Whetstone Associates

ENERGY*SOLUTIONS* CLASS A SOUTH CELL INFILTRATION AND TRANSPORT MODELING

Prepared for

Energy*Solutions,* LLC
423 West 300 South, Suite 200
Salt Lake City, UT 84101

Prepared by

Whetstone Associates, Inc.
714 S. Oak Street
P.O. Box 1156
La Veta, Colorado 81055
719-742-5155
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1. INTRODUCTION

Energy*Solutions* operates a radioactive waste and mixed waste disposal facility in Tooele County, Utah. Waste disposal cells at the site (Figure 1) are permanent, clay-lined cells with composite clay and rock caps designed to perform for a minimum of 500 years. Two Class A waste disposal cells on site are partially filled, and Energy*Solutions* proposes to place Class A waste in the western half of the existing 11e.(2) cell, which would be called the Class A South cell.

The footprint of the Class A South and 11e.(2) disposal cell would not change from the currently approved 11e.(2) cell. At completion, the entire cell would occupy approximately 100 acres in Section 32 of T1S, R11W, SLBM. The Class A South portion of the cell would occupy approximately 58 acres. The engineered cover for the Class A South portion of the cell would be designed and constructed similar to other Class A disposal cells on site. The cover would include a top rock, a frost protection layer, and two filter zones above the radon barrier to minimize infiltration through the cell.

1.1 Purpose and Objective

The groundwater discharge permit for the facility requires that environmental impacts to groundwater are kept within tolerable risk levels. The flow of water and transport of constituents from the proposed Class A South disposal cell to a compliance well must be predicted for a period of 200 and 500 years after closure, for hazardous and radioactive constituents, respectively.

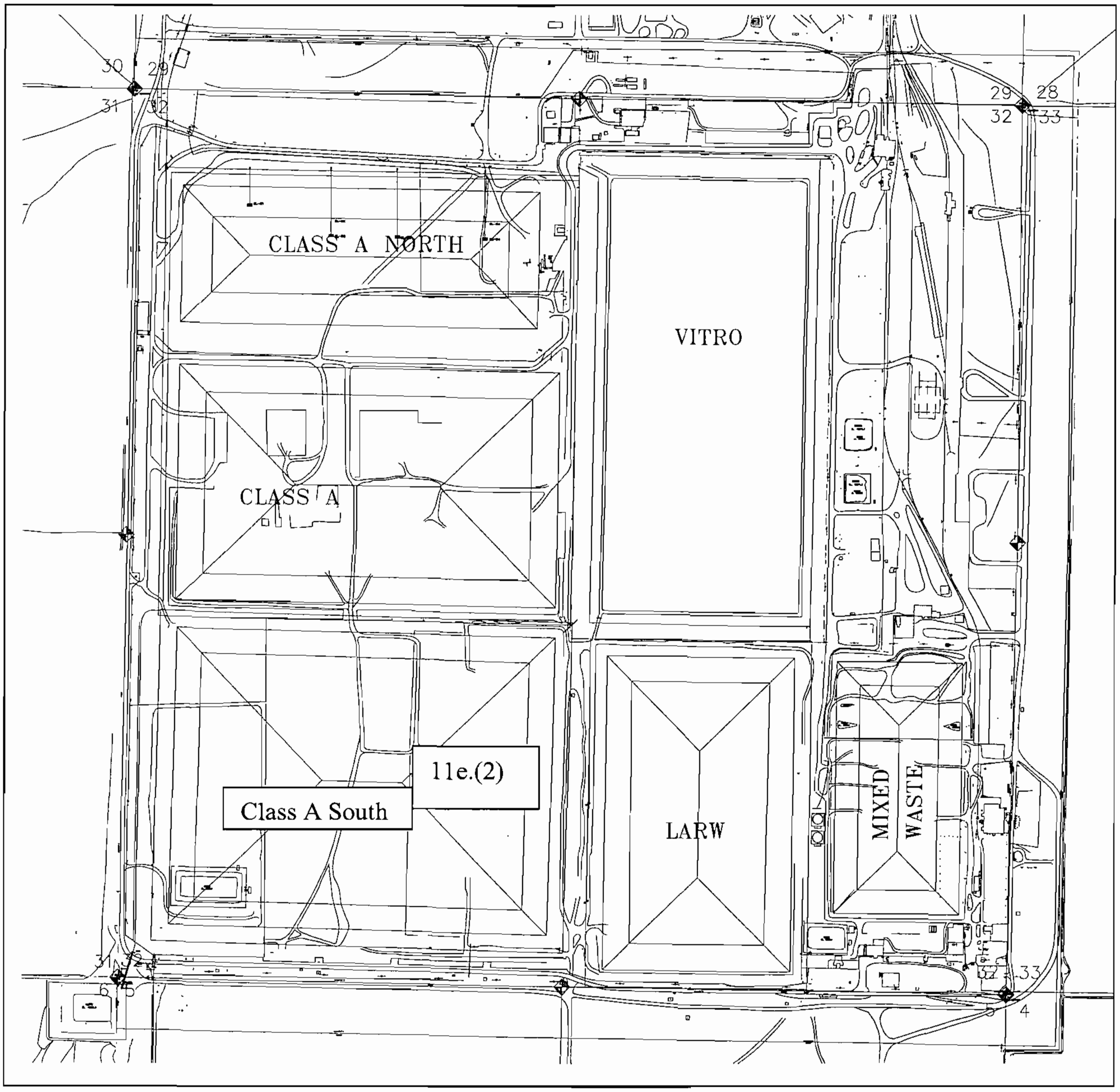
Groundwater modeling (including infiltration, unsaturated groundwater flow, and contaminant transport) was performed for the Class A South cell to evaluate future groundwater quality at compliance wells. The purpose of this document is to describe the input parameters used in the modeling and to summarize the modeling results.

1.2 Background

Fate and transport modeling of a similar nature has been performed previously for the LARW cell, 11e.(2) cell, Class A cell, Class A, B, & C cell, Mixed Waste cell, and Class A Combined cell at the Energy*Solutions* Clive facility. This modeling has been based on site-specific parameters, where available, or conservative assumptions where no site-specific data existed. Over time, as more data have been collected for the site, these models have been refined and updated to provide more accurate yet extremely environmentally conservative estimates of the leaching, transport, and arrival of constituents at compliance monitoring wells for decades and centuries into the future.

Previous groundwater flow and contaminant transport models of the Envirocare facility have been generated by Rogers and Associates Engineering (1990), Bingham Environmental (1991, 1993a. 1993b, 1994a, 1995a, 1995c), Adrian Brown Consultants (1996a, 1996b, 1997a, 1997b, 1997d, 1998), the Utah Department of Environmental Quality (DEQ) Division of Water Quality (1993, 1994), and Whetstone Associates (2000a, 2000d, 2000e, 2000f, 2001a, 2001b, 2003, 2005a, 2005b). The methodology used in the modeling was described in a two-volume comprehensive modeling report for the LARW cell, prepared by Adrian Brown Consultants in 1997. The reader is encouraged to review these documents, which may be found as Appendix M to Envirocare's 1998 Radioactive Material License Renewal Application.

Figure 1. Plan View Map of Section 32 Showing Embankments and Buffer Zones



Existing modeling reports using this methodology include the following:

- Volume I. Final Report on Infiltration Modeling, Adrian Brown Consultants, December 4, 1997
- Volume II. LARW Groundwater Fate and Transport Modeling, Adrian Brown Consultants, February 12, 1998
- Revised Western LARW Infiltration and Transport Modeling report, Whetstone Associates, July 19, 2000
- Class A, B, & C Cell Infiltration and Transport Modeling report, Whetstone Associates, August 1, 2000
- Mixed Waste Cell Infiltration and Transport Modeling report, Whetstone Associates, November 22, 2000
- 11e.(2) Cell Infiltration and Transport Modeling report, Whetstone Associates, June 5 and July 26, 2001
- Technical memorandum on 11(e).2 Cell Transport Modeling Using New Zn Kd and Higher Radionuclide Concentrations, Whetstone Associates, November 10, 2003
- Class A Combined (CAC) Cell Infiltration and Transport Modeling report, Whetstone Associates, June and November, 2005
- Class A Combined (CAC) Cell Infiltration and Transport Modeling report, Whetstone Associates, May, 2006

The engineering design for the proposed Class A South cell is very similar to that of the existing Class A and Class A North cells. The approach and methodology for the modeling are similar.

2. APPROACH

The potential migration of hazardous and radioactive constituents from the Class A South cell were investigated using the EPA HELP model (Schroeder and Peyton, 1995), the Pacific Northwest Laboratories UNSAT-H model (Fayer and Jones, 1990), and the PATHRAE-RAD model (Merrell, et al, 1995).

The modeling project was divided into the following four phases:

1. The infiltration through the closed Class A South cell was predicted using the EPA HELP model;
2. Percolation rates predicted by the HELP model were input into the UNSAT-H model to predict the moisture content and time of travel from the bottom of the waste to the top of the aquifer;
3. A dispersive solution for contaminant transport from the base of the cell to the top of the water table (vertical solution) was determined using the PATHRAE model; and
4. The horizontal migration of constituents through the saturated zone to a compliance well was modeled, again using PATHRAE.

The infiltration (HELP) and moisture content (UNSAT-H) models are described in Sections 3 and 4 of this report. The contaminant transport (PATHRAE) modeling is described in Section 5.

3. INFILTRATION (HELP) MODELING

The infiltration modeling code and input are briefly described below. Again, for more detailed information on the infiltration modeling approach, code, and design in relation to the Energy*Solutions* site, refer to the document entitled Volume I. Final Report on Infiltration Modeling, dated December 4, 1997, which may be found as Appendix M to the 1998 Radioactive Material License Renewal Application.

3.1 Code

Infiltration through the Class A South cell was modeled using the EPA Hydrologic Evaluation of Landfill Performance (HELP) model (version 3.06). The HELP program (Schroeder and Peyton, 1995) is a quasi-two-dimensional code developed by Paul Schroeder (U.S. Army Corps of Engineers) and R. Lee Peyton (University of Missouri, Columbia). The model was adapted from the EPA HSSWDS model (Perrier and Gibson, 1980) and various codes from the US Agricultural Research Service, and National Weather Service, and uses weather, soil, and landfill design data to perform water balance analysis of the designed cell. Surface storage, snowmelt, runoff, infiltration, evapotranspiration, soil moisture storage, lateral subsurface drainage, and unsaturated surface drainage can all be modeled.

The HELP code is distributed by EPA and has widespread acceptance as a tool for the evaluation of the hydrologic performance of landfills. The HELP code was used previously in the prediction of infiltration at the Energy*Solutions* site, and was accepted by DRC as part of license renewal.

3.2 Weather Data Input

The HELP weather data input to Class A South cell model was based on 12 years of meteorological data available for the Clive site, as reported by Meteorological Solutions, Inc (MSI, 2004). The precipitation measured from 1993-2005 indicates that the average annual precipitation at the Energy*Solutions* Clive facility is 7.58 inches per year. The evapotranspiration, precipitation, temperature, and solar radiation data files were generated using a synthetic weather generator, based on site-specific data, as described in previous reports. The weather generator routine, developed by the USDA Agricultural Research Service (Richardson and Wright, 1984), generated 100 years of daily climate data based on site-specific monthly average precipitation and temperature coupled with the climate distribution parameters for a selected analog city.

The climatological input values are summarized in Table 1 and described briefly in the following sections.

Table 1. Summary of HELP Model Weather and Climate Input

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM SALT LAKE CITY UTAH

STATION LATITUDE	=	40.69 DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	117
END OF GROWING SEASON (JULIAN DATE)	=	289
EVAPORATIVE ZONE DEPTH	=	18.0 INCHES
AVERAGE ANNUAL WIND SPEED	=	6.67 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	50.50 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	28.60 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	22.70 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	47.90 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.79	0.92	0.85	1.25	0.94	0.90
0.34	0.32	0.34	0.75	0.58	0.60

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
30.40	32.00	41.70	49.10	60.10	69.60
78.40	77.00	65.50	50.90	36.70	28.90

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH AND STATION LATITUDE = 40.69 DEGREES

3.2.1 Evapotranspiration

Evapotranspiration was calculated by HELP using the location, maximum leaf area, and evaporative zone depth (EZD) specified for the site.

Location. Salt Lake City appears to be the most appropriate analog city for the Clive site DRC (1997a). Therefore, Salt Lake City was used in the model as the analog city, from which HELP generated synthetic evapotranspiration data. The default latitude (40.76°) was adjusted to 40.6858°(40°41'15") for the Clive site.

Evaporative Zone Depth (EZD). The EZD is defined as the depth to which evaporation and transpiration from the soil or rock can occur. Because the Class A South cell will not be vegetated, the EZD represents the maximum depth of evaporation. Any water which percolates below the EZD could only be routed laterally, via a filter (or lateral drainage) layer, or vertically downward as percolation. The model determined the amount evaporation based on the available energy in the system, according to the temperature, solar radiation, and wind speed for each given day.

The modeling was conducted using an 18-inch EZD, which only allows water to evaporate from the 18-inch thick rip rap layer. Water that percolates down to the upper filter layer or to the sacrificial soil cannot be removed from the HELP model by evaporation. This input value is considered to be extremely environmentally conservative.

Maximum Leaf Area Index. The maximum leaf area was set to zero, which is appropriate for bare ground. The Class A South cell will not be vegetated.

Growing Season. The model is insensitive to the input values for the start and end of growing season, because the Class A South cell will not be vegetated. The growing season for Salt Lake City (start day 117, end day 289) was left as the default input.

Wind Speed. The site-specific 12-year average wind speed (July 1, 1992 through March 17, 2005) of 2.98 meters per second (6.67 miles per hour) was used in the base case model. This value is 16% higher than the long-term average wind speed from Dugway, Utah (5.75 mph) used in previous modeling.

Previous sensitivity analyses using wind speeds of 5.75, 7.27, and 8.8 mph (ABC, 1998) indicated that the HELP model is insensitive to slight variations in wind speed. As stated in the 1998 report:

> "Long-term climatic data from Dugway ... indicates that the average annual wind speed is 5 knots (5.75 mph). The long term average wind speed measured at the site from April through September 1994 was 3.5 meters per second ... or 7.27 mph. The default wind speed for Salt Lake City is 8.8 mph. The long-term Dugway value of 5 knots (5.75 mph) was used in the modeling. A sensitivity analysis ... indicates that the model was insensitive to these slight variations in wind speed."

The site-specific average wind speed (2.98 meters per second, 6.67 mph) used in the Class A South cell modeling is within the range of previous sensitivity analyses.

Relative Humidity. The long-term relative humidity data from Dugway was used in the HELP model simulations. The data are based on a 20-year period of record of monthly mean relative humidity values, from 13:00 hours local standard time from NWS, NOAA. The quarterly values were derived as a simple average of the monthly values.

