38E-09	2.13E-08	6.36E-10	4.77E-11	8.65E-11	7.71E-10	1.0E-06	7.4E-08	1.4E-07	1.2E-06	3.6E-08	2.7E-09	4.9E-09	4.4E-08
								Total Risk		1E-06	9E-08	2E-07	**1E-06**	4E-08	3E-09	6E-09	**5E-08**

[1] Results of Dose-to-Source Ratio (DSR) and Risk-to-Ratios (RSR) are presented in the following RESRAD files.

Table B-5-1: Results of Dose Assessments to Cultural Monitor/Trespasser/Visitor

Nuclide	EPC (pCi/g)	DSR ((mrem/yr)/(pCi/g))[1]								Dose (mrem/yr)							
		T=0 Year				T=1000				T=0 Year				T=1000			
		External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total
U-234	21.79	9.1E-06	3.8E-04	2.4E-04	6.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-04	8.3E-03	5.3E-03	1.4E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-235	0.89	1.7E-02	3.6E-04	2.3E-04	1.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-02	3.2E-04	2.0E-04	1.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-238	116.7	3.1E-03	3.4E-04	2.3E-04	3.7E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-01	4.0E-02	2.7E-02	4.3E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00
								Total Dose		0.4	0.05	0.03	**0.5**	0.0	0.000	0.00	**0.00**

Table B-5-2: Results of Risk Assessments to Cultural Monitor/Trespasser

Nuclide	EPC (pCi/g)	RSR (1/(pCi/g))[1]								Risk							
		T=0				T=1000				T=0 Year				T=1000			
		External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total
U-234	21.79	9.9E-11	1.3E-09	1.3E-09	2.6E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-09	2.7E-08	2.8E-08	5.8E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-235	0.89	2.0E-07	1.1E-09	1.3E-09	2.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-07	1.0E-09	1.2E-09	1.8E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-238	116.7	3.9E-08	1.1E-09	1.6E-09	4.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-06	1.3E-07	1.9E-07	4.8E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00
								Total Risk		5E-06	2E-07	2E-07	**5E-06**	0E+00	0E+00	0E+00	**0E+00**

[1] Results of Dose-to-Source Ratio (DSR) and Risk-to-Ratios (RSR) are presented in the following RESRAD files.

Table B-6-1: Results of Dose Assessments to Site Worker

Nuclide	EPC (pCi/g)	DSR ((mrem/yr)/(pCi/g))[1]								Dose (mrem/yr)							
		T=0 Year				T=1000				T=0 Year				T=1000			
		External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total
U-234	21.79	6.4E-05	1.7E-03	1.2E-03	2.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	3.8E-02	2.5E-02	6.4E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-235	0.89	1.2E-01	1.6E-03	1.1E-03	1.2E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-01	1.4E-03	9.7E-04	1.1E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-238	116.7	2.2E-02	1.5E-03	1.1E-03	2.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E+00	1.8E-01	1.3E-01	2.9E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
								Total Dose		2.7	0.2	0.2	**3.0**	0.0	0.000	0.00	**0.0**

Table B-6-2: Results of Risk Assessments to Site Worker

Nuclide	EPC (pCi/g)	RSR (1/(pCi/g))[1]								Risk							
		T=0				T=1000				T=0 Year				T=1000			
		External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total	External Gamma	Inhalation	Soil Ingestion	Total
U-234	21.79	6.3E-10	5.3E-09	5.6E-09	1.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-08	1.1E-07	1.2E-07	2.5E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-235	0.89	1.3E-06	4.7E-09	5.7E-09	1.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	4.2E-09	5.1E-09	1.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-238	116.7	2.5E-07	4.5E-09	7.1E-09	2.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-05	5.2E-07	8.3E-07	3.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00
								Total Risk		3E-05	6E-07	1E-06	**3E-05**	0E+00	0E+00	0E+00	**0E+00**

[1] Results of Dose-to-Source Ratio (DSR) and Risk-to-Ratios (RSR) are presented in the following RESRAD files.

Table B-7: Results of Dose and Risk Assessments to Various Receptors

Receptor Type	Medium	Exposure Pathways	Total Dose (mrem/yr)		Total Risk	
			T=0	T=1000	T=0	T=1000
Maintenance Worker	All Depth Soil	External	0.1	0.003	4E-07	2E-08
		Inhalation	0	0.001	2E-08	8E-10
		Soil Ingestion	0.0	0	2E-08	7E-10
		Total	0.1	0.004	4E-07	2E-08
Construction/ Remediation Worker		External	1.4	0.1	1E-06	4E-08
		Inhalation	0.5	0.02	9E-08	3E-09
		Soil Ingestion	0.4	0.01	2E-07	6E-09
		Total	2.2	0.1	1E-06	5E-08
Cultural Monitor/ Trespasser	Surface Soil	External	0.4	0.00	5E-06	0E+00
		Inhalation	0.0	0.00	2E-07	0E+00
		Soil Ingestion	0.032	0.00	2E-07	0E+00
		Total	0.5	0.00	5E-06	0E+00
Site Worker		External	2.7	0.00	3E-05	0E+00
		Inhalation	0.2	0.00	6E-07	0E+00
		Soil Ingestion	0.2	0.00	1E-06	0E+00
		Total	3.0	0.0	3E-05	0E+00