

**CHECKLIST****NUREG 1757 - Appendix C: CHECKLIST OF ACTIONS TO BE COMPLETED BY NRC STAFF UPON RECEIPT OF LICENSED FACILITIES NOTIFICATION OF INTENT TO CEASE LICENSED OPERATIONS****Facility Information:** License No.: 25-07093-01 Docket No.: 030-00873Facility Name: Carroll College  
Address: 1601 N. Benton Avenue  
Address: Helena, Montana 59625Project Manager: Rachel S. Browder  
Date of Notification: October 10, 2005Carroll College was determined to be Group 2Group 2 Licensees (Refer to Section 9.1 of NUREG 1757)  
(Enter Y or N)Yes Licensee demonstrated compliance with 10 CFR Part 20.1402 (Radiological criteria for unrestricted use) using the screening methodology.N/A Licensee possessed and used only sealed sources and cannot demonstrate current leak tight integrity.

Licensee used sealed and unsealed material. The sealed sources did not leak.

Yes Complete an Environmental Assessment (EA).N/A Confirmatory survey or side-by-side survey completed. This depends on the licensee's survey and radioactive material use at the facility.

NRC staff reviewed the licensee's survey and determined they were satisfactory.

Yes Issue Federal Register Notice to announce FONSI.

Note: Group 2 decommissioning licensees would not be required to develop a DP.

***(If Licensee is designated as Group 2 or 3, then you may end the Checklist here!)  
(Please Go to the Last Page)***

Radioactive Material Disposition

Yes Form 314 or equivalent submitted:

Yes Staff verified disposition of sealed sources or unsealed radioactive material by one of the following:

Yes Letter from Form 314 Recipient

\_\_\_\_\_ Call to Form 314 Recipient

Comments:

Radioactive Material Records Disposition

Yes Licensee transfer of records discussed in 10 CFR 30.35, 30.36, 30.51; 40.36, 40.42, 40.61; or 70.25, 70.38, 70.51:

Yes To U. S. NRC

\_\_\_\_\_ To individual assuming responsibility for the license, with a copy of the cover letter to the U.S. NRC.

Comments: NRC has records in their docket file.

Confirmatory or Side-by-Side Survey

Yes Termination survey submitted by licensee.

Yes Termination survey satisfies NRC survey requirements.

N/A Confirmatory or Side-by-Side survey performed:

Comments: The final survey was satisfactory and indicated the laboratory room and counting room were background.

**Montana Bureau of Mines and Geology  
Ground-Water Information Center Site Report  
HAND VERNA & R.K.**

**Plot this site on a topographic map**

**Location Information**

GWIC Id: 62276  
Location (TRS): 10N 03W 30 D  
County (MT): LEWIS AND CLARK  
DNRC Water Right:  
PWS Id:  
Block: 5  
Lot: 12  
Addition: LOCKEY

Source of Data: GW4  
Latitude (dd): 46.5907  
Longitude (dd): -112.0251  
Geomethod: TRS-TWN  
Datum: NAD27  
Altitude (feet): 4020.00  
Certificate of Survey:  
Type of Site: WELL

**Well Construction and Performance Data**

Total Depth (ft): 60.00  
Static Water Level (ft): 60.00  
Pumping Water Level (ft):  
Yield (gpm): 10.00  
Test Type:  
Test Duration:  
Drill Stem Setting (ft):  
Recovery Water Level (ft):  
Recovery Time (hrs):  
Well Notes:

How Drilled:  
Driller's Name:  
Driller License:  
Completion Date (m/d/y): 7/1/1948  
Special Conditions:  
Is Well Flowing?:  
Shut-In Pressure:  
Geology/Aquifer: 111ALVM  
Well/Water Use: DOMESTIC

**Hole Diameter Information**

No Hole Diameter Records currently in GWIC.

**Annular Seal Information**

No Seal Records currently in GWIC.

**Casing Information<sup>1</sup>**

From	To	Dia	Wall Thickness	Pressure Rating	Joint	Type
0.0	60.0	6.0				

**Completion Information<sup>1</sup>**

From	To	Dia	# of Openings	Size of Openings	Description
5.0	40.0	6.0			

**Lithology Information**

From	To	Description
0.0	60.0	CLAY & GRAVEL FORMATION

<sup>1</sup> - All diameters reported are **inside** diameter of the casing.

These data represent the contents of the GWIC databases at the Montana Bureau of Mines and Geology at the time and date of the retrieval. The information is considered unpublished and is subject to correction and review on a daily basis. The Bureau warrants the accurate transmission of the data to the original end user. Retransmission of the data to other users is discouraged and the Bureau claims no responsibility if the material is retransmitted. Note: non-reported casing, completion, and lithologic records may exist in paper files at GWIC.

**Montana Bureau of Mines and Geology**  
**Ground-Water Information Center Site Report**  
**BRIGGS SUSAN**

**Plot this site on a topographic map**

**Location Information**

GWIC Id: 62269  
 Location (TRS): 10N 03W 30  
 County (MT): LEWIS AND CLARK  
 DNRC Water Right:  
 PWS Id:  
 Block:  
 Lot:  
 Addition: SEYMOUR PARK

Source of Data: GW4  
 Latitude (dd): 46.5947  
 Longitude (dd): -112.0304  
 Geomethod: TRS-TWN  
 Datum: NAD27  
 Altitude (feet): 3950.00  
 Certificate of Survey:  
 Type of Site: WELL

**Well Construction and Performance Data**

Total Depth (ft): 36.00  
 Static Water Level (ft): 35.00  
 Pumping Water Level (ft):  
 Yield (gpm):  
 Test Type:  
 Test Duration:  
 Drill Stem Setting (ft):  
 Recovery Water Level (ft):  
 Recovery Time (hrs):

How Drilled:  
 Driller's Name:  
 Driller License:  
 Completion Date (m/d/y): 7/1/1960  
 Special Conditions:  
 Is Well Flowing?:  
 Shut-In Pressure:  
 Geology/Aquifer: 111ALVM  
 Well/Water Use: DOMESTIC  
 STOCKWATER

Well Notes:

**Hole Diameter Information**

No Hole Diameter Records currently in GWIC.