Table 2. Quarterly Relative Humidity at Dugway Proving Ground

Quarter	Month 1	Month 2	Month 3	Quarterly Average
1st (Jan., Feb., Mar.)	57.9	52.8	40.9	50.5
2nd (Apr., May, June)	33.4	27.5	25	28.6
3rd (July, Aug., Sept.)	19.8	21.8	26.7	22.7
4th (Oct., Nov., Dec.)	34.3	47.2	62.4	47.9

Note: Dugway average monthly relative humidity data from 13:00 hours local standard time from NWS, NOAA (summarized from NOAA internet site data))

3.2.2 Precipitation

Precipitation data was generated using the HELP synthetic precipitation generator to stochastically generate 100 years of daily precipitation data. The mean monthly precipitation values, from which the 100 years of daily precipitation data were generated, include twelve years of recorded precipitation available for the Clive site (MSI 2004). The precipitation measured from 1992 – 2004 at the Clive meteorological station is summarized in Table 3. The annual average precipitation, based on valid data from the twelve-year record, is 8.58 inches per year. The monthly values were input to the HELP synthetic weather generator, which generated a 100-year data set with an average annual precipitation of 8.72 inches per year[1].

A statistical analysis of the 100-year synthetic precipitation data set indicates that the synthetic weather generator produced daily data having a mean annual precipitation of 8.72 in/yr, with a minimum of 5.09 in/yr and a maximum of 12.90 in/yr. The 100-year data set contains 252 days having precipitation greater than 0.4 inches, 54 days having precipitation greater than 0.6 inches, and 20 days having precipitation greater than 0.8 inches. The complete data set is presented in Attachment 4, file M100.d4.

Table 3. Summary of Precipitation at Clive, Utah July 1992-June 2004

MONTH	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	12-YR AVE
July	0.51	0.03	0.06	0.17	1.10	1.19	0.43	0.06	0.07	0.13	0.24	0.03	0.34
August	0.24	0.10	0.39	0.04	0.01	0.32	0.28	0.68	1.05	0.25	0.01	0.45	0.32
September	0.07	0.27	0.51	0.15	0.41	0.90	0.52	0.12	0.15	0.22	0.52	0.21	0.34
October	0.89	0.78	0.89	0.06	0.69	0.47	1.94	0.04	1.92	0.20	0.95	0.17	0.75
November	0.33	0.33	1.91	0.24	0.6	0.72	0.10	0.13	0.15	1.25	0.58 a	0.62	0.58 c
December	1.03	0.18	0.22	0.78	0.77	0.6	0.32	0.18	0.44	0.81	0.53 a	1.27	0.60 c
January	1.17	0.13	0.95	1.31	1.56	0.71	0.81	1.31	0.21	0.50	0.87 a	0.06	0.79 c
February	0.39	0.63	0.78	0.78	0.87	2.21	0.64	1.87	0.55	0.07	0.88 a	1.30	0.92 c
March	0.67	1.14	1.74	0.88	0.17	1.67	0.46	0.23	1.48	0.44	0.89 a	0.43	0.85 c
April	0.17	1.66	0.44	0.91	1.42	1.63	2.65	0.38	1.17	1.36	1.18 a	1.98	1.25 c
May	0.99	0.79	2.58	1.9	0.98	1.04	0.41	0.53	0.0	0.57	0.91	0.60	0.94
June	0.70	0.02	1.88	0.29	2.36	2.69	1.84	0.10	0.52	0.08	0.12	0.19	0.90 c
ANNUAL	7.17	6.06	12.35	7.51	10.94	14.69	10.41	5.61	7.74	5.87	7.68 b	7.29	8.58 c

Source: MSI (2004)
a) Monthly means based on 10-year climatological average
b) Annual total based on valid data and 10-year climatological averages
c) Mean is based on 11 years of data (excludes 2002-2003 data)

The 100-year synthetic data set had a mean precipitation of 8.72 inches. For comparison, the 8.72 inches of precipitation used in the HELP model is 13% higher than the long-term average annual precipitation measured at Dugway from September 1950 – January 2005. The monthly precipitation received at Clive has been similar to that received at Dugway over a 12-year period (Figure 2). The monthly average during this period has been similar (Figure 3), although the precipitation received at the Energy*Solutions* Clive site has exceeded Dugway's by 2.3% (Table 4).

Precipitation in recent years has exceeded the long-term average. During the 12-year period from July 1992 to June 2004, the average precipitation at Dugway exceeded the long-term average by 11% (Table 4). Assuming that the Clive precipitation has also exceeded the long-term average by 11%, the calculated long-term precipitation at Clive is 7.76 inches per year (Table 4) and the 8.72 inches used in the model is conservatively high.

[1] The synthetic weather generator created a 100-year synthetic precipitation data set having a mean annual precipitation of 8.72 inches per year, which was 0.14 inches (1.6%) higher than the sum of the monthly values (8.58 inches) input to the weather generator.

Figure 2. Monthly Precipitation at Clive and Dugway, July 1992 – June 2004

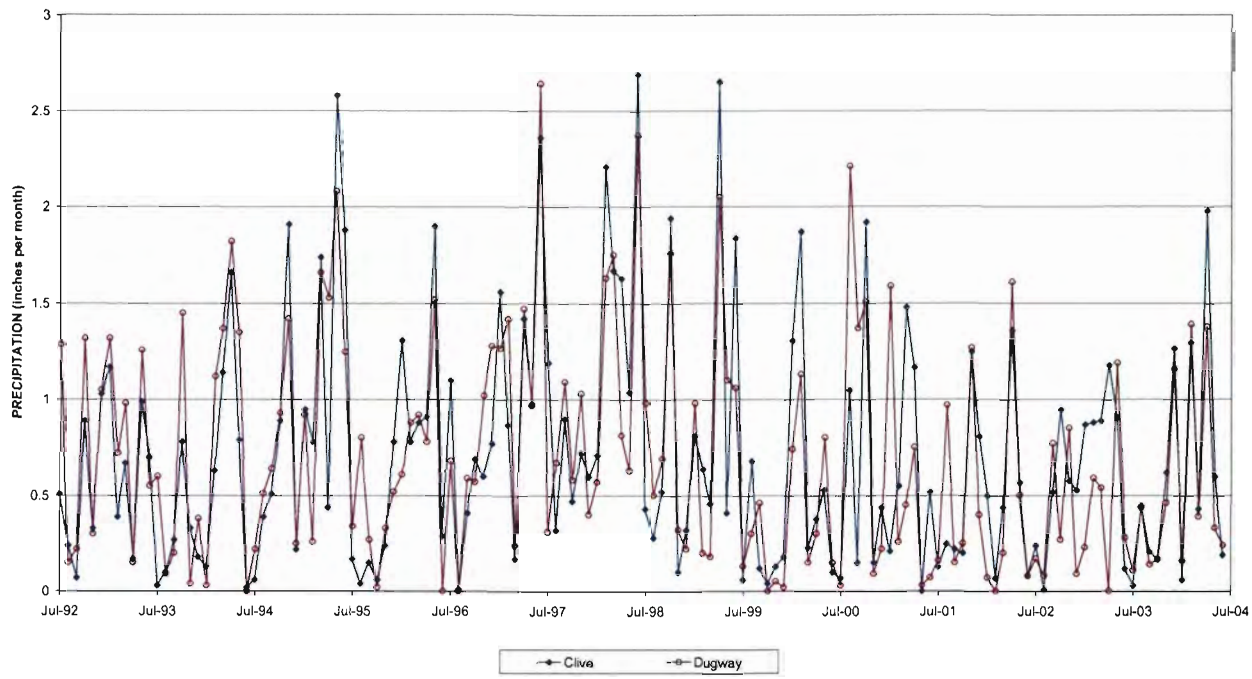


Figure 3. 12-Year Mean Monthly Precipitation at Clive and Dugway, July 1992 – June 2004

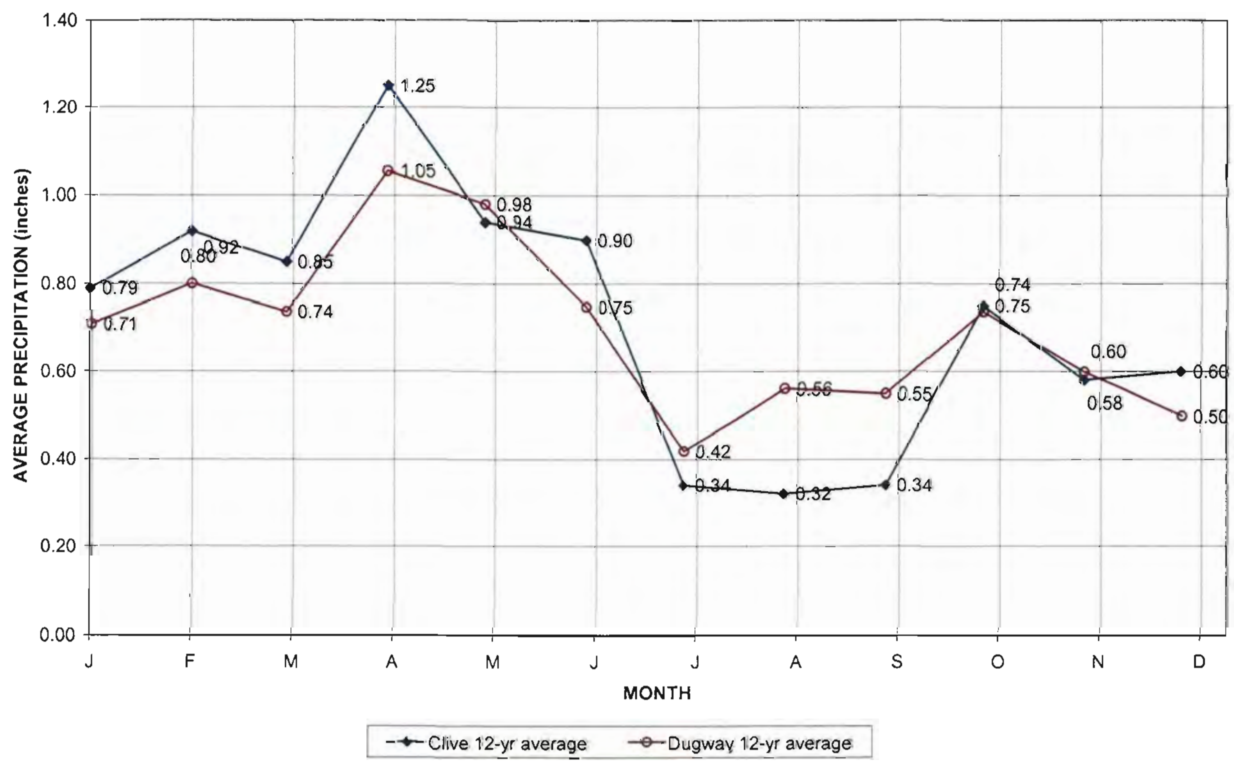


Table 4. Monthly Precipitation (in inches) at Clive and Dugway Stations July 1992-June 2004 with Comparison to Long-Term Mean

DATA	J	F	M	A	M	J	J	A	S	O	N	D	ANNUAL
12-yr Average Clive	0.79	0.92	0.85	1.25	0.94	0.90	0.34	0.32	0.34	0.75	0.58	0.60	8.58
12-yr Average Dugway	0.71	0.80	0.74	1.05	0.98	0.75	0.42	0.56	0.55	0.74	0.60	0.50	8.39
1950-2004 Avg. Dugway	0.56	0.62	0.75	0.82	0.97	0.54	0.49	0.58	0.59	0.73	0.55	0.55	7.58
Dugway 12-yr avg./Long-term	1.26	1.29	0.98	1.29	1.01	1.38	0.85	0.97	0.93	1.01	1.09	0.91	1.11
Clive fraction of Dugway	1.12	1.15	1.16	1.19	0.96	1.20	0.81	0.57	0.62	1.02	0.97	1.20	1.023
Clive long-term	0.57	0.63	0.77	0.84	0.99	0.55	0.50	0.59	0.60	0.75	0.56	0.56	7.76
Clive long-term (sum of monthly means)													7.93

NOTES:

Precipitation data reported in inches.

12-year average: Monthly averages for Dugway are based on mean monthly values for July 1992 - June 2004. Annual average is calculated as the sum of the mean monthly values.

% of long-term: Calculated by dividing twelve-year average at Dugway by the long term average at Dugway; determined that Dugway precipitation from July 1992 - June 2004 has been 11% higher than long-term average.

Clive fraction: Calculated by dividing twelve-year average at Clive by the twelve-year average at Dugway; Determined that on an annualized basis, the precipitation at Clive is 104.7% of that at Dugway

Clive long-term: Calculated by multiplying the long-term average at Dugway by the annualized conversion factor (104.7%).

DATA SOURCES:

Dugway data for 1950-Jan 2005 from Western Regional Climate Center (WRCC, 2005)

Clive data from Meteorological Solutions Inc (MSI, 2004)

Long-term statistics for Dugway calculated by WRCC

12-year statistics for Clive calculated by MSI

The synthetic precipitation data set (with a long-term mean of 8.72 in/yr) used in the HELP model is considered environmentally conservative because 1) the precipitation data set is based on a 12-year period of above-average precipitation in the region and 2) the data set captures extreme precipitation events.

3.2.3 Temperature

One hundred years of temperature data were created using the HELP synthetic temperature generator based on coefficients for Salt Lake City and the monthly average temperature at the Clive site. A statistical analysis of the 100 years of synthetic daily precipitation data indicates that the mean daily temperature is 51.88 °F, with a minimum of 3.7 °F and a maximum of 94.0 °F (Table 5). The 100-year data set contains 22,655 days having temperatures lower than 60 °F, 11,972 days having temperatures lower than 40 °F, and 1,033 days having temperatures lower than 20 °F (Table 6).

Table 5. Summary and Evaluation of Daily Temperature Data in HELP Model 100-Year Synthetic Weather Data Set

(See large tables at end of report document)

Table 6. Event Distribution of Mean Daily Temperature in 100-year Synthetic Data Set

Temperature (°F)	Number of Events
<95	36600
<90	36571
<80	34339
<70	28111
<60	22655
<50	17512
<40	11972
<30	5510
<20	1033
<10	45
<5	5

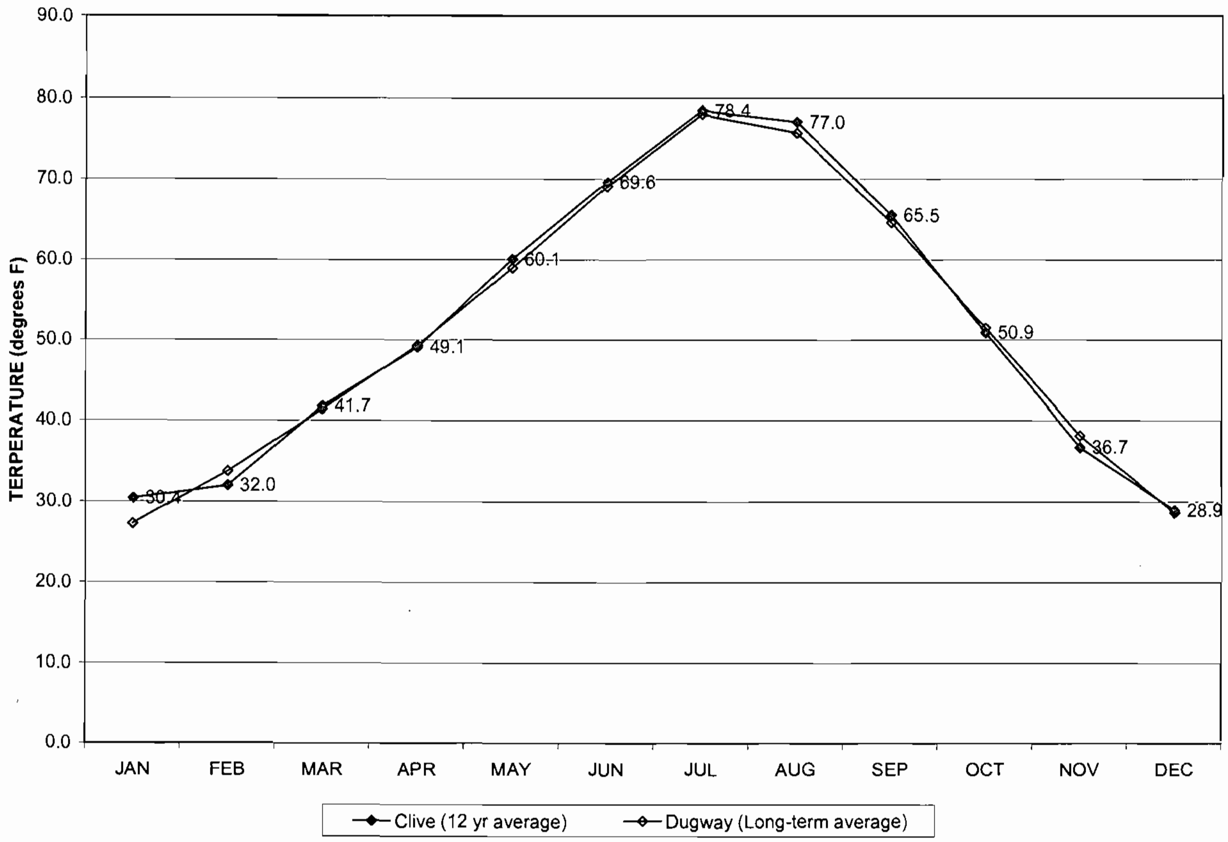
The 12-year average monthly temperatures from the Energy*Solutions* meteorological station (MSI, 2004) compare favorably with the long-term (Sept. 1950 – March 2005) average monthly temperatures at Dugway, Utah (Table 7, Figure 4) indicating that the temperature values from Dugway used in previous modeling were representative of the site. Long-term temperatures for Dugway tend to be slightly higher in the winter and lower in the summer than the 12-year average temperatures for the Clive site.

Table 7. Mean Monthly Temperature for the **Energy*Solutions* *Site***

Month	12 -Year Average Temperature (°C) at Energy*Solutions* Site	12 -Year Average Temperature (°F) at Energy*Solutions* Site	Long-Term Average Temperature (°F) at Dugway Sept 1950 – March 2005
January	-0.9	30.4	27.3
February	0.0	32.0	33.8
March	5.4	41.7	41.3
April	9.5	49.1	49.3
May	15.6	60.1	59.0
June	20.9	69.6	69.1
July	25.8	78.4	78.0
August	25.0	77.0	75.6
September	18.6	65.5	64.6
October	10.5	50.9	51.5
November	2.6	36.7	38.1
December	-1.7	28.9	28.6

Data Sources: Energy*Solutions* 12-year data: MSI (2004)
Dugway 1950-2005 data: Western Regional Climate Center (WRCC, 2005)

Figure 4. Comparison of 12-Year Mean Monthly Temperature at Clive (July 1992 – June 2004) with Long-term at Dugway (Sept 1950 – March 2005)



3.2.4 Solar Radiation Data

The synthetic generation of solar radiation data is a strong function of precipitation, therefore the precipitation data sets were generated first, followed by temperature, followed by solar radiation. The solar radiation data set was generated by first generating precipitation data (based the long-term average of 8.78 inches/year), then generating synthetic temperature data (based on long-term mean monthly temperatures at the Energy*Solutions* Clive meteorological station), then generating the solar radiation data using the location coefficients for Salt Lake City and the latitude (40°41'15", 40.6858°) for the Clive site.

Solar radiation data collected at the site over a 12-year period indicates that the maximum solar radiation occurs in June and averages 670 Langleys per day (MSI, 2004).

3.3 Landfill Soil and Design Data

The design of the Class A South cell is similar to the design of the Class A and Class A North cells, except that the Class A South has a longer maximum slope length (740 ft) and lower slope (2.1% – 2.4%). At completion, the footprint of the Class A South disposal cell will be approximately 1,476 x 1,880 feet, covering approximately 64 acres (Figure 5). The perimeter of the waste would be 1,426 x 1,775 feet (approximately 58 acres). The cell will be excavated into native soils and lined with compacted clay materials. Waste will be placed above the liner and will be covered with a layered engineered cover constructed of natural (no man-made) materials. The cell cover will be a layered composite which includes rip rap, filter material, sacrificial soil, and a clay radon barrier (Figure 6). The top slopes of the cell will be finished at a 2.1% – 2.4% grade, with side slopes no steeper than 5:1 (20%).

Figure 5. Class A South Cell Plan

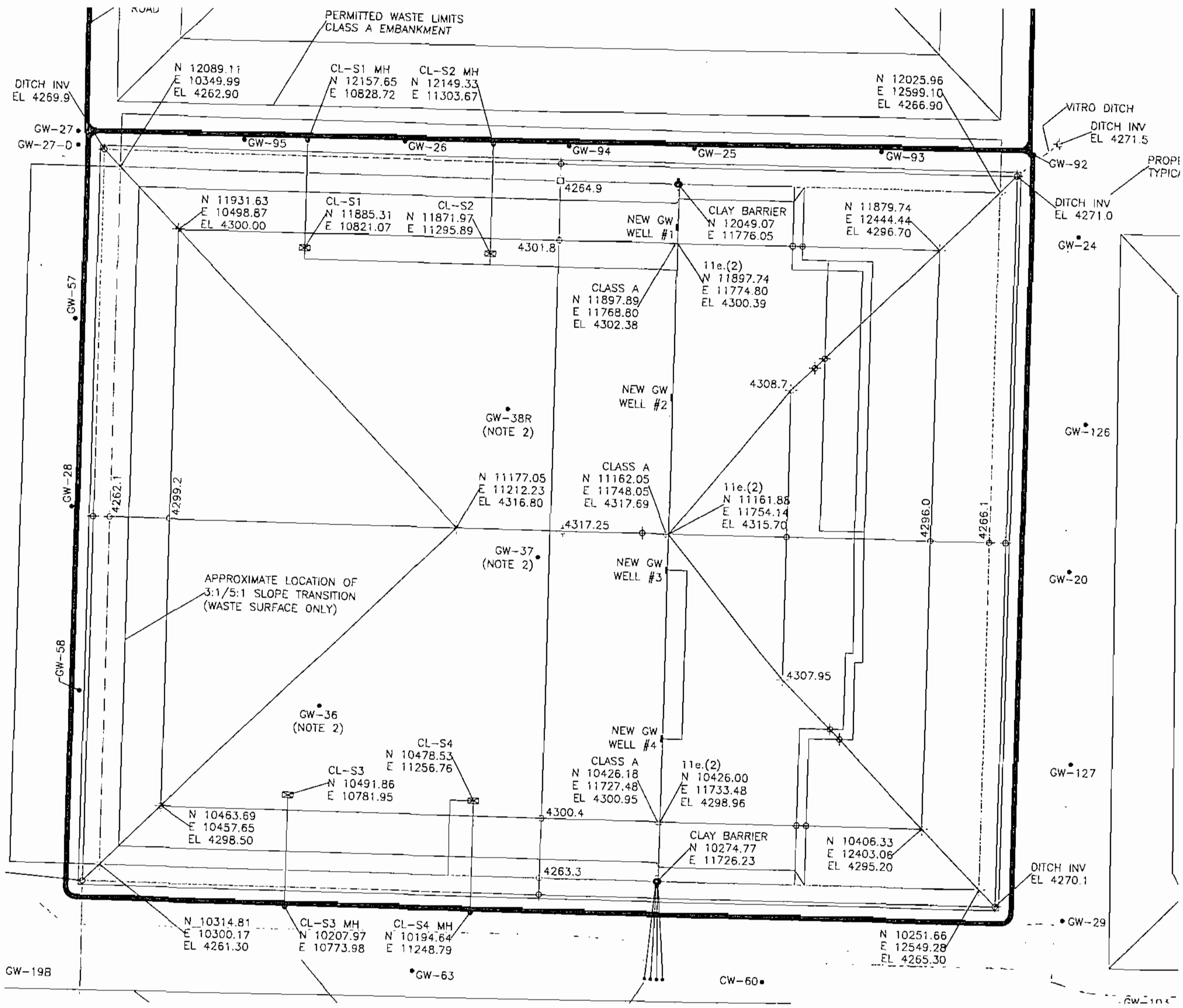
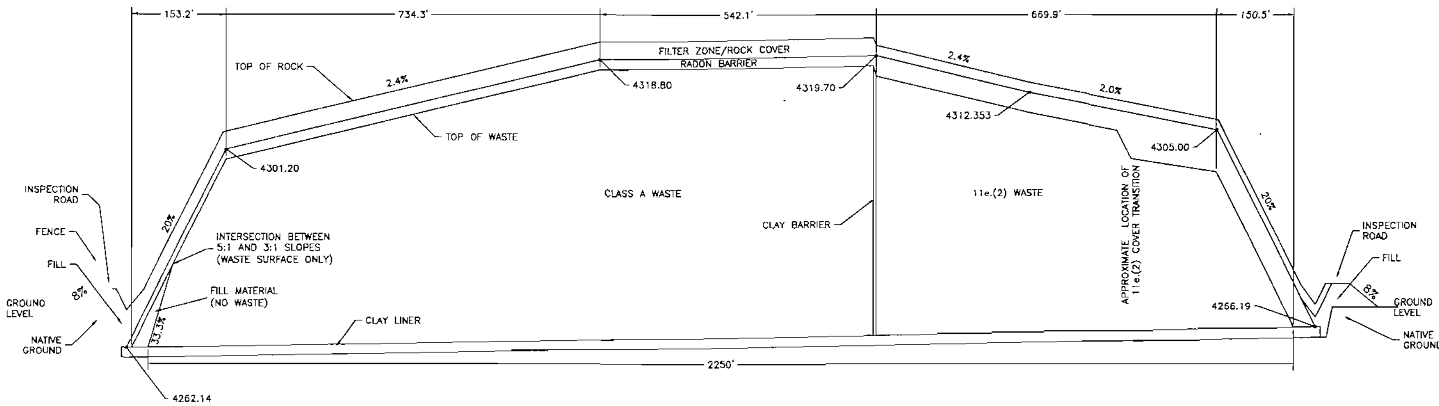
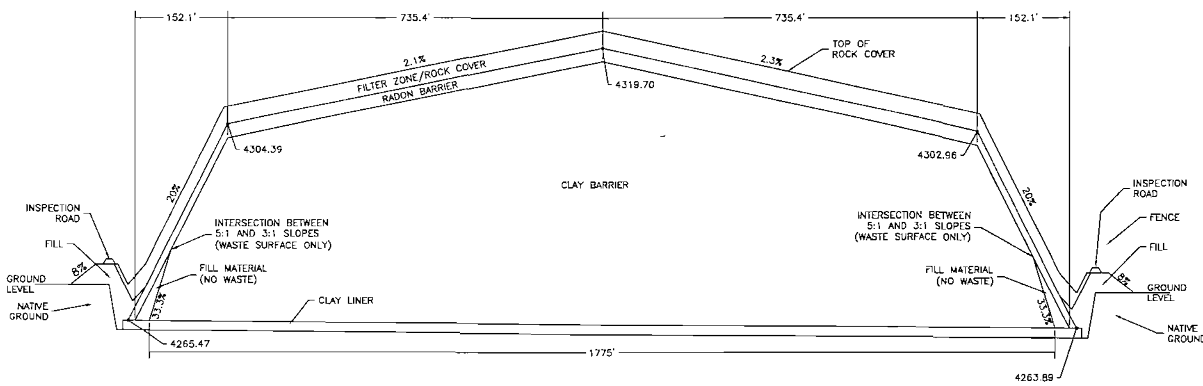


Figure 6. Class A South Cell Section



(a) East West Section



(b) North South Section

3.3.1 Top-Slope

The Class A South cell top slope has been designed with a 2.1 – 2.4% grade and a maximum slope length of 740 feet. The layers used in the Class A South top slope cover are listed in Table 8, and consist of the following:

- Lower Liner. The cell will be lined with a 2-foot thick layer of compacted clayey soil. This bottom clay liner has been constructed with a field hydraulic conductivity of $1.0x10^{-6}$ cm/sec or less.
- Waste. The waste layer will reach a maximum thickness of approximately 53 feet above the top of the clay bottom liner at the crest. The height of waste at the shoulder of the top slope (the contact between the top slope and side slope) will be approximately 37 feet, and the average waste height will be approximately 45 feet in the top slope area ((53+37)/2). Since the moisture contents of the waste are initialized to steady state (no moisture goes into or out of storage in the waste), the model is completely insensitive to waste thickness. A unit thickness of 100 inches was used for the waste in all HELP model runs.