**Annular Seal Information**

No Seal Records currently in GWIC.

**Casing Information<sup>1</sup>**

From	To	Dia	Wall Thickness	Pressure Rating	Joint	Type
0.0	36.0	4.0				

**Completion Information<sup>1</sup>**

No Completion Records currently in GWIC.

**Lithology Information**

From	To	Description
7.0	17.0	BOULDERS
17.0	26.0	CLAY & GRAVEL
26.0	35.0	TIGHT GRAVEL
35.0	36.0	CLEAR WATER & GRAVEL

<sup>1</sup> - All diameters reported are **inside** diameter of the casing.

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**Montana Bureau of Mines and Geology  
Ground-Water Information Center Site Report  
CARROLL COLLEGE**

**Plot this site on a topographic map**

**Location Information**

GWIC Id: 177973  
Location (TRS): 10N 03W 30 CBB  
County (MT): LEWIS AND CLARK  
DNRC Water Right: C111710-0  
PWS Id:  
Block:  
Lot:  
Addition:

Source of Data: LOG  
Latitude (dd): 46.5935  
Longitude (dd): -112.0402  
Geomethod: TRS-TWN  
Datum: NAD27  
Altitude (feet):  
Certificate of Survey:  
Type of Site: WELL

**Well Construction and Performance Data**

Total Depth (ft): 305.00  
Static Water Level (ft): 32.00  
Pumping Water Level (ft): 300.00  
Yield (gpm): 180.00  
Test Type: AIR LIFT  
Test Duration: 1.00  
Drill Stem Setting (ft):  
Recovery Water Level (ft): 32.00  
Recovery Time (hrs): 1.00  
Well Notes:

How Drilled: ROTARY  
Driller's Name: LINDSAY  
Driller License: WWC253  
Completion Date (m/d/y): 9/30/1999  
Special Conditions:  
Is Well Flowing?:  
Shut-In Pressure:  
Geology/Aquifer: Not Reported  
Well/Water Use: DOMESTIC

**Hole Diameter Information**

No Hole Diameter Records currently in GWIC.

**Annular Seal Information**

From	To	Description
0.0	20.0	BENTONITE

**Casing Information<sup>1</sup>**

From	To	Dia	Wall Thickness	Pressure Rating	Joint	Type
-1.5	21.0	8.0				STEEL
10.0	305.0	6.0				STEEL

**Completion Information<sup>1</sup>**

From	To	Dia	# of Openings	Size of Openings	Description
25.0	305.0	6.0			

**Lithology Information**

From	To	Description
0.0	2.0	TOPSOIL
2.0	18.0	BROKEN ROCK
18.0	305.0	LIMESTONE BEDROCK

<sup>1</sup> - All diameters reported are **inside** diameter of the casing.

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**Montana Bureau of Mines and Geology**  
**Ground-Water Information Center Site Report**  
**CARROLL COLLEGE**

**Plot this site on a topographic map**

**Location Information**

GWIC Id: 201538  
 Location (TRS): 10N 03W 30 DB  
 County (MT): LEWIS AND CLARK  
 DNRC Water Right:  
 PWS Id:  
 Block:  
 Lot:  
 Addition:

Source of Data: LOG  
 Latitude (dd): 46.5926  
 Longitude (dd): -112.0279  
 Geomethod: TRS-TWN  
 Datum: NAD27  
 Altitude (feet):  
 Certificate of Survey:  
 Type of Site: WELL

**Well Construction and Performance Data**

Total Depth (ft): 180.00  
 Static Water Level (ft): 34.00  
 Pumping Water Level (ft):  
 Yield (gpm): 60.00  
 Test Type: AIR LIFT  
 Test Duration: 1.00  
 Drill Stem Setting (ft): 180.00  
 Recovery Water Level (ft): 34.00  
 Recovery Time (hrs): 0.25  
 Well Notes:

How Drilled: ROTARY  
 Driller's Name: H AND L  
 Driller License: WWC447  
 Completion Date (m/d/y): 10/2/2002  
 Special Conditions:  
 Is Well Flowing?:  
 Shut-In Pressure:  
 Geology/Aquifer: Not Reported  
 Well/Water Use: IRRIGATION

**Hole Diameter Information**

From	To	Diameter
0.0	180.0	8.0

**Annular Seal Information**

From	To	Description
0.0	0.0	CONT FED BENTONITE

**Casing Information<sup>1</sup>**

From	To	Dia	Wall Thickness	Pressure Rating	Joint	Type
-2.0	180.0	8.0	0.250			STEEL

**Completion Information<sup>1</sup>**

From	To	Dia	# of Openings	Size of Openings	Description
80.0	100.0	8.0		5/16X1	MILLS KNIFE

**Lithology Information**

From	To	Description
0.0	10.0	BROWN CLAY
10.0	35.0	BROWN SHALE AND CLAY
35.0	110.0	GRAY SHALE
110.0	180.0	GREENISH GRANITE

<sup>1</sup> - All diameters reported are **inside** diameter of the casing.