- Radon Barrier. The proposed uniform waste cover design will consist of an upper 12 inches of radon barrier with a maximum hydraulic conductivity of $5x10^{-8}$ cm/sec and a lower 12 inches of radon barrier having a hydraulic conductivity of $1x10^{-6}$ cm/sec or less.
- Filter Zone (Lower). Six inches of Type-B filter material will be incorporated in the top slope cover design. This filter material ranges in size from 0.2 inches to 1.5 inches, with 100% passing a 1 ½-inch sieve, less than 40% passing a 3/8-inch sieve, and not more than 10% passing a 4.75 mm sieve. The Type-B size gradation corresponds to a coarse sand and fine gravel mix, according to the Universal Soil Classification System. A series of sensitivity analyses on the top slope show no difference in infiltration for through the top slope for Type B thicknesses of 6-, 12-, and 18-inches (Section 3.4.3).
- Sacrificial Soil (freeze/thaw) Layer. A 12-inch thick layer of silty sand and gravel will be used in the top slope cover, above the lower filter zone, in order to protect the lower layers of the cover from freeze/thaw effects. The engineering design specifies a D_{15} grain size of 1.68 mm, a D_{60} of 3/8 inch, and a $D_{100} \leq 3/4$ inch.
- Filter Zone (Upper). Six inches of Type-A filter material will be used on the top slope. The Type-A filter material ranges in size from 0.08 inches (2 mm) to 6.0 inches, with 100% passing a 6-inch sieve, 70% passing a 3-inch sieve, and not more than 10% passing a 2 mm sieve. The Type-A size gradation corresponds to a poorly sorted mixture of coarse sand to coarse gravel and cobble, according to the Universal Soil Classification System.
- Rip Rap Layer. Approximately 18-inches of rip rap will be placed on the top slopes, above the upper (Type A) filter zone. The Type-B rip rap to be used on the top slopes will range in size from 0.75-4.50 inches, with the D_{100} grain size $\leq$4.5 inch, $D_{50} \geq 1.25$ inch, and $D_{10} \geq 0.75$ inch. The coarser Type-A rip rap, used on the side slopes, will range in size from 2-16 inches (equivalent to coarse gravel to boulders), with the D_{100} grain size $\leq$16 inch, $D_{50} \geq 4.5$ inch, and $D_{10} \geq 2$ inch.

Table 8. HELP Infiltration Model Layers and Material Properties – Class A South Cell Top Slope

Layer	Material	Thickness (inches)	N (vol/vol)	θ_{fc} (vol/vol)	θ_{wp} (vol/vol)	Available Moisture (vol/vol)	θ_i (vol/vol)	K_s (cm/sec)	Layer Type n/a	Size Range (inches)	Material Description n/a
Layer 1	Type-B Rip Rap	18	0.190	0.024	0.007	0.017	initialized to ss	42	Vertical percolation	0.75-4.5	1.25 inches
Layer 2	Type-A Filter (upper)	6	0.190	0.024	0.007	0.017	initialized to ss	42	lateral drainage	0.08-6.0	Coarse Sand - Fine Cobble
Layer 3	Sacrificial Soil	12	0.31	0.2	0.025	0.175	0.31	4.00E-03	barrier soil	<0.75	Silty Sand and Gravel
Layer 4	Type-B Filter (lower)	6	0.28	0.032	0.013	0.019	initialized to ss	3.5	lateral drainage	0.2-1.5	Coarse Sand -Fine Gravel
Layer 5	Upper Radon Barrier	12	0.430	0.390	0.28	0.11	0.43	5.00E-08	barrier soil	n/a	Clay
Layer 6	Lower Radon Barrier	12	0.430	0.390	0.28	0.11	initialized to ss	1.00E-06	Vertical percolation	n/a	Clay
Layer 7	Waste	100	0.437	0.062	0.024	0.038	initialized to ss	5.00E-04	Vertical percolation	n/a	Sand
Layer 8	Clay Liner	24	0.430	0.390	0.28	0.11	0.43	1.00E-06	barrier soil	n/a	Clay

n = porosity
θ_{fc} = Field Capacity
θ_{wp} = Wilting Point
θ_i = Initial Moisture Content
K_s = Saturated Hydraulic Conductivity
θ_i = Value for initialized steady-state (ss) moisture content are given in model output files (Attachment 1).

Notes: Available Moisture: Moisture available to be evaporated is only applicable in the upper 18 inches of the model
Layer 1: Rip rap size is nominal diameter
Layer 3: Sacrificial soil is placed at $4x10^{-4}$ cm/sec; freeze/thaw reduces K to $4x10^{-3}$ cm/sec.
Layer 7: Waste Unit thickness is set at 100 inches. HELP model is insensitive to waste thickness variation.

3.3.2 Side-Slope

The Class A South Side Slope has been designed with a 20% grade and a slope length of 150 feet. From bottom to top, the side slope design includes a 2-ft thick lower liner, waste, 12-inch lower radon barrier, 12-inch thick upper radon barrier, 18-inch Type-B filter zone, 12-inch sacrificial soil (consisting of silty sand and gravel), 6-inch Type-A filter zone, and 18-inch Type-A rip rap (Table 9). The material used for the Type-A filter and Type-A rip rap are described above. The thickness of waste will range from zero at the edge of the cell to approximately 37 feet at the shoulder, for an average waste height of 18.5 feet ((0+37)/2). The side-slope infiltration modeling used a unit waste thickness of 100 inches, as discussed above for the top-slope simulations.

The thickness of the Type-B filter was 18 inches in the base case Side Slope model. Sensitivity analyses were performed using thicknesses of 6 inches and 12 inches for the Type-B filter (as described in Section 3.4.3).

Table 9. HELP Infiltration Model Layers and Material Properties – Class A South Cell Side Slope

Layer	Material	Thickness (inches)	N (vol/vol)	θ_{fc} (vol/vol)	θ_{wp} (vol/vol)	Available Moisture (vol/vol)	θ_i (vol/vol)	K_s (cm/sec)	Layer Type n/a	Size Range (inches)	Material Description n/a
Layer 1	Type-A Rip Rap	18	0.170	0.007	0.003	0.004	initialized to ss	80	vertical percolation	2.0-16.0	12 inches
Layer 2	Type-A Filter (upper)	6	0.190	0.024	0.007	0.017	initialized to ss	42	lateral drainage	0.08-6.0	Coarse Sand - Fine Cobble
Layer 3	Sacrificial Soil	12	0.31	0.2	0.025	0.175	0.31	4.0E-03	barrier soil	<0.75	Silty Sand and Gravel
Layer 4	Type-B Filter (lower)	18	0.28	0.032	0.013	0.019	initialized to ss	3.5	lateral drainage	0.2-1.5	Coarse Sand -Fine Gravel
Layer 5	Upper Radon Barrier	12	0.430	0.390	0.28	0.11	0.43	5.0E-08	barrier soil	n/a	Clay
Layer 6	Lower Radon Barrier	12	0.430	0.390	0.28	0.11	initialized to ss	1.0E-06	vertical percolation	n/a	Clay
Layer 7	Waste	100	0.437	0.062	0.024	0.038	initialized to ss	5.0E-04	vertical percolation	n/a	Sand
Layer 8	Clay Liner	24	0.430	0.390	0.28	0.11	0.43	1.0E-06	barrier soil	n/a	Clay

n = Porosity
θ_{fc} = Field Capacity
θ_{wp} = Wilting Point
θ_i = Initial Moisture Content
K_s = Saturated Hydraulic Conductivity
θ_i = Value for initialized steady-state moisture content are given in the model output files (Attachment 1).

Notes:
Layer 1: Rip rap size is nominal diameter
Layer 3: Sacrificial soil is placed at 4×10^{-4} cm/sec; freeze/thaw reduces K to 4×10^{-3} cm/sec.
Layer 4: Sensitivity analyses were performed using 6-inch and 12-inch Type-B filter layer.
Layer 7: Waste Unit thickness is set at 100 inches. HELP model is insensitive to waste thickness variation.

3.3.3 Side-Slope Run-on

The side-slope modeling includes the effects of run-on from the filter layers in the Top Slope. As described in previous reports, run-on or drainage from up-slope can be simulated by adjusting the slope length to an effective length (L'). The procedure is summarized as follows:

1. Run the HELP3 simulation on the up-slope panel (which is the Top Slope, in this case.) Note the initial volume estimate of drainage (D_u).
2. Run the simulation on the receiving (down-slope) panel using the actual slope length (L) for that section. Note the initial volume estimate of drainage (D_{d1}).
3. Determine an incremental increase in slope length (ΔL):

$$\Delta L = L \cdot \left(\frac{D_u}{D_d} \right)$$

4. Add the incremental increase in slope length to the initial slope length to determine the effective slope length:

$$L' = \Delta L + L$$

5. If the new estimate of drainage (D_{d2}) is significantly different from the previous estimate (D_{d1}), repeat the process to calculate a new effective length (L') and run the simulation again to compute a final estimate of drainage (D_d), runoff, evapotranspiration, and percolation.

The effective slope length calculations are shown in Table 10.

Table 10. Class A South Cell HELP Infiltration Modeling – Effective Slope Length For Lateral Drainage Run-On To Side Slopes

CELL	RUN	DESCRIPTION	SLOPE LENGTH ft.	WIDTH ft.	AREA acres	PERC. in.	LATERAL DRAINAGE	in.	ft^3/yr	ΔL	L'
6" Filter, Side Slope Analysis:											
Class A So.	11e2-T6	Top-slope Drainage	740	100	1.699	0.109	D_u	2.633	21074		
Class A So.	11e2-S6	Side-slope, Without Run-on	150	100	0.344	0.078	D_{d1}	2.948	3685	858	1008
Class A So.	11e2-S6A	Receiving Side-slope, 1st Iteration	1008	100	0.344	0.250	D_{d2}	3.140	3926	805	955
Class A So.	11e2-S6B	Receiving Side-slope, 2nd Iteration	955	100	0.344	0.253	D_{d3}	3.129	3912	808	958
Class A So.	11e2-S6C	Receiving Side-slope, 3rd Iteration	958	100	0.344	0.253	D_{d4}	3.130	3912	808	958
12" Filter, Side Slope Analysis:											
Class A So.	11e2-T6	Top-slope Drainage	740	100	1.699	0.109	D_u	2.633	21074		
Class A So.	11e2S12	Side-slope, Without Run-on	150	100	0.344	0.063	D_{d1}	2.963	3704	853	1003
Class A So.	11e2S12A	Receiving Side-slope, 1st Iteration	1003	100	0.344	0.238	D_{d2}	3.151	3940	802	952
Class A So.	11e2S12B	Receiving Side-slope, 2nd Iteration	952	100	0.344	0.235	D_{d3}	3.151	3934	804	954
Class A So.	11e2S12C	Receiving Side-slope, 3rd Iteration	954	100	0.344	0.234	D_{d4}	3.148	3935	803	953
Class A So.	11e2S12D	Receiving Side-slope, 3rd Iteration	953	100	0.344	0.234	D_{d4}	3.148	3935	803	953
18" Filter, Side Slope Analysis:											
Class A So.	11e2-T6	Top-slope Drainage	740	100	1.699	0.109	D_u	2.633	21074		
Class A So.	11e2S18	Side-slope, Without Run-on	150	100	0.344	0.023	D_{d1}	3.002	3754	842	992
Class A So.	11e2S18A	Receiving Side-slope, 1st Iteration	992	100	0.344	0.153	D_{d2}	3.235	4044	782	932
Class A So.	11e2S18B	Receiving Side-slope, 2nd Iteration	932	100	0.344	0.113	D_{d3}	3.265	4082	774	924
Class A So.	11e2S18C	Receiving Side-slope, 3rd Iteration	924	100	0.344	0.113	D_{d4}	3.265	4082	774	924

3.4 HELP Infiltration Modeling Results

The results of the HELP modeling runs are summarized in Table 11 and Table 12 and discussed in the following sections. The output files are provided in Attachment 1.

Table 11. Class A South Cell HELP Infiltration Model Results for Base Case and Sensitivity Analyses

CELL	RUN:	CASE:	INFILTRATION (in/yr)	(cm/yr)
Class A South	**T6**	**Top Slope, 740 ft length, 2.1% slope**	**0.1087**	**0.276**
Class A South	T12	Top Slope, 740 ft length, 2.1% slope, 12" Filter	0.1086	0.276
Class A South	T18	Top Slope, 740 ft length, 2.1% slope, 18" Filter	0.1086	0.276
Class A South	11E2-S6	Side-slope, frost prot. layer, length 150 ft, no run-on	0.078	0.198
Class A South	11E2-S6a	Side-slope, frost prot. layer, length 1008 ft, with run-on	0.250	0.634
Class A South	11E2-S6b	Side-slope, frost prot. layer, length 955 ft, with run-on	0.253	0.643
Class A South	**11E2-S6c**	**Side-slope, frost prot. layer, length 958 ft, with run-on**	**0.253**	**0.643**
Class A South	11E2-S12	Side-slope, frost prot. layer, 12" filter, L=150 ft, no run-on	0.063	0.160
Class A South	11E2-S12a	Side-slope, frost prot. layer, 12" filter, L=1003 ft, with run-on	0.238	0.604
Class A South	11E2-S12b	Side-slope, frost prot. layer, 12" filter, L=952 ft, with run-on	0.235	0.597
Class A South	11E2-S12c	Side-slope, frost prot. layer, 12" filter, L=954 ft, with run-on	0.234	0.595
Class A South	**11E2-S12d**	**Side-slope, frost prot. layer, 12" filter, L=953 ft, with run-on**	**0.234**	**0.595**
Class A South	11E2-S18	Side-slope, frost prot. layer, 18" filter, L=150 ft, no run-on	0.023	0.059
Class A South	11E2-S18a	Side-slope, frost prot. layer, 18" filter, L=992 ft, with run-on	0.153	0.388
Class A South	11E2-S18b	Side-slope, frost prot. layer, 18" filter, L=932 ft, with run-on	0.113	0.288
Class A South	**11E2-S18c**	**Side-slope, frost prot. layer, 18" filter, L=924 ft, with run-on**	**0.113**	**0.286**

Table 12. Class A South Cell HELP Infiltration Model Water Balance Summary (in/yr) for Base Case and Sensitivity Analyses

HELP Results (inches of water)	**Top Slope 6" Filter** 11e2-T6	**Top Slope 12" Filter** 11e2-T12	**Top Slope 18" Filter** 11e2-T18
Precipitation	8.72	8.72	8.72
Runoff	0.052	0.052	0.052
Evapotranspiration	5.142	5.142	5.142
Drainage Collected from Layer 2	0.043	0.043	0.043
Percolation/leakage through Layer 3	3.483	3.483	3.483
Average Head on Top of Layer 3	0.001	0.001	0.001
Drainage Collected from Layer 4	3.374	3.374	3.374
Percolation/Leakage through Layer 5	0.10862	0.10860	0.10858
Average Head on Top of Layer 5	0.016	0.016	0.016
Percolation/Leakage through Layer 8	0.10866	0.10856	0.10863
Average Head on Top of Layer 8	0.000	0.000	0.000
Change in Water Storage	0.000	0.000	0.000

HELP Results (inches of water)	**Class A South Side Slope – 18" Type-B Filter**			
	11e2-S18	11e2-S18a	11e2-S18b	11e2-S18c
Precipitation	8.72	8.72	8.72	8.72
Runoff	0.058	0.058	0.058	0.058
Evapotranspiration	5.058	5.058	5.058	5.058
Drainage Collected from Layer 2	0.577	0.215	0.224	0.225
Percolation/leakage through Layer 3	3.026	3.388	3.379	3.378
Average Head on Top of Layer 3	0.001	0.001	0.001	0.001
Drainage Collected from Layer 4	3.002	3.235	3.265	3.265
Percolation/Leakage through Layer 5	0.023	0.153	0.113	0.113
Average Head on Top of Layer 5	0.002	0.002	0.002	0.002
Percolation/Leakage through Layer 8	0.0231	0.1528	0.1134	0.1127
Average Head on Top of Layer 8	0.000	0.001	0.000	0.000
Change in Water Storage	0.000	0.000	0.000	0.000

HELP Results (inches of water)	**Class A South Side Slope Sensitivity Analysis – 12" Filter**				
	11e2-S12	11e2-S12a	11e2-S12b	11e2-S12c	11e2-S12d
Precipitation	8.72	8.72	8.72	8.72	8.72
Runoff	0.058	0.058	0.058	0.058	0.058
Evapotranspiration	5.058	5.058	5.058	5.058	5.058
Drainage Collected from Layer 2	0.577	0.214	0.221	0.221	0.221
Percolation/leakage through Layer 3	3.026	3.389	3.382	3.382	3.382
Average Head on Top of Layer 3	0.001	0.001	0.001	0.001	0.001
Drainage Collected from Layer 4	2.963	3.151	3.147	3.148	3.148
Percolation/Leakage through Layer 5	0.063	0.238	0.235	0.234	0.234
Average Head on Top of Layer 5	0.001	0.002	0.002	0.002	0.002
Percolation/Leakage through Layer 8	0.0628	0.2377	0.2351	0.2344	0.2342
Average Head on Top of Layer 8	0.000	0.001	0.001	0.001	0.001
Change in Water Storage	0.000	0.000	0.000	0.000	0.000

HELP Results (inches of water)	**Class A South Side Slope Sensitivity Analysis – 6" Filter**			
	8.72	8.72	8.72	8.72
Precipitation	0.058	0.058	0.058	0.058
Runoff	5.058	5.058	5.058	5.058
Evapotranspiration	0.577	0.213	0.221	0.220
Drainage Collected from Layer 2	3.026	3.390	3.382	3.383
Percolation/leakage through Layer 3	0.001	0.001	0.001	0.001
Average Head on Top of Layer 3	2.948	3.140	3.129	3.130
Drainage Collected from Layer 4	0.078	0.250	0.253	0.253
Percolation/Leakage through Layer 5	0.001	0.002	0.002	0.002
Average Head on Top of Layer 5	0.0779	0.2496	0.2531	0.2532
Percolation/Leakage through Layer 8	0.000	0.001	0.001	0.001
Average Head on Top of Layer 8	0.000	0.000	0.000	0.000
Change in Water Storage	8.72	8.72	8.72	8.72

3.4.1 Top Slope Infiltration Results

The top slope infiltration modeling indicates that an average of 0.109 inches per year (0.276 cm/yr) would infiltrate through the Class A South cell top slope under long-term quasi-steady state. The infiltration rate is affected by the relatively long slope length, low precipitation, and lateral drainage layers. The infiltration through the top slope is essentially identical for the 6-inch, 12-inch, and 18-inch Type-B Filter cases (0.109

in/yr, 0.276 cm/yr), because no buildup of hydraulic head occurs in the top slope lower filter layer (as discussed in Section 3.4.3).

3.4.2 Side Slope Infiltration Results

The side-slope infiltration modeling indicates that an average of 0.113 inches per year (0.286 cm/yr) would infiltrate through the Class A South cell side slope under long-term quasi-steady state conditions, for the base case side slope model (18-inch thick Type-B filter).

3.4.3 Sensitivity Analyses

Sensitivity analyses were performed using a range of thicknesses for the lower (Type B) filter in both the top slope and the side slope. The infiltration results are shown in Table 11 and the complete water balance results for each case are shown in Table 12. The conclusions from the sensitivity analyses are as follows:

- A thicker Type-B Filter layer in the top slope area had no effect on infiltration, because no head build up occurs as water flows laterally in the filter layer. Modeling results based on a 12-inch and 18-inch thick filter layer were essentially identical to those based on a 6-inch thick filter layer (0.109 in/yr, 0.276 cm/yr).
- The thickness of the Type-B Filter layer in the side slope area significantly affects infiltration through the cell, because the model predicts that a build up of water can occur in thinner filter layers, slowing down the lateral transport of water off the cell and allowing greater infiltration to occur. A thinner (6-inch) Type-B Filter layer results in 2.4 times more infiltration than in the base case (18-inch thick filter) model run. Based on a precipitation rate of 8.72 inches/yr, the HELP model indicates that 0.253 inches/yr (0.643 cm/yr) would infiltrate through the side slope having a 6-inch thick Type-B filter.
- Decreasing the thickness of Type-B Filter to 12 inches (compared to a base case of 18-inches) would results in 2.1 times more infiltration. The HELP model indicates that 0.235 inches/yr (0.595 cm/yr) would infiltrate through the side slope having a 12-inch thick Type-B filter.

The sensitivity analyses performed on the Class A South cell, coupled with previous sensitivity analyses, provide satisfactory assurance that the predicted infiltration is reasonable estimate of the future conditions.

4. MOISTURE CONTENT (UNSAT-H) MODELING

The UNSAT-H model was used to predict the moisture content and time of travel in the radon barrier, waste, clay liner, and Unit 3 sand to the top of the aquifer. The final moisture content from UNSAT-H is used as input to the contaminant transport modeling (PATHRAE). Although the HELP model does report the final moisture content in each model layer for each simulation, the UNSAT-H model is considered to be more accurate with regard to predicting moisture content.

Version 2.05 of the UNSAT-H code was used. The code was written by Dr. Michael J. Fayer, at Pacific Northwest Laboratories. Dr. Fayer dimensioned the MATN variable to 10, in order to accommodate up to ten material layers. The six material layers modeled in the Class A South cell UNSAT-H model are shown in Table 15 and described below. The UNSAT-H model input and output files are provided in Attachment 2.

4.1 UNSAT-H Node Geometry

The UNSAT-H model node geometry for the top slope area started at the top of the radon barrier and included 45 feet of waste above the clay liner and the Unit 3 sand. In the side-slope area, the waste layer was modeled with a thickness of 18.5 feet (the average waste height). The node spacing was arranged such that the distance between discontinuities (layer boundaries) was 0.1 cm, and the spacing between adjacent nodes did not exceed about a factor of 2.

4.1.1 Waste Thickness

The waste height under the top slope was based on Energy*Solutions* engineering drawing 07021 V3. The waste layer will reach a maximum thickness of approximately 53 feet above the top of the clay bottom liner at the crest. The height of waste at the shoulder of the top slope (the contact between the top slope and side slope) will be approximately 37 feet, and the average waste height will be approximately 45 feet in the top slope area ((53+37)/2).

The waste height under the side-slope was also based on Energy*Solutions* engineering drawing 07021 V3. The thickness of waste will range from zero at the edge of the cell to approximately 37 feet at the shoulder, for an average waste height of 18.5 feet ((0+37)/2). The waste under the side-slope was modeled in UNSAT-H using this 18.5-ft average thickness.

4.1.2 Unit 3 Sand Thickness

The Unit 3 sand underlying the Class A South cell was modeled with a thickness of 10.8 feet, which is intended to represent the distance from the base of the clay liner to the top of the aquifer. Although the actual distance is 11.1 feet, using 10.8 feet in the UNSAT-H model is adequate for the purpose of determining a steady state moisture in the Unit 3 Sand. The base of the clay liner occurs at an average design elevation of 4,262.4 ft. The top of the aquifer (adjusted to freshwater head) occurred at an average elevation of 4,251.3 ft during the four quarters of 1998 (Table 13). This water level elevation was used in the modeling for consistency with previous work, and subsequent data from 1999 and 2000 (Figure 7, Table 14) indicated that water level elevations were relatively stable in the 11e.(2) / Class A South area, with an average elevation of 4251.4 from January 1999 to April 2000.

The water level elevation used in calculating the Unit 3 Sand thickness in the model is higher than the average elevation (4250.1) measured from 1991 to 1996. It is also slightly higher (0.12 ft) than the natural saline (non-adjusted) head, and is therefore considered to be conservative. The length of the capillary zone calculated by UNSAT-H was subtracted from the vertical transport distance in the PATHRAE model, thus decreasing the vertical transport distance even further.

Table 13. Water Level Elevations used in Calculating the Thickness of the Unsaturated Unit 3 Sand

WELL ID	1ST QTR FW ELEVATION (feet)	2ND QTR FW ELEVATION (feet)	3RD QTR FW ELEVATION (feet)	4TH QTR FW ELEVATION (feet)	
GW-19A	4252.23	4254.25	4255.45	4254.59	
GW-20	4250.80	4251.19	4251.08	4250.57	
GW-24	4250.54	4250.17	4250.33	4250.75	
GW-25	4251.62	4251.87	4251.95	4251.92	
GW-26	4251.26	4251.49	4251.33	4251.36	
GW-27	4249.51	4249.53	4249.72	4249.97	
GW-28	4250.76	4250.94	4250.31	4251.34	
GW-29	4250.60	4250.69	4250.76	4250.82	
GW-36	4251.46	4251.55	4251.74	4251.67	
GW-37	4251.68	4251.75	4251.98	4251.83	
GW-38	4251.22	4251.54	4251.71	4251.48	
GW-57	4249.88	4250.13	4250.68	4251.11	
GW-58	4250.98	4251.36	4251.49	4251.67	
GW-60	4251.05	4251.09	4251.23	4251.32	
GW-63	4251.39	4251.48	4251.93	4251.66	
Maximum	**4252.23**	**4254.25**	**4255.45**	**4254.59**	**4254.13**
Minimum	**4249.51**	**4249.53**	**4249.72**	**4249.97**	**4249.68**
Average	**4251.00**	**4251.27**	**4251.45**	**4251.47**	**4251.30**

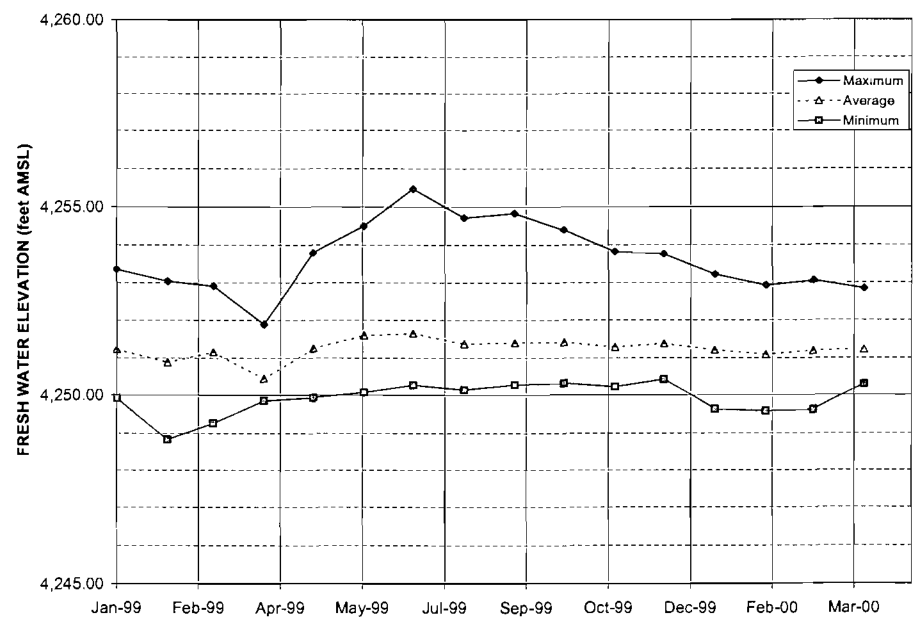


Figure 7. Water Level Elevations in 11e.(2) Cell Monitoring Wells Completed in the Unconfined Shallow Aquifer, January 1999 – April 2000

Table 14. January 1999 – April 2000 Water Level Elevations used in Calculating the Thickness of the Unsaturated Unit 3 Sand

	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99
GW-19A	4,253.35	4,253.03	4,252.91	4,251.88	4,253.78	4,254.49	4,255.46	4,254.71	4,254.83	4,254.39	4,253.82
GW-20	4,250.90	4,250.91	4,251.05	4,250.15	4,250.96	n/a	4,251.00	4,250.93	4,250.96	4,250.99	4,250.88
GW-24	4,250.50	4,250.74	4,250.67	4,249.85	4,250.67	n/a	4,250.75	4,250.57	4,250.57	4,250.52	4,250.48
GW-25	4,250.79	n/a	4,250.86	4,250.07	4,250.90	n/a	4,252.09	4,250.99	4,250.98	4,250.90	4,250.82
GW-26	4,250.28	n/a	4,250.89	4,250.08	4,250.80	n/a	4,251.72	4,250.62	4,250.67	4,250.66	4,250.56
GW-27	4,249.91	4,248.83	4,249.26	4,249.96	4,249.93	4,250.07	4,250.27	4,250.14	4,250.28	4,250.31	4,250.22
GW-28	4,251.31	n/a	4,251.17	4,250.20	4,251.20	n/a	4,251.42	4,251.16	4,251.41	4,251.39	4,251.25
GW-29	n/a	n/a	n/a	n/a	4,250.88	4,250.94	4,250.91	4,250.87	4,250.87	4,250.89	4,250.82
GW-36	4,251.67	n/a	4,251.69	4,250.86	4,251.65	4,251.67	4,251.75	4,251.75	4,251.81	4,251.74	4,251.63
GW-37	4,251.66	n/a	4,251.70	4,250.76	4,251.56	4,251.54	4,251.88	4,251.68	4,251.80	4,251.83	4,251.64
GW-38	n/a	n/a	n/a	n/a	4,251.27	4,251.29	4,251.48	4,251.41	4,251.44	4,251.47	4,251.28
GW-57	4,251.21	n/a	4,250.28	4,250.09	4,251.06	n/a	4,251.28	4,251.12	4,251.37	4,251.33	4,251.16
GW-58	4,251.83	n/a	4,251.83	4,250.94	4,251.74	4,251.78	4,251.92	4,251.88	4,251.30	4,251.98	4,251.97
GW-60	4,251.09	n/a	4,251.16	4,250.27	4,251.08	4,251.09	4,251.16	4,251.17	4,251.19	4,251.18	4,251.15
GW-63	4,251.48	n/a	4,251.48	4,250.63	4,251.35	4,251.49	4,251.68	4,251.61	4,251.70	4,251.67	4,251.61
Average	4,251.23	4,250.88	4,251.15	4,250.44	4,251.25	4,251.59	4,251.65	4,251.38	4,251.41	4,251.42	4,251.29
Maximum	4,253.35	4,253.03	4,252.91	4,251.88	4,253.78	4,254.49	4,255.46	4,254.71	4,254.83	4,254.39	4,253.82
Minimum	4,249.91	4,248.83	4,249.26	4,249.85	4,249.93	4,250.07	4,250.27	4,250.14	4,250.28	4,250.31	4,250.22

	Dec-99	Jan-00	Feb-00	Mar-00	Apr-00	
GW-19A	4,253.75	4,253.21	4,252.92	4,253.05	4,252.84	
GW-20	4,250.95	4,250.90	4,250.89	4,251.31	4,251.07	
GW-24	4,250.57	4,250.48	4,250.40	4,251.14	4,250.67	
GW-25	4,250.88	4,251.07	4,250.69	4,250.71	4,250.80	
GW-26	4,250.68	4,249.64	4,249.59	4,249.62	4,250.74	
GW-27	4,250.42	4,250.33	4,250.28	4,250.25	4,250.29	
GW-28	4,251.37	4,251.19	4,251.15	4,251.18	4,251.09	
GW-29	4,250.91	4,250.97	4,250.89	4,251.09	4,250.98	
GW-36	4,251.67	4,251.56	4,251.47	4,251.51	4,251.57	
GW-37	4,251.66	4,251.61	4,251.51	4,251.48	4,251.69	
GW-38	4,251.37	4,251.32	4,251.17	4,251.38	4,251.46	
GW-57	4,251.46	4,251.11	4,251.00	4,251.00	4,250.93	
GW-58	4,252.07	4,252.05	4,251.78	4,251.72	4,251.61	
GW-60	4,251.25	4,251.10	4,251.06	4,251.07	4,251.07	
GW-63	4,251.69	4,251.52	4,251.46	4,251.38	4,251.47	
Average	4,251.38	4,251.20	4,251.08	4,251.19	4,251.22	4,251.24
Maximum	4,253.75	4,253.21	4,252.92	4,253.05	4,252.84	4,253.65
Minimum	4,250.42	4,249.64	4,249.59	4,249.62	4,250.29	4,249.91

The thicknesses of the upper radon barrier, lower radon barrier, top slope waste, and clay liner used in the UNSAT-H top slope model are 12 inches, 12 inches, 540 inches, and 24 inches, respectively, as shown in Table 15. Similarly, the thicknesses of the upper radon barrier, lower radon barrier, top slope waste, and clay liner used in the UNSAT-H side slope model are 12 inches, 12 inches, 222 inches, and 24 inches, respectively, as shown in Table 15. With the exception of the waste layers[2], all layer thicknesses in UNSAT-H are identical to those used in the HELP modeling.