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**HELENA**  
MONTANA  
EST. 1881

# City Public Works Department

Public Works  
Home

Engineering  
Division

Fleet  
Division

HATS

Solid Waste  
Division

Streets  
Division

Utility maint.  
Division

Wastewater  
Division

Water  
Division

CITY HOME

SERVICES /  
DEPARTMENTS

CITY  
CODES

CITY JOBS

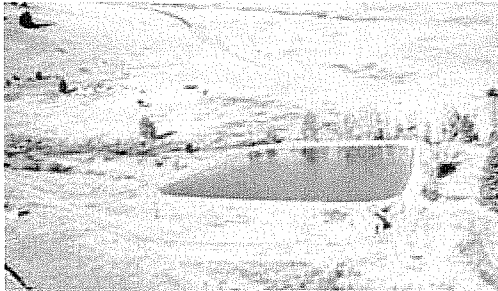
CITY  
MEETINGS

LINKS

Search

## Water Treatment Division

Note: Chlorine building at lower right corner of reservoir.



TEN MILE RESERVOIR AND SETTLING BASIN

Ten Mile Chlorine Building. (Circa 1960)



**The Helena Water Department has a long interesting history. Below is a listing of some of the highlights.**

**1864** - The Helena Water Works established their first water rights on the Ten Mile Creek. To transport the water to Helena the Yaw Yaw ditch was established. The name Yaw Yaw is thought to have come from a reply to the question, "Should we build a ditch?"

**1870** - Some of the first written information regarding Helena's water was in 1870. Water was taken from Grizzly Gulch and Dry Gulch (Davis street) and run down the "Big Ditch". This water was used for mining and drinking.

**1873** - A second ditch was established from the Ten Mile settling ponds, to a pump station near Dotsonville to Cannon street.

**1886** - The separate water companies were consolidated into one company, the Helena Water Works Co., a New Jersey owned company.

**1887** - The Bed Rock well was built. This later became the Eureka well.

**1902** - A 16" wood stave pipe was laid to Woolston from Yaw Yaw.

**1903** - A pumping station was built along Ten Mile Creek at the old Yaw Yaw station.

**1910** - The City of Helena took over the Helena Water Works Co. through receivership on January 18, 1910. By court order the New Jersey company was forced to turn over the Helena Water Works Co. for \$400,000. The water department consisted of Chessman Reservoir and the first two water rights to Ten Mile Creek, and water rights in Tucker, Arastra, Grizzly and Dry Gulches. Hale and Woolston reservoirs, Eureka Bed Rock system and pump house, Woolston Well, Yaw Yaw pump station, Oro Fino line, Grizzly Gulch line and

all of the pipe lines valves, easements and right of ways.

**1919-** Yaw Yaw station abandoned.

**1921-** William A. Chessman built the water line from Ten Mile to Helena.

**1935** - The '35 earth quake altered the water sources. Dry Gulch dried up, but Oro Fino increased slightly. A water line replaced the ditch from Oro Fino to Hale reservoir.

**1940's** A second wood stave pipe was constructed from Yaw Yaw to Woolston.

In **1960** the Missouri River Treatment Plant and the East Side Reservoir were built. The East Side Reservoir was later called Malben Reservoir.

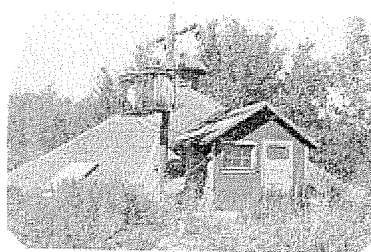
**1973** - Upgrades were made to the filtration and sedimentation at the Missouri River Plant. The last of the wood stave pipe line was replaced from Yaw Yaw to Woolston reservoir.

**1984** - The low zone pumps and supply line as well as a new sedimentation tank, additional clearwell, and chemical building were added to the Missouri River Plant.

**1990** - The Ten Mile Water Plant was completed. The first filtration plant for the Ten Mile Creek.

**2002-** The East side reservoir and pump station was completed and accepted. This reservoir and station provides additional storage to Helena's East side as well as additional flow for water usage and fire protection to Helena's upper South side.

All that remains of the original purchase is Hale and Woolston reservoirs, Eureka pump house, Oro Fino, and some of the original pipe lines.



WOOLSTON WELL AND PUMP

Water was transported from the Ten Mile settling pond (reservoir) to Woolston Reservoir by open ditch and flume. Later a wood stave line was installed near what later became Le Grand Cannon Boulevard. Yaw Yaw pump station pumped water from Ten Mile Creek up to Woolston reservoir, but was abandoned when the pipe line was installed. Woolston Well is located near the Lewis and Clark fairgrounds. It was a large shallow hand dug well. It was given to the Lewis and Clark County Fairgrounds in the early 1970's.

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

enu	Parameter	Current Value	Default	Param Nam
-1	Dose conversion factors for inhalation, mrem/μCi:			
-1	C-14	2.090E+00	2.090E+00	DCF2 (
-1	Dose conversion factors for ingestion, mrem/μCi:			
-1	C-14	2.090E+00	2.090E+00	DCF3 (
-34	Food transfer factors:			
-34	C-14 , plant/soil concentration ratio, dimensionless	5.500E+00	5.500E+00	RTF( 1
-34	C-14 , beef/livestock-intake ratio, (μCi/kg)/(μCi/d)	3.100E-02	3.100E-02	RTF( 1
-34	C-14 , milk/livestock-intake ratio, (μCi/L)/(μCi/d)	1.200E-02	1.200E-02	RTF( 1
-5	Bioaccumulation factors, fresh water, L/kg:			
-5	C-14 , fish	5.000E+04	5.000E+04	BIOFAC
-5	C-14 , crustacea and mollusks	9.100E+03	9.100E+03	BIOFAC

Site-Specific Parameter Summary

enu	Parameter	User Input	Default	Used by R (If different fro
011	Area of contaminated zone (m**2)	1.000E-01	1.000E+04	---
011	Thickness of contaminated zone (m)	2.000E+00	2.000E+00	---
011	Length parallel to aquifer flow (m)	1.000E+02	1.000E+02	---
011	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---
011	Time since placement of material (yr)	0.000E+00	0.000E+00	---
011	Times for calculations (yr)	1.000E+00	1.000E+00	---
011	Times for calculations (yr)	5.000E+00	3.000E+00	---
011	Times for calculations (yr)	7.000E+00	1.000E+01	---
011	Times for calculations (yr)	1.000E+01	3.000E+01	---
011	Times for calculations (yr)	not used	1.000E+02	---
011	Times for calculations (yr)	not used	3.000E+02	---
011	Times for calculations (yr)	not used	1.000E+03	---
011	Times for calculations (yr)	not used	0.000E+00	---
011	Times for calculations (yr)	not used	0.000E+00	---
012	Initial principal radionuclide (µCi/g): C-14	2.500E-01	0.000E+00	---
012	Concentration in groundwater (µCi/L): C-14	not used	0.000E+00	---
013	Cover depth (m)	1.200E+00	0.000E+00	---
013	Density of cover material (g/cm**3)	1.500E+00	1.500E+00	---
013	Cover depth erosion rate (m/yr)	1.000E-03	1.000E-03	---
013	Density of contaminated zone (g/cm**3)	1.500E+00	1.500E+00	---
013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---
013	Contaminated zone total porosity	4.000E-01	4.000E-01	---
013	Contaminated zone field capacity	2.000E-01	2.000E-01	---
013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---
013	Contaminated zone b parameter	5.300E+00	5.300E+00	---
013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---
013	Humidity in air (g/m**3)	not used	8.000E+00	---
013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---
013	Precipitation (m/yr)	1.000E+00	1.000E+00	---
013	Irrigation (m/yr)	2.000E-01	2.000E-01	---
013	Irrigation mode	overhead	overhead	---
013	Runoff coefficient	2.000E-01	2.000E-01	---
013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---
013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---
014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---
014	Saturated zone total porosity	4.000E-01	4.000E-01	---
014	Saturated zone effective porosity	2.000E-01	2.000E-01	---
014	Saturated zone field capacity	2.000E-01	2.000E-01	---
014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---
014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---
014	Saturated zone b parameter	5.300E+00	5.300E+00	---
014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---
014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---
014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---
014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---
015	Number of unsaturated zone strata	1	1	---

Site-Specific Parameter Summary (continued)

enu	Parameter	User Input	Default	Used by R (If different fro
015	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---
015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---
015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---
015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---
015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---
015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---
015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---
016	Distribution coefficients for C-14			
016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---
016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---
016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---
016	Leach rate (/yr)	0.000E+00	0.000E+00	7.790E-
016	Solubility constant	0.000E+00	0.000E+00	not use
017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---
017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---
017	Exposure duration	3.000E+01	3.000E+01	---
017	Shielding factor, inhalation	4.000E-01	4.000E-01	---
017	Shielding factor, external gamma	7.000E-01	7.000E-01	---
017	Fraction of time spent indoors	5.000E-01	5.000E-01	---
017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---
017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circu
017	Radii of shape factor array (used if FS = -1):			
017	Outer annular radius (m), ring 1:	not used	5.000E+01	---
017	Outer annular radius (m), ring 2:	not used	7.071E+01	---
017	Outer annular radius (m), ring 3:	not used	0.000E+00	---
017	Outer annular radius (m), ring 4:	not used	0.000E+00	---
017	Outer annular radius (m), ring 5:	not used	0.000E+00	---
017	Outer annular radius (m), ring 6:	not used	0.000E+00	---
017	Outer annular radius (m), ring 7:	not used	0.000E+00	---
017	Outer annular radius (m), ring 8:	not used	0.000E+00	---
017	Outer annular radius (m), ring 9:	not used	0.000E+00	---
017	Outer annular radius (m), ring 10:	not used	0.000E+00	---
017	Outer annular radius (m), ring 11:	not used	0.000E+00	---
017	Outer annular radius (m), ring 12:	not used	0.000E+00	---
017	Fractions of annular areas within AREA:			
017	Ring 1	not used	1.000E+00	---
017	Ring 2	not used	2.732E-01	---
017	Ring 3	not used	0.000E+00	---
017	Ring 4	not used	0.000E+00	---
017	Ring 5	not used	0.000E+00	---
017	Ring 6	not used	0.000E+00	---
017	Ring 7	not used	0.000E+00	---
017	Ring 8	not used	0.000E+00	---
017	Ring 9	not used	0.000E+00	---
017	Ring 10	not used	0.000E+00	---
017	Ring 11	not used	0.000E+00	---
017	Ring 12	not used	0.000E+00	---

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by R (If different from)
018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---
018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---
018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---
018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---
018	Fish consumption (kg/yr)	5.400E+00	5.400E+00	---
018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---
018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---
018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---
018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---
018	Contamination fraction of household water	not used	1.000E+00	---
018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---
018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---
018	Contamination fraction of aquatic food	5.000E-01	5.000E-01	---
018	Contamination fraction of plant food	-1	-1	0.500E-
018	Contamination fraction of meat	-1	-1	0.500E-
018	Contamination fraction of milk	-1	-1	0.500E-
019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---
019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---
019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---
019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---
019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---
019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---
019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---
019	Depth of roots (m)	9.000E-01	9.000E-01	---
019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---
019	Household water fraction from ground water	not used	1.000E+00	---
019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---
019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---
19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---
19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---
19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---
19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---
19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---
19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---
19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---
19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---
19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---
19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---
19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---
19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---
19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---
19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---
19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---
19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---
14	C-12 concentration in water (g/cm**3)	2.000E-05	2.000E-05	---
14	C-12 concentration in contaminated soil (g/g)	3.000E-02	3.000E-02	---
14	Fraction of vegetation carbon from soil	2.000E-02	2.000E-02	---
14	Fraction of vegetation carbon from air	9.800E-01	9.800E-01	---