4.1.3 Boundary Conditions

The lower boundary of the model was set to a constant head of zero cm, to represent the top of the water table. The upper boundary is represents the top of the radon barrier, which is located below the zone of evaporative and drainage. Therefore, evaporation at the upper boundary was set to zero and precipitation was set to the percolation rate predicted by the HELP model.

The upper boundary of the model received moisture as a constant, steady-state "precipitation" onto the top of the radon barrier. The average annual infiltration predicted by HELP was distributed over 24 hours per day, 365 days per year. All of the applied water infiltrates into the radon barrier, and percolates vertically through the profile.

4.1.4 Initial Head Conditions

The suction head (Ψ) was iterated to quasi-steady state, in order to predict the long-term moisture content and velocity in the cover, waste, liner, and underlying soil. The suction head from each run was used as input to the next simulation. Each series was run for an adequate time (50 - 250 years), until quasi-steady state head conditions were achieved.

4.2 Material Properties

The UNSAT-H model, with the van Genuchten option, required the input of θ_r, θ_s, K_s, α, n, and m for each material modeled. These include the radon barrier, waste, clay liner, and Unit 3 sand. The values were identical to those used in the previous 11e.(2) modeling. The material properties are given in Table 15.

The saturated hydraulic conductivity used for the Unit 3 Sand in the UNSAT-H model matches that used in previous 11e.(2) modeling. The geometric mean hydraulic conductivity of the shallow aquifer (6.09×10^{-4} cm/sec) was based on data from 96 wells across the site (Table 16). The site-wide statistics were calculated for all wells, without differentiating between hydrostratigraphic units[3].

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[2] The waste layers in the HELP model were set to a uniform thickness of 100 inches, because the HELP model is not sensitive to the waste thickness.

[3] DRC (May 2000) recommended that the model not differentiate between the Unit 2 Clay and the Unit 3 Sand, because the hydraulic conductivity data did not indicate a clear correlation in the two units.

Table 15. UNSAT-H Model Input Parameters: Layer Thicknesses and Material Properties

Model	Van Genuchten Parameter	Upper Radon Barrier	Lower Radon Barrier	Waste	Clay Liner	Unit 3 Sand
Moisture Retention	θ_s	0.432	0.432	0.35	0.432	0.34
	θ_r	0.1	0.1	0.02	0.100	0.02
	α	0.003	0.003	0.115	0.003	0.055
	N	1.172	1.172	2.013	1.172	2.518
	m	Mualem	Mualem	Mualem	Mualem	Mualem
Conductivity	K_s (cm/sec)	5.00E-08	1.00E-06	5.00E-04	1.00E-06	6.09E-04
	α	0.003	0.003	0.115	0.003	0.055
	N	1.172	1.172	2.013	1.172	2.518
	M	Mualem	Mualem	Mualem	Mualem	Mualem
	L	4.5	4.5	0.5	4.5	0.5
Layer Thickness	Top Slope (in)	12	12	540	24	129.6
	Top Slope (cm)	30.5	30.5	1371.6	61.0	329.2
	Side Slope (in)	12	12	222	24	129.6
	Side Slope (cm)	30.5	30.5	563.9	61.0	329.2

NOTES:
θ_s = saturated moisture content (vol/vol)
θ_r = residual moisture content (vol/vol)
θ = air entry pressure (bubbling pressure)
n = van Genuchten's n, fitting parameter
K_s = saturated hydraulic conductivity (cm/sec)
m = Mualem's m
l = pore connectivity parameter

Table 16. Site-Wide Hydraulic Conductivity Test Results

(See large tables at end of report document)

4.3 UNSAT-H Modeling Results

The UNSAT-H model for each case was run daily in 50 year-increments for up to 250 years to reach quasi-steady-state conditions. Quasi-steady-state is achieved by running the model for sufficient time that moisture contents stabilize, and water is not taken into or released from storage. These moisture contents represent the long-term expected moisture contents in the Class A South cell materials and the underlying subsurface.

4.3.1 Moisture Content

The moisture content with depth for the Class A South cell top slope is listed in Table 17, and is shown graphically in Figure 8. The clay layers in the cover and liner of the Class A South cell retain high moisture contents (approximately 0.42) while the waste and native soil layers have relatively low moisture contents. Based on 0.244 cm/yr infiltration, the moisture contents stabilized at 0.0575 in the waste and 0.045 in the native soil below the cell (Table 18).

The predicted moisture content for the Class A South cell side slope is slightly higher than for the top slope, due to higher infiltration rates through the side slope. The moisture contents with depth for three side slope simulations are listed in Table 17, and shown graphically in Figure 9. The results are summarized in Table 18. Based on 0.641 cm/yr infiltration, the moisture contents stabilized at 0.066 in the waste and 0.050 in the native soil below the cell. Based on 0.507 cm/yr infiltration, the moisture contents stabilized at 0.064 in the waste and 0.049 in the native soil below the cell. Based on 0.451 cm/yr infiltration, the moisture contents stabilized at 0.063 in the waste and 0.048 in the native soil below the cell. The soil suction heads with depth for the three side slope simulations are also shown in Figure 9.

4.3.2 Capillary Fringe

The moisture content of the Unit 3 sand was determined for the zone from the bottom of the clay liner to the top of the capillary fringe. This approach is conservative because 1) a higher vadose zone velocity is calculated using the lower moisture content ($v_v = q/n_e$) and 2) the length of the vertical path was decreased in the PATHRAE model to exclude the capillary fringe.

The UNSAT-H results for both the top slope (Figure 8) and side slope (Figure 9) areas illustrate that the capillary fringe may extend as far as 35 cm above the water table. To account for this phenomenon, the distance from the bottom of the waste to the water table was decreased by 1.17 feet in PATHRAE runs, and the moisture contents from the vadose zone (omitting the capillary fringe) were used.

Table 17. Moisture Content vs. Depth - UNSAT-H Results for Class A South Cell

TOP SLOPE		0.276 cm/yr		Unit /
NODE NUMBER	DEPTH	θ	Average θ	Material
1	0.0	0.4279		Upper Radon Barrier
2	0.1	0.4279		Upper Radon Barrier
3	0.3	0.4279		Upper Radon Barrier
4	0.6	0.4278		Upper Radon Barrier
5	1.1	0.4278		Upper Radon Barrier
6	2.0	0.4277		Upper Radon Barrier
7	3.3	0.4275		Upper Radon Barrier
8	5.6	0.4273		Upper Radon Barrier
9	6.9	0.4271		Upper Radon Barrier
10	7.8	0.4270		Upper Radon Barrier
11	8.3	0.4269		Upper Radon Barrier
12	8.6	0.4269		Upper Radon Barrier
13	8.8	0.4268		Upper Radon Barrier
14	8.9	0.4268		Upper Radon Barrier
15	9.0	0.4268		Upper Radon Barrier
16	9.2	0.4268		Upper Radon Barrier
17	9.5	0.4267		Upper Radon Barrier
18	10.0	0.4267		Upper Radon Barrier
19	10.9	0.4265		Upper Radon Barrier
20	13.1	0.4262		Upper Radon Barrier
21	16.4	0.4256		Upper Radon Barrier
22	21.5	0.4245		Upper Radon Barrier
23	24.8	0.4237		Upper Radon Barrier
24	27.0	0.4230		Upper Radon Barrier
25	28.5	0.4226		Upper Radon Barrier
26	29.4	0.4223		Upper Radon Barrier
27	29.9	0.4221		Upper Radon Barrier
28	30.2	0.4220		Upper Radon Barrier
29	30.4	0.4219		Upper Radon Barrier
30	30.5	0.4219	0.4253	Upper Radon Barrier
31	30.6	0.4219		Lower Radon Barrier
32	30.8	0.4219		Lower Radon Barrier
33	31.1	0.4219		Lower Radon Barrier
34	31.6	0.4220		Lower Radon Barrier
35	32.3	0.4221		Lower Radon Barrier
36	33.3	0.4221		Lower Radon Barrier
37	34.8	0.4223		Lower Radon Barrier
38	37.0	0.4225		Lower Radon Barrier
39	39.7	0.4227		Lower Radon Barrier
40	42.7	0.4230		Lower Radon Barrier
41	45.7	0.4232		Lower Radon Barrier
42	48.7	0.4235		Lower Radon Barrier
43	51.7	0.4238		Lower Radon Barrier
44	54.5	0.4240		Lower Radon Barrier
45	56.7	0.4242		Lower Radon Barrier
46	58.2	0.4244		Lower Radon Barrier
47	59.2	0.4245		Lower Radon Barrier
48	59.9	0.4245		Lower Radon Barrier
49	60.4	0.4246		Lower Radon Barrier
50	60.7	0.4246		Lower Radon Barrier
51	60.9	0.4246		Lower Radon Barrier
52	61.0	0.4246	0.4261	Lower Radon Barrier
53	61.1	0.0587		Waste
54	61.3	0.0587		Waste
55	61.6	0.0587		Waste
56	62.1	0.0587		Waste
57	63.0	0.0587		Waste
58	64.5	0.0587		Waste
59	67.5	0.0587		Waste
60	72.5	0.0587		Waste
61	82.5	0.0587		Waste
62	102.5	0.0587		Waste
63	132.5	0.0587		Waste
64	177.5	0.0587		Waste
65	242.5	0.0587		Waste
66	342.5	0.0587		Waste
67	502.5	0.0587		Waste
68	746.8	0.0587		Waste
69	991.1	0.0587		Waste
70	1151.1	0.0587		Waste
71	1251.1	0.0587		Waste
72	1316.1	0.0587		Waste
73	1361.1	0.0586		Waste
74	1391.1	0.0580		Waste
75	1411.1	0.0555		Waste
76	1421.1	0.0520		Waste
77	1426.1	0.0487		Waste
78	1429.1	0.0456		Waste
79	1430.6	0.0433		Waste
80	1431.5	0.0416		Waste

SIDE SLOPE.		0.286 cm/yr		0.595 cm/yr		Unit /
NODE NUMBER	DEPTH	θ	Average θ	θ	Average θ	Material
1	0.0	0.4281		0.4315		Upper Radon Barrier
2	0.1	0.4281		0.4315		Upper Radon Barrier
3	0.3	0.4281		0.4315		Upper Radon Barrier
4	0.6	0.4281		0.4314		Upper Radon Barrier
5	1.1	0.4280		0.4314		Upper Radon Barrier
6	2.0	0.4279		0.4314		Upper Radon Barrier
7	3.3	0.4278		0.4313		Upper Radon Barrier
8	5.6	0.4275		0.4311		Upper Radon Barrier
9	6.9	0.4273		0.4310		Upper Radon Barrier
10	7.8	0.4272		0.4309		Upper Radon Barrier
11	8.3	0.4271		0.4308		Upper Radon Barrier
12	8.6	0.4271		0.4308		Upper Radon Barrier
13	8.8	0.4271		0.4307		Upper Radon Barrier
14	8.9	0.4271		0.4307		Upper Radon Barrier
15	9.0	0.4270		0.4307		Upper Radon Barrier
16	9.2	0.4270		0.4307		Upper Radon Barrier
17	9.5	0.4270		0.4307		Upper Radon Barrier
18	10.0	0.4269		0.4306		Upper Radon Barrier
19	10.9	0.4268		0.4305		Upper Radon Barrier
20	13.1	0.4264		0.4301		Upper Radon Barrier
21	16.4	0.4258		0.4295		Upper Radon Barrier
22	21.5	0.4247		0.4281		Upper Radon Barrier
23	24.8	0.4238		0.4269		Upper Radon Barrier
24	27.0	0.4232		0.4258		Upper Radon Barrier
25	28.5	0.4227		0.4250		Upper Radon Barrier
26	29.4	0.4224		0.4244		Upper Radon Barrier
27	29.9	0.4222		0.4241		Upper Radon Barrier
28	30.2	0.4221		0.4239		Upper Radon Barrier
29	30.4	0.4220		0.4237		Upper Radon Barrier
30	30.5	0.4220	0.42545	0.4237	0.42873	Upper Radon Barrier
31	30.6	0.4220		0.4237		Lower Radon Barrier
32	30.8	0.4220		0.4237		Lower Radon Barrier
33	31.1	0.4220		0.4237		Lower Radon Barrier
34	31.6	0.4221		0.4237		Lower Radon Barrier
35	32.3	0.4221		0.4238		Lower Radon Barrier
36	33.3	0.4222		0.4238		Lower Radon Barrier
37	34.8	0.4224		0.4239		Lower Radon Barrier
38	37.0	0.4225		0.4241		Lower Radon Barrier
39	39.7	0.4228		0.4243		Lower Radon Barrier
40	42.7	0.4230		0.4245		Lower Radon Barrier
41	45.7	0.4233		0.4247		Lower Radon Barrier
42	48.7	0.4236		0.4249		Lower Radon Barrier
43	51.7	0.4238		0.4252		Lower Radon Barrier
44	54.5	0.4241		0.4254		Lower Radon Barrier
45	56.7	0.4243		0.4256		Lower Radon Barrier
46	58.2	0.4244		0.4257		Lower Radon Barrier
47	59.2	0.4245		0.4258		Lower Radon Barrier
48	59.9	0.4246		0.4258		Lower Radon Barrier
49	60.4	0.4246		0.4258		Lower Radon Barrier
50	60.7	0.4247		0.4259		Lower Radon Barrier
51	60.9	0.4247		0.4259		Lower Radon Barrier
52	61.0	0.4247	0.42621	0.4259	0.42762	Lower Radon Barrier
53	61.1	0.0590		0.0659		Waste
54	61.3	0.0590		0.0659		Waste
55	61.6	0.0590		0.0659		Waste
56	62.1	0.0590		0.0659		Waste
57	63.0	0.0590		0.0659		Waste
58	64.5	0.0590		0.0659		Waste
59	67.5	0.0590		0.0659		Waste
60	72.5	0.0590		0.0659		Waste
61	82.5	0.0590		0.0659		Waste
62	102.5	0.0590		0.0659		Waste
63	132.5	0.0590		0.0659		Waste
64	182.5	0.0590		0.0659		Waste
65	272.5	0.0590		0.0659		Waste
66	413.4	0.0590		0.0659		Waste
67	503.4	0.0590		0.0659		Waste
68	553.4	0.0584		0.0660		Waste
69	583.4	0.0558		0.0659		Waste
70	603.4	0.0590		0.0660		Waste
71	613.4	0.0523		0.0593		Waste
72	618.4	0.0490		0.0554		Waste
73	621.4	0.0458		0.0516		Waste
74	622.9	0.0436		0.0488		Waste
75	623.8	0.0418		0.0467		Waste
76	624.3	0.0407		0.0452		Waste
77	624.6	0.0399		0.0442		Waste
78	624.8	0.0393		0.0434		Waste
79	624.9	0.0390	0.05897	0.0430	0.06599	Waste
80	625.0	0.4167		0.4194		Clay Liner