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by R (If different from)
14	C-14 evasion layer thickness in soil (m)	3.000E-01	3.000E-01	---
14	C-14 evasion flux rate from soil (1/sec)	7.000E-07	7.000E-07	---
14	C-12 evasion flux rate from soil (1/sec)	1.000E-10	1.000E-10	---
14	Fraction of grain in beef cattle feed	8.000E-01	8.000E-01	---
14	Fraction of grain in milk cow feed	2.000E-01	2.000E-01	---
14	DCF correction factor for gaseous forms of C14	8.894E+01	8.894E+01	---
FOR	Storage times of contaminated foodstuffs (days):			
FOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---
FOR	Leafy vegetables	1.000E+00	1.000E+00	---
FOR	Milk	1.000E+00	1.000E+00	---
FOR	Meat and poultry	2.000E+01	2.000E+01	---
FOR	Fish	7.000E+00	7.000E+00	---
FOR	Crustacea and mollusks	7.000E+00	7.000E+00	---
FOR	Well water	1.000E+00	1.000E+00	---
FOR	Surface water	1.000E+00	1.000E+00	---
FOR	Livestock fodder	4.500E+01	4.500E+01	---
021	Thickness of building foundation (m)	not used	1.500E-01	---
021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---
021	Total porosity of the cover material	not used	4.000E-01	---
021	Total porosity of the building foundation	not used	1.000E-01	---
021	Volumetric water content of the cover material	not used	5.000E-02	---
021	Volumetric water content of the foundation	not used	3.000E-02	---
021	Diffusion coefficient for radon gas (m/sec):			
021	in cover material	not used	2.000E-06	---
021	in foundation material	not used	3.000E-07	---
021	in contaminated zone soil	not used	2.000E-06	---
021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---
021	Average building air exchange rate (1/hr)	not used	5.000E-01	---
021	Height of the building (room) (m)	not used	2.500E+00	---
021	Building interior area factor	not used	0.000E+00	---
021	Building depth below ground surface (m)	not used	-1.000E+00	---
021	Emanating power of Rn-222 gas	not used	2.500E-01	---
021	Emanating power of Rn-220 gas	not used	1.500E-01	---
ITL	Number of graphical time points	32	---	---
ITL	Maximum number of integration points for dose	17	---	---
ITL	Maximum number of integration points for risk	257	---	---

Summary of Pathway Selections

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

Contaminated Zone Dimensions		Initial Soil Concentrations, µCi/g	
Area:	0.10 square meters	C-14	2.500E-01
Thickness:	2.00 meters		
soil Depth:	1.20 meters		

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

t (years):	0.000E+00	1.000E+00	5.000E+00	7.000E+00	1.000E+01
TDOSE(t):	9.506E-24	7.046E+00	3.415E+01	7.522E+00	7.269E-01
M(t):	3.802E-25	2.818E-01	1.366E+00	3.009E-01	2.908E-02

Maximum TDOSE(t): 3.996E+01 mrem/yr at t = 4.290 ± 0.009 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 4.290E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radionuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
C-14	4.059E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
Total	4.059E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 4.290E+00 years

Water Dependent Pathways

Radionuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
C-14	2.981E+01	0.7459	1.015E+01	0.2541	0.000E+00	0.0000	2.179E-05	0.0000	9.821E-06	0.0000	3
Total	2.981E+01	0.7459	1.015E+01	0.2541	0.000E+00	0.0000	2.179E-05	0.0000	9.821E-06	0.0000	3

Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

radio- nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	9.506E-24	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
total	9.506E-24	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0

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

Water Dependent Pathways

radio- nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
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

Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

radio- nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	4.558E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
total	4.558E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0

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

Water Dependent Pathways

radio- nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	5.311E+00	0.7537	1.735E+00	0.2463	0.000E+00	0.0000	3.525E-06	0.0000	1.503E-06	0.0000	6
total	5.311E+00	0.7537	1.735E+00	0.2463	0.000E+00	0.0000	3.525E-06	0.0000	1.503E-06	0.0000	6

Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 5.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

radio- nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
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

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 5.000E+00 years

Water Dependent Pathways

radio- nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	2.541E+01	0.7442	8.737E+00	0.2558	0.000E+00	0.0000	1.897E-05	0.0000	8.640E-06	0.0000	3
total	2.541E+01	0.7442	8.737E+00	0.2558	0.000E+00	0.0000	1.897E-05	0.0000	8.640E-06	0.0000	3

Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 7.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

radio- nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
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

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 7.000E+00 years

Water Dependent Pathways

radio- nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	5.591E+00	0.7433	1.931E+00	0.2567	0.000E+00	0.0000	4.216E-06	0.0000	1.933E-06	0.0000	6
total	5.591E+00	0.7433	1.931E+00	0.2567	0.000E+00	0.0000	4.216E-06	0.0000	1.933E-06	0.0000	6

Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

radio- nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
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

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

Water Dependent Pathways

radio- nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
C-14	5.403E-01	0.7433	1.866E-01	0.2567	0.000E+00	0.0000	4.074E-07	0.0000	1.868E-07	0.0000	6
Total	5.403E-01	0.7433	1.866E-01	0.2567	0.000E+00	0.0000	4.074E-07	0.0000	1.868E-07	0.0000	6

Sum of all water independent and dependent pathways.

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

Parent (i)	Product (j)	Branch Fraction*	DSR(j,t) (mrem/yr)/(µCi/g)	(mrem/yr)/(µCi/g)	(mrem/yr)/(µCi/g)	(mrem/yr)/(µCi/g)	(mrem/yr)/(µCi/g)
		t= 0.000E+00	1.000E+00	5.000E+00	7.000E+00	1.000E+01	
-14	C-14	1.000E+00	3.802E-23	2.818E+01	1.366E+02	3.009E+01	2.908E+00

Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) =  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

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

Radionuclide (i)	t= 0.000E+00	1.000E+00	5.000E+00	7.000E+00	1.000E+01
-14	*4.454E+06	8.870E-01	1.830E-01	8.309E-01	8.598E+00

At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(µCi/g)  
and Single Radionuclide Soil Guidelines G(i,t) in µCi/g  
at tmin = time of minimum single radionuclide soil guideline  
and at tmax = time of maximum total dose = 4.290 ± 0.009 years

Radionuclide (i)	Initial (µCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (µCi/g)	DSR(i,tmax)	G(i,tmax) (µCi/g)
-14	2.500E-01	4.290 ± 0.009	1.599E+02	1.564E-01	1.599E+02	1.564E-01

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

Nuclide (j)	Parent (i)	BRF(i)	DOSE(j,t), mrem/yr				
			t= 0.000E+00	1.000E+00	5.000E+00	7.000E+00	1.000E+01
-14	C-14	1.000E+00	9.506E-24	7.046E+00	3.415E+01	7.522E+00	7.269E-01

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

Individual Nuclide Soil Concentration  
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	BRF(i)	S(j,t), µCi/g				
			t= 0.000E+00	1.000E+00	5.000E+00	7.000E+00	1.000E+01
-14	C-14	1.000E+00	2.500E-01	1.147E-01	5.082E-03	1.070E-03	1.033E-04

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

ESCALC.EXE execution time = 2.12 seconds

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

enu	Parameter	Current Value	Default	Param Nam
-1	Dose conversion factors for inhalation, mrem/μCi:			
-1	C-14	2.090E+00	2.090E+00	DCF2 (
-1	Dose conversion factors for ingestion, mrem/μCi:			
-1	C-14	2.090E+00	2.090E+00	DCF3 (
-34	Food transfer factors:			
-34	C-14 , plant/soil concentration ratio, dimensionless	5.500E+00	5.500E+00	RTF( 1
-34	C-14 , beef/livestock-intake ratio, (μCi/kg)/(μCi/d)	3.100E-02	3.100E-02	RTF( 1
-34	C-14 , milk/livestock-intake ratio, (μCi/L)/(μCi/d)	1.200E-02	1.200E-02	RTF( 1
-5	Bioaccumulation factors, fresh water, L/kg:			
-5	C-14 , fish	5.000E+04	5.000E+04	BIOFAC
-5	C-14 , crustacea and mollusks	9.100E+03	9.100E+03	BIOFAC

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by R (If different from)
011	Area of contaminated zone (m**2)	1.000E-01	1.000E+04	---
011	Thickness of contaminated zone (m)	2.000E+00	2.000E+00	---
011	Length parallel to aquifer flow (m)	1.000E+02	1.000E+02	---
011	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---
011	Time since placement of material (yr)	0.000E+00	0.000E+00	---
011	Times for calculations (yr)	1.000E+00	1.000E+00	---
011	Times for calculations (yr)	3.000E+00	3.000E+00	---
011	Times for calculations (yr)	5.000E+00	1.000E+01	---
011	Times for calculations (yr)	7.000E+00	3.000E+01	---
011	Times for calculations (yr)	1.000E+01	1.000E+02	---
011	Times for calculations (yr)	2.000E+01	3.000E+02	---
011	Times for calculations (yr)	1.000E+02	1.000E+03	---
011	Times for calculations (yr)	not used	0.000E+00	---
011	Times for calculations (yr)	not used	0.000E+00	---
012	Initial principal radionuclide (µCi/g): C-14	1.000E-01	0.000E+00	---
012	Concentration in groundwater (µCi/L): C-14	not used	0.000E+00	---
013	Cover depth (m)	1.200E+00	0.000E+00	---
013	Density of cover material (g/cm**3)	1.500E+00	1.500E+00	---
013	Cover depth erosion rate (m/yr)	1.000E-03	1.000E-03	---
013	Density of contaminated zone (g/cm**3)	1.500E+00	1.500E+00	---
013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---
013	Contaminated zone total porosity	4.000E-01	4.000E-01	---
013	Contaminated zone field capacity	2.000E-01	2.000E-01	---
013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---
013	Contaminated zone b parameter	5.300E+00	5.300E+00	---
013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---
013	Humidity in air (g/m**3)	not used	8.000E+00	---
013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---
013	Precipitation (m/yr)	1.000E+00	1.000E+00	---
013	Irrigation (m/yr)	2.000E-01	2.000E-01	---
013	Irrigation mode	overhead	overhead	---
013	Runoff coefficient	2.000E-01	2.000E-01	---
013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---
013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---
014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---
014	Saturated zone total porosity	4.000E-01	4.000E-01	---
014	Saturated zone effective porosity	2.000E-01	2.000E-01	---
014	Saturated zone field capacity	2.000E-01	2.000E-01	---
014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---
014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---
014	Saturated zone b parameter	5.300E+00	5.300E+00	---
014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---
014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---
014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---
014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---
015	Number of unsaturated zone strata	1	1	---