Table 17. Moisture Content vs. Depth - UNSAT-H Results for Class A South Cell (Part 2)

TOP SLOPE		0.276 cm/yr		Unit /	SIDE SLOPE,		0.286 cm/yr		0.595 cm/yr		Unit /
NODE NUMBER	DEPTH	θ	Average θ	Material	NODE NUMBER	DEPTH	θ	Average θ	θ	Average θ	Material
81	1432.0	0.0405		Waste	81	625.2	0.4167		0.4194		Clay Liner
82	1432.3	0.0397		Waste	82	625.5	0.4167		0.4194		Clay Liner
83	1432.5	0.0391		Waste	83	626.0	0.4168		0.4194		Clay Liner
84	1432.6	0.0388	0.0585	Clay Liner	84	626.7	0.4168		0.4194		Clay Liner
85	1432.7	0.4166		Clay Liner	85	627.7	0.4169		0.4195		Clay Liner
86	1432.9	0.4166		Clay Liner	86	629.2	0.4170		0.4195		Clay Liner
87	1433.2	0.4166		Clay Liner	87	631.4	0.4171		0.4196		Clay Liner
88	1433.7	0.4166		Clay Liner	88	635.4	0.4174		0.4198		Clay Liner
89	1434.4	0.4167		Clay Liner	89	642.4	0.4178		0.4201		Clay Liner
90	1435.4	0.4167		Clay Liner	90	655.4	0.4188		0.4208		Clay Liner
91	1436.9	0.4168		Clay Liner	91	668.4	0.4197		0.4215		Clay Liner
92	1439.1	0.4170		Clay Liner	92	675.4	0.4203		0.4219		Clay Liner
93	1443.1	0.4173		Clay Liner	93	679.4	0.4206		0.4221		Clay Liner
94	1450.1	0.4177		Clay Liner	94	681.6	0.4208		0.4222		Clay Liner
95	1463.1	0.4187		Clay Liner	95	683.1	0.4209		0.4223		Clay Liner
96	1476.1	0.4197		Clay Liner	96	684.1	0.4210		0.4224		Clay Liner
97	1483.1	0.4202		Clay Liner	97	684.8	0.4211		0.4224		Clay Liner
98	1487.1	0.4205		Clay Liner	98	685.3	0.4211		0.4225		Clay Liner
99	1489.3	0.4207		Clay Liner	99	685.6	0.4211		0.4225		Clay Liner
100	1490.8	0.4208		Clay Liner	100	685.8	0.4211		0.4225		Clay Liner
101	1491.8	0.4209		Clay Liner	101	685.9	0.4211	0.41911	0.4225	0.42103	Clay Liner
102	1492.5	0.4210		Clay Liner	102	686.0	0.0426		0.0474		Unit 3 Sand
103	1493.0	0.4210		Clay Liner	103	686.2	0.0426		0.0474		Unit 3 Sand
104	1493.3	0.4210		Clay Liner	104	686.5	0.0426		0.0474		Unit 3 Sand
105	1493.5	0.4211		Clay Liner	105	687.0	0.0426		0.0474		Unit 3 Sand
106	1493.6	0.4211	0.41902	Clay Liner	106	687.7	0.0426		0.0474		Unit 3 Sand
107	1493.7	0.0424		Unit 3 Sand	107	688.7	0.0426		0.0474		Unit 3 Sand
108	1493.9	0.0424		Unit 3 Sand	108	690.2	0.0426		0.0474		Unit 3 Sand
109	1494.2	0.0424		Unit 3 Sand	109	692.0	0.0426		0.0474		Unit 3 Sand
110	1494.7	0.0424		Unit 3 Sand	110	696.0	0.0426		0.0474		Unit 3 Sand
111	1495.4	0.0424		Unit 3 Sand	111	702.0	0.0426		0.0474		Unit 3 Sand
112	1496.4	0.0424		Unit 3 Sand	112	712.0	0.0426		0.0474		Unit 3 Sand
113	1497.9	0.0424		Unit 3 Sand	113	726.0	0.0426		0.0474		Unit 3 Sand
114	1499.7	0.0424		Unit 3 Sand	114	746.0	0.0426		0.0474		Unit 3 Sand
115	1503.7	0.0424		Unit 3 Sand	115	775.0	0.0426		0.0474		Unit 3 Sand
116	1509.7	0.0424		Unit 3 Sand	116	818.0	0.0426		0.0476		Unit 3 Sand
117	1519.7	0.0424		Unit 3 Sand	117	883.0	0.0426		0.0470		Unit 3 Sand
118	1533.7	0.0424		Unit 3 Sand	118	926.0	0.0503		0.0521		Unit 3 Sand
119	1553.7	0.0424		Unit 3 Sand	119	955.0	0.0710	0.04691	0.0715	0.05069	Unit 3 Sand
120	1582.7	0.0424		Unit 3 Sand	120	975.0	0.1093		0.1093		Unit 3 Sand
121	1625.7	0.0424		Unit 3 Sand	121	989.0	0.1708		0.1708		Unit 3 Sand – Capillary Fringe
122	1690.7	0.0424		Unit 3 Sand	122	999.0	0.2495		0.2495		Unit 3 Sand – Capillary Fringe
123	1733.7	0.0502		Unit 3 Sand	123	1005.0	0.3028		0.3028		Unit 3 Sand – Capillary Fringe
124	1762.7	0.0710	0.0467	Unit 3 Sand	124	1009.0	0.3283		0.3283		Unit 3 Sand – Capillary Fringe
125	1782.7	0.1093		Unit 3 Sand	125	1010.8	0.3350		0.3350		Unit 3 Sand – Capillary Fringe
126	1796.7	0.1708		Unit3 Sand-Capillary Frng	126	1012.3	0.3383		0.3383		Unit 3 Sand – Capillary Fringe
127	1806.7	0.2495		Unit3 Sand-Capillary Frng	127	1013.3	0.3394		0.3394		Unit 3 Sand – Capillary Fringe
128	1812.7	0.3028		Unit3 Sand-Capillary Frng	128	1014.0	0.3398		0.3398		Unit 3 Sand – Capillary Fringe
129	1816.7	0.3283		Unit3 Sand-Capillary Frng	129	1014.5	0.3400		0.3400		Unit 3 Sand – Capillary Fringe
130	1818.5	0.3350		Unit3 Sand-Capillary Frng	130	1014.8	0.3400		0.3400		Unit 3 Sand – Capillary Fringe
131	1820.0	0.3383		Unit3 Sand-Capillary Frng	131	1015.0	0.3400		0.3400		Unit 3 Sand – Capillary Fringe
132	1821	0.3394		Unit3 Sand-Capillary Frng	132	1015.1	0.3400		0.3400		Unit 3 Sand – Capillary Fringe
133	1821.7	0.3398		Unit3 Sand-Capillary Frng							
134	1822.2	0.3400		Unit3 Sand-Capillary Frng							
135	1822.5	0.3400		Unit3 Sand-Capillary Frng							
136	1822.7	0.3400		Unit3 Sand-Capillary Frng							
137	1822.8	0.3400		Unit3 Sand-Capillary Frng							

Table 18. UNSAT-H Model Results – Moisture Content in Waste, Clay Liner, and Unit 3 Sand

UNSAT-H Model Run			Volumetric Moisture Content (v/v)				
Run Name	Description	Infiltration (cm/yr)	Radon Barrier (Upper)	Radon Barrier (Lower)	Waste	Clay Liner	Unit 3 Sand
CAS-T27e	Top Slope, 0.276 cm/yr	0.276	0.4253	0.4261	0.0585	0.4190	0.0467
CAS-28c	Side Slope, 0.286 cm/yr	0.286	0.4254	0.4262	0.0590	0.4191	0.0469
CAS-59c	Side Slope, 0.595 cm/yr	0.595	0.4287	0.4276	0.0660	0.4210	0.0507

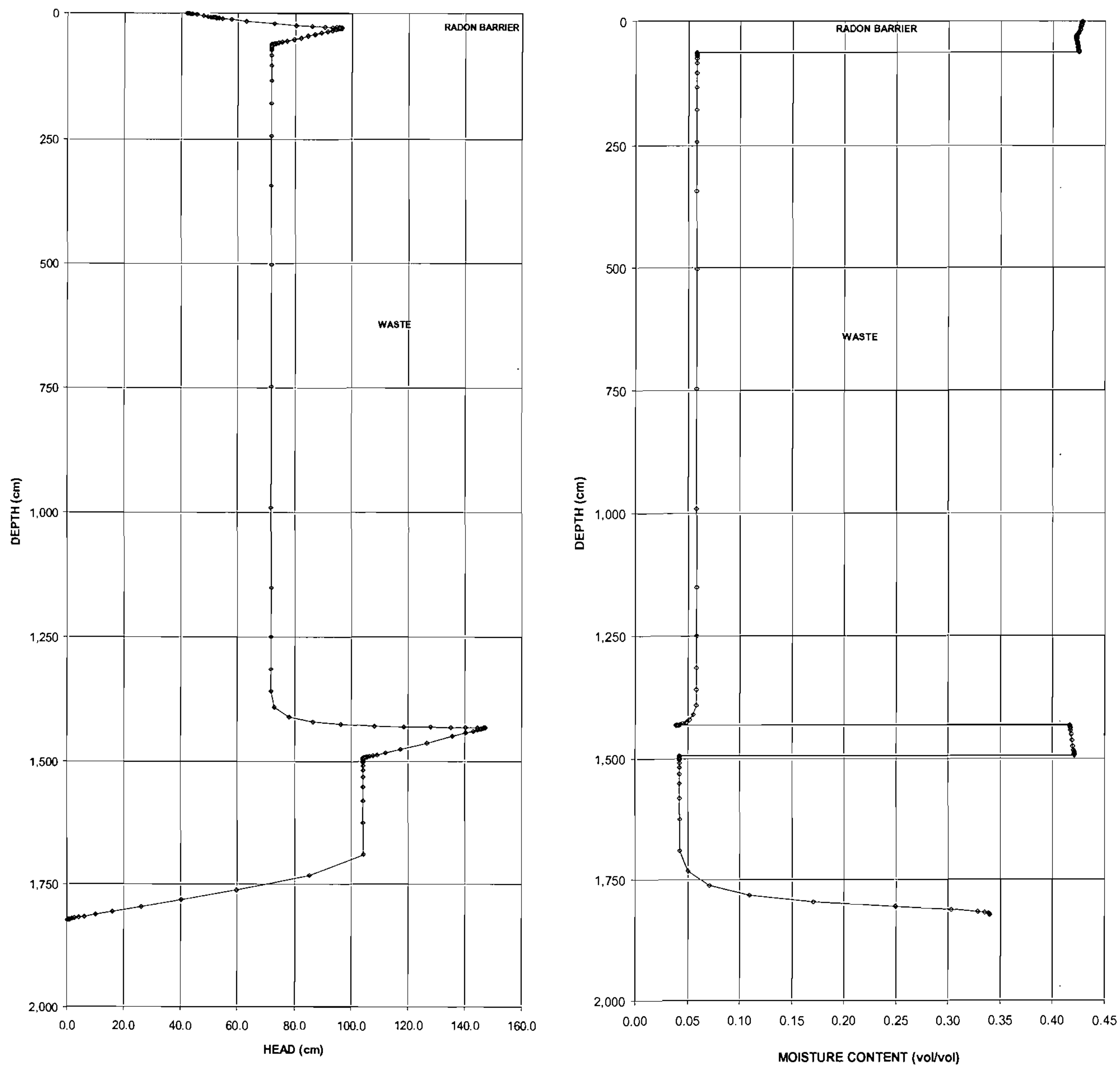

Figure 8. Suction Head and Moisture Content vs. Depth Below Top of Radon Barrier – UNSAT-H Top Slope Model Results