Site-Specific Parameter Summary (continued)

enu	Parameter	User Input	Default	Used by F (If different frc)
015	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---
015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---
015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---
015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---
015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---
015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---
015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---
016	Distribution coefficients for C-14			
016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---
016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---
016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---
016	Leach rate (/yr)	0.000E+00	0.000E+00	7.790E-
016	Solubility constant	0.000E+00	0.000E+00	not use
017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---
017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---
017	Exposure duration	3.000E+01	3.000E+01	---
017	Shielding factor, inhalation	4.000E-01	4.000E-01	---
017	Shielding factor, external gamma	7.000E-01	7.000E-01	---
017	Fraction of time spent indoors	5.000E-01	5.000E-01	---
017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---
017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circu
017	Radii of shape factor array (used if FS = -1):			
017	Outer annular radius (m), ring 1:	not used	5.000E+01	---
017	Outer annular radius (m), ring 2:	not used	7.071E+01	---
017	Outer annular radius (m), ring 3:	not used	0.000E+00	---
017	Outer annular radius (m), ring 4:	not used	0.000E+00	---
017	Outer annular radius (m), ring 5:	not used	0.000E+00	---
017	Outer annular radius (m), ring 6:	not used	0.000E+00	---
017	Outer annular radius (m), ring 7:	not used	0.000E+00	---
017	Outer annular radius (m), ring 8:	not used	0.000E+00	---
017	Outer annular radius (m), ring 9:	not used	0.000E+00	---
017	Outer annular radius (m), ring 10:	not used	0.000E+00	---
017	Outer annular radius (m), ring 11:	not used	0.000E+00	---
017	Outer annular radius (m), ring 12:	not used	0.000E+00	---
017	Fractions of annular areas within AREA:			
017	Ring 1	not used	1.000E+00	---
017	Ring 2	not used	2.732E-01	---
017	Ring 3	not used	0.000E+00	---
017	Ring 4	not used	0.000E+00	---
017	Ring 5	not used	0.000E+00	---
017	Ring 6	not used	0.000E+00	---
017	Ring 7	not used	0.000E+00	---
017	Ring 8	not used	0.000E+00	---
017	Ring 9	not used	0.000E+00	---
017	Ring 10	not used	0.000E+00	---
017	Ring 11	not used	0.000E+00	---
017	Ring 12	not used	0.000E+00	---

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by R (If different from Default)
018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---
018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---
018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---
018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---
018	Fish consumption (kg/yr)	5.400E+00	5.400E+00	---
018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---
018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---
018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---
018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---
018	Contamination fraction of household water	not used	1.000E+00	---
018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---
018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---
018	Contamination fraction of aquatic food	5.000E-01	5.000E-01	---
018	Contamination fraction of plant food	-1	-1	0.500E-
018	Contamination fraction of meat	-1	-1	0.500E-
018	Contamination fraction of milk	-1	-1	0.500E-
019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---
019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---
019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---
019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---
019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---
019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---
019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---
019	Depth of roots (m)	9.000E-01	9.000E-01	---
019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---
019	Household water fraction from ground water	not used	1.000E+00	---
019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---
019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---
19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---
19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---
19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---
19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---
19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---
19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---
19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---
19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---
19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---
19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---
19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---
19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---
19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---
19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---
19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---
19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---
14	C-12 concentration in water (g/cm**3)	2.000E-05	2.000E-05	---
14	C-12 concentration in contaminated soil (g/g)	3.000E-02	3.000E-02	---
14	Fraction of vegetation carbon from soil	2.000E-02	2.000E-02	---
14	Fraction of vegetation carbon from air	9.800E-01	9.800E-01	---

Site-Specific Parameter Summary (continued)

enu	Parameter	User Input	Default	Used by R (If different fro
14	C-14 evasion layer thickness in soil (m)	3.000E-01	3.000E-01	---
14	C-14 evasion flux rate from soil (1/sec)	7.000E-07	7.000E-07	---
14	C-12 evasion flux rate from soil (1/sec)	1.000E-10	1.000E-10	---
14	Fraction of grain in beef cattle feed	8.000E-01	8.000E-01	---
14	Fraction of grain in milk cow feed	2.000E-01	2.000E-01	---
14	DCF correction factor for gaseous forms of C14	8.894E+01	8.894E+01	---
TOR	Storage times of contaminated foodstuffs (days):			
TOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---
TOR	Leafy vegetables	1.000E+00	1.000E+00	---
TOR	Milk	1.000E+00	1.000E+00	---
TOR	Meat and poultry	2.000E+01	2.000E+01	---
TOR	Fish	7.000E+00	7.000E+00	---
TOR	Crustacea and mollusks	7.000E+00	7.000E+00	---
TOR	Well water	1.000E+00	1.000E+00	---
TOR	Surface water	1.000E+00	1.000E+00	---
TOR	Livestock fodder	4.500E+01	4.500E+01	---
021	Thickness of building foundation (m)	not used	1.500E-01	---
021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---
021	Total porosity of the cover material	not used	4.000E-01	---
021	Total porosity of the building foundation	not used	1.000E-01	---
021	Volumetric water content of the cover material	not used	5.000E-02	---
021	Volumetric water content of the foundation	not used	3.000E-02	---
021	Diffusion coefficient for radon gas (m/sec):			
021	in cover material	not used	2.000E-06	---
021	in foundation material	not used	3.000E-07	---
021	in contaminated zone soil	not used	2.000E-06	---
021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---
021	Average building air exchange rate (1/hr)	not used	5.000E-01	---
021	Height of the building (room) (m)	not used	2.500E+00	---
021	Building interior area factor	not used	0.000E+00	---
021	Building depth below ground surface (m)	not used	-1.000E+00	---
021	Emanating power of Rn-222 gas	not used	2.500E-01	---
021	Emanating power of Rn-220 gas	not used	1.500E-01	---
ITL	Number of graphical time points	32	---	---
ITL	Maximum number of integration points for dose	17	---	---
ITL	Maximum number of integration points for risk	257	---	---

Summary of Pathway Selections

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

Contaminated Zone Dimensions		Initial Soil Concentrations, µCi/g	
Area:	0.10 square meters	C-14	1.000E-01
Thickness:	2.00 meters		
over Depth:	1.20 meters		

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	5.000E+00	7.000E+00	1.000E+01	2.000E+01	1.000E+
TDOSE(t):	3.802E-24	2.818E+00	1.400E+01	1.366E+01	3.009E+00	2.908E-01	1.204E-04	0.000E+
M(t):	1.521E-25	1.127E-01	5.599E-01	5.464E-01	1.203E-01	1.163E-02	4.817E-06	0.000E+
aximum TDOSE(t):	1.599E+01 mrem/yr	at t = 4.285 ± 0.009 years						

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 4.285E+00 years

Water Independent Pathways (Inhalation excludes radon)											
radio- nuclide nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	1.630E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
total	1.630E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 4.285E+00 years

Water Dependent Pathways											
radio- nuclide nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	1.192E+01	0.7459	4.061E+00	0.2541	0.000E+00	0.0000	8.715E-06	0.0000	3.927E-06	0.0000	1
total	1.192E+01	0.7459	4.061E+00	0.2541	0.000E+00	0.0000	8.715E-06	0.0000	3.927E-06	0.0000	1

Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

radio- nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	3.802E-24	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
total	3.802E-24	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0

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

Water Dependent Pathways

radio- nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
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

Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

radio- uclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	1.823E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
total	1.823E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0

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

Water Dependent Pathways

radio- uclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	2.124E+00	0.7537	6.942E-01	0.2463	0.000E+00	0.0000	1.410E-06	0.0000	6.013E-07	0.0000	2
total	2.124E+00	0.7537	6.942E-01	0.2463	0.000E+00	0.0000	1.410E-06	0.0000	6.013E-07	0.0000	2

Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

radio- nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	4.192E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
total	4.192E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0

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

Water Dependent Pathways

radio- nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	1.045E+01	0.7463	3.551E+00	0.2537	0.000E+00	0.0000	7.601E-06	0.0000	3.416E-06	0.0000	1
total	1.045E+01	0.7463	3.551E+00	0.2537	0.000E+00	0.0000	7.601E-06	0.0000	3.416E-06	0.0000	1

Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and  
As mrem/yr and Fraction of Total Dose At t = 5.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	(
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	(

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and  
As mrem/yr and Fraction of Total Dose At t = 5.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
C-14	1.017E+01	0.7442	3.495E+00	0.2558	0.000E+00	0.0000	7.587E-06	0.0000	3.456E-06	0.0000	1
Total	1.017E+01	0.7442	3.495E+00	0.2558	0.000E+00	0.0000	7.587E-06	0.0000	3.456E-06	0.0000	1

Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 7.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

radio- nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
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

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 7.000E+00 years

Water Dependent Pathways

radio- nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	2.236E+00	0.7433	7.723E-01	0.2567	0.000E+00	0.0000	1.686E-06	0.0000	7.731E-07	0.0000	2
total	2.236E+00	0.7433	7.723E-01	0.2567	0.000E+00	0.0000	1.686E-06	0.0000	7.731E-07	0.0000	2

Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

radio- nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
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

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

Water Dependent Pathways

radio- nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	2.161E-01	0.7433	7.463E-02	0.2567	0.000E+00	0.0000	1.630E-07	0.0000	7.471E-08	0.0000	2
total	2.161E-01	0.7433	7.463E-02	0.2567	0.000E+00	0.0000	1.630E-07	0.0000	7.471E-08	0.0000	2

Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 2.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

radio- uclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
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

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and P  
As mrem/yr and Fraction of Total Dose At t = 2.000E+01 years

Water Dependent Pathways

radio- uclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	8.951E-05	0.7433	3.091E-05	0.2567	0.000E+00	0.0000	6.750E-11	0.0000	3.094E-11	0.0000	1
total	8.951E-05	0.7433	3.091E-05	0.2567	0.000E+00	0.0000	6.750E-11	0.0000	3.094E-11	0.0000	1

Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

Radio- nuclide	Ground		Inhalation		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
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

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

Water Dependent Pathways

Radio- nuclide	Water		Fish		Radon		Plant		Meat		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0
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

Sum of all water independent and dependent pathways.

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

Parent (i)	Product (j)	Branch Fraction*	DSR(j,t) (mrem/yr)/(µCi/g) t= 0.000E+00 1.000E+00 3.000E+00 5.000E+00 7.000E+00 1.000E+01 2.000E+01						
-14	C-14	1.000E+00	3.802E-23	2.818E+01	1.400E+02	1.366E+02	3.009E+01	2.908E+00	1.204E-03

Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) =  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

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

Radionuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	5.000E+00	7.000E+00	1.000E+01	2.000E+01	1.0
-14	*4.454E+06	8.870E-01	1.786E-01	1.830E-01	8.309E-01	8.598E+00	2.076E+04	*4.4	

At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(µCi/g)  
and Single Radionuclide Soil Guidelines G(i,t) in µCi/g  
at tmin = time of minimum single radionuclide soil guideline  
and at tmax = time of maximum total dose = 4.285 ± 0.009 years

Radionuclide (i)	Initial (µCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (µCi/g)	DSR(i,tmax)	G(i,tmax) (µCi/g)
-14	1.000E-01	4.285 ± 0.009	1.599E+02	1.564E-01	1.599E+02	1.564E-01

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

Nuclide (j)	Parent (i)	BRF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	5.000E+00	7.000E+00	1.000E+01	2.000E+01
-14	C-14	1.000E+00		3.802E-24	2.818E+00	1.400E+01	1.366E+01	3.009E+00	2.908E-01	1.204E-04

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

Individual Nuclide Soil Concentration  
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	BRF(i)	S(j,t), µCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	5.000E+00	7.000E+00	1.000E+01	2.000E+01
-14	C-14	1.000E+00		1.000E-01	4.588E-02	9.658E-03	2.033E-03	4.279E-04	4.133E-05	1.708E-08

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

RESRAD.EXE execution time = 1.99 seconds