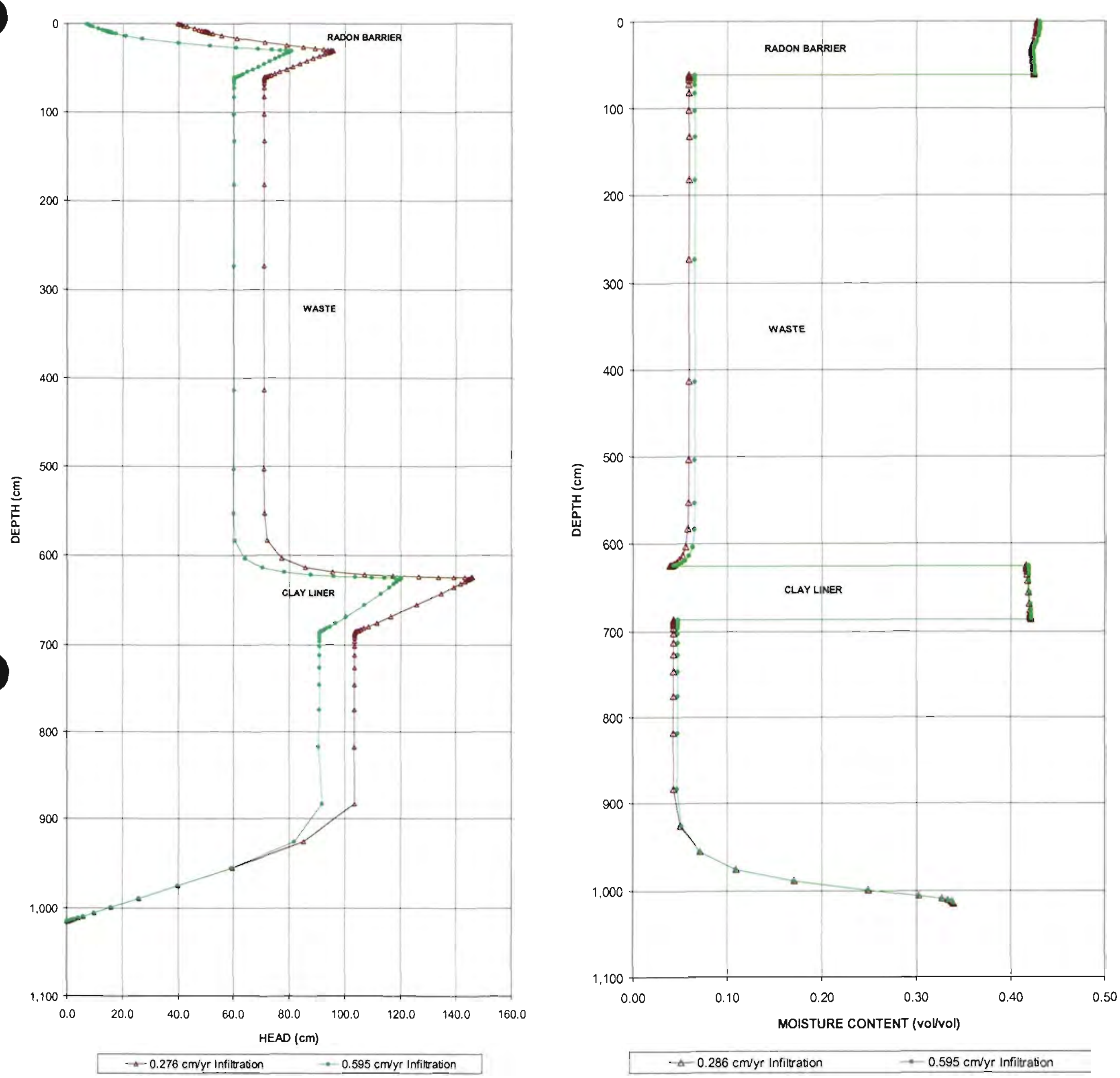

Figure 9. Suction Head and Moisture Content vs. Depth Below Top of Radon Barrier – UNSAT-H Side Slope Model Results

5. VERTICAL PATHRAE FATE AND TRANSPORT MODELING

5.1 PATHRAE Code

Transport modeling was performed using the PATHRAE-RAD Performance Assessment Code for the Land Disposal of Radioactive Wastes (Merrell, et. al, 1995). The PATHRAE code was first developed for the US EPA in the 1980s, for use in assessing the maximum annual dose to a critical population group resulting from the disposal of "below regulatory concern" (BRC) wastes. The Class A South cell modeling used the PATHRAE-RAD version of the code, which was released on February 9, 1995 (code) and March 1995 (documentation). A modification to the code to allow for more than 10 output times was made by Adrian Brown Consultants in 1997, and is documented in Appendix M of Envirocare's 1998 license renewal application.

The PATHRAE code is generally made up of three components: release, transport, and uptake solutions. The model calculates a closed form solution for dose (or concentration) at a point in each pathway at a user-specified set of times. The code can be used to simulate multiple transport/receptor pathways. In the Class A South cell model, the groundwater to a river pathway was applied, in order to determine the concentration at a compliance point located 90 feet from the edge of the disposal cell. The three PATHRAE components are described below:

- *Release.* PATHRAE uses a constant rate for predicting the release of contaminants from the waste, in the current modeling exercise. That is, the model assumes that the quantity of contaminant released each year is a constant fraction of the amount of waste initially present[4].
- *Transport.* The transport component of PATHRAE is similar to that in many other groundwater contaminant transport models. PATHRAE solves the advection/dispersion equation, includes aquifer diffusion, assumes that diffusion is Fickian, allows for retardation of contaminants using a blanket K_d (retardation coefficient), and includes radioactive decay.
- *Uptake.* PATHRAE also calculates the maximum annual doses to a receptor consuming river or well water and crops grown using that water. However, the groundwater protection levels for the Energy*Solutions* site are given as concentrations derived from dose/uptake conversions. Therefore, PATHRAE was used to determine concentrations, rather than dose.

Both a vertical transport path and a horizontal transport path were modeled. The vertical model was run first, to determine the arrival time and concentrations of constituents at the water table. The output from the vertical model was then input into the horizontal model, using the discrete dispersed source method.

The discrete dispersed source method involves a vertically dispersed source term which is discretized over time and space. The PATHRAE transport model was run first for the dispersive vertical (unsaturated zone) solution. The procedure for applying the discrete dispersed source method is described in detail in previous reports. Concentration output was obtained for 116 output times and the total mass (or activity) of each constituent at the water table during a given time "slice" was summed from the output file. The time of arrival was converted to a distance by which to shorten (or lengthen) the vertical path as a result of positive (or negative) dispersion and retardation (Figure 10). The horizontal model was then run 115 times, using the initial concentration and distance for each time "slice". The 115 resulting concentrations at the compliance point were summed, to determine total concentration, which was then compared to the groundwater protection levels established for the applicable monitoring wells.

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[4] The assumption that the release rate (leach rate) is constant over time is conservative. The release rate would actually decrease over time as the source term concentration decreases.

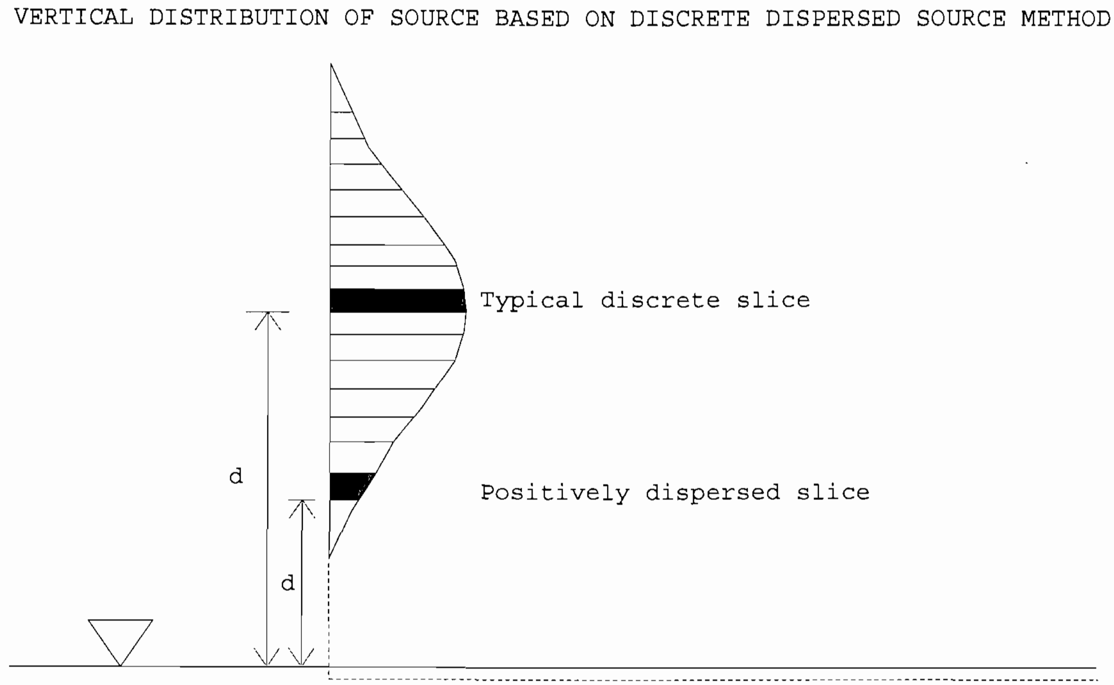

Figure 10. Vertical Distribution of Source Term Based on the Discrete Dispersed Source Method

5.2 Groundwater Protection Levels

The final output from the PATHRAE model was compared to the Groundwater Protection Levels (GWPLs) to determine the year in which the GWPL is first exceeded. The year to exceed is conservatively reported as the next *lowest* model output time.

GWPLs are listed in Table 19, for all constituents modeled. The GWPL values were derived from several sources (including UDEQ and EPA), which are also listed in Table 19. These sources include:

- Maximum contaminant levels (MCLs) and secondary MCLs (SMCLs) in drinking water established by UDEQ and the US EPA.
- Proposed drinking water standards for alpha emitters, as published in the EPA 1991 Proposed Rules, Federal Register, Vol. 56, No. 138, 40 CFR Parts 141 and 142, Appendix C - Alpha Emitters. The EPA's proposed standards for beta, gamma, and alpha emitters were also published in the Federal Register on April 21, 2000.
- Proposed drinking water standards for beta emitters, as published in the - EPA 1991 Proposed Rules, Federal Register, Vol. 56, No. 138, 40 CFR Parts 141 and 142, Appendix B - Beta Particle and Photon Emitters.
- Site specific GWPLs established by UDEQ for the existing LARW cell monitoring wells. These standards are listed in Table 1B of Energy*Solutions*' GWDP.
- GWPLs used in previous modeling performed by UDEQ DRC.

- Calculated values using FGR 11 or FGR 13. The most conservative (lowest) value calculated by Loren Morton (UDEQ DRC) were selected for nuclides which were not included in EPA's proposed rules or for which background GWPLs had not been established. GWPLs for two nuclides that were not were provided in the spreadsheet from Loren Morton were calculated by Wayne Johns using FGR 11. Both Loren Morton and Wayne Johns calculated the GWPL using the following equation:

$$GWPL = \frac{4mrem(CEDE)}{Year} \times \frac{1ALI(\mu Ci)}{5000mrem} \times \frac{10^6\,pCi}{\mu Ci} \times \frac{1year}{365days} \times \frac{1day}{2Liters} = \frac{pCi}{Liter}$$

- The GWPL for Nb-94 was also used for Nb-91 and Nb-92, because no values for these two nuclides are listed in MCLs, FGR 11, or FGR 13. The Nb-94 GWPL would be lower than those of Nb-91, Nb-92 based on radioactive half-life, decay products, and decay energies.
- GWPLs estimated using ICRP 30 (for Po-208, Po-209).

Table 19. Ground Water Protection Levels (GWPLs) for Class A South Cell Monitoring Wells

Radiological Constituents:

PARAMETER		GWPL (pCi/L)	GWPL (Ci/m^3)	Ref.
Actinium	Ac-227	1.27E+00	1.27E-09	2
Silver-108m	Ag-108m	7.23E+02	7.23E-07	2
Silver-110m	Ag-110m	5.12E+02	5.12E-07	2
Aluminum-26	Al-26	4.38E+02	4.38E-07	8
Americium-241	Am-241	6.45E+00	6.45E-09	1
Americium-242m	Am-242m	1.27E+00	1.27E-09	2
Americium-243	Am-243	6.49E+00	6.49E-09	1
Barium-133	Ba-133	1.52E+03	1.52E-06	2
Beryllium-7	Be-7	4.35E+04	4.35E-05	2
Beryllium-10	Be-10	1.10E+03	1.10E-06	8
Bismuth-207	Bi-207	1.01E+03	1.01E-06	2
Bismuth-210m	Bi-210m	3.46E+01	3.46E-08	7
Berkelium-247	Bk-247	5.48E-01	5.48E-10	7
Carbon-14	C-14	3.20E+03	3.20E-06	2
Calcium-41	Ca-41	3.29E+03	3.29E-06	8
Calcium-45	Ca-45	1.73E+03	1.73E-06	2
Cadmium-109	Cd-109	2.27E+02	2.27E-07	2
Cadmium-113	Cd-113	2.19E+01	2.19E-08	8
Cadmium-113m	Cd-113m	2.19E+01	2.19E-08	7
Californium-249	Cf-249	5.48E-01	5.48E-10	7
Californium-250	Cf-250	1.10E+00	1.10E-09	7
Californium-251	Cf-251	5.48E-01	5.48E-10	7
Californium-252	Cf-252	1.70E+01	1.70E-08	1
Chlorine-36	Cl-36	1.85E+03	1.85E-06	2
Curium-242	Cm-242	1.45E+02	1.45E-07	1
Curium-243	Cm-243	8.47E+00	8.47E-09	1
Curium-244	Cm-244	1.00E+01	1.00E-08	1
Curium-245	Cm-245	6.35E+00	6.35E-09	1
Curium-246	Cm-246	6.38E+00	6.38E-09	1
Curium-247	Cm-247	6.93E+00	6.93E-09	1
Curium-248	Cm-248	1.71E+00	1.71E-09	1
Cobalt-57	Co-57	4.87E+03	4.87E-06	2
Cobalt-60	Co-60	2.18E+02	2.18E-07	2
Cesium-134	Cs-134	8.13E+01	8.13E-08	2
Cesium-135	Cs-135	7.94E+02	7.94E-07	2
Cesium-137	Cs-137	1.19E+02	1.19E-07	2
Europium-152	Eu-152	8.41E+02	8.41E-07	2
Europium-154	Eu-154	5.73E+02	5.73E-07	2
Europium-155	Eu-155	3.59E+03	3.59E-06	2
Iron-55	Fe-55	9.25E+03	9.25E-06	2
Iron-60	Fe-60	7.96E+00	7.96E-09	7
Gadolinium-148	Gd-148	1.10E+01	1.10E-08	7
Tritium H-3	H-3	6.09E+04	6.09E-05	2
Mercury-194	Hg-194	2.19E+01	2.19E-08	7
Holmium-166m	Ho-166m	6.58E+02	6.58E-07	8
Iodine-129	I-129	2.10E+01	2.10E-08	2
Potassium-40	K-40	5.60E+02	5.60E-07	3
Manganese-53	Mn-53	5.48E+04	5.48E-05	8
Sodium-22	Na-22	4.66E+02	4.66E-07	2
Niobium-91	Nb-91	7.07E+02	7.07E-07	9
Niobium-92	Nb-92	7.07E+02	7.07E-07	9
Niobium-93m	Nb-93m	1.05E+04	1.05E-05	2
Niobium-94	Nb-94	7.07E+02	7.07E-07	2
Nickel-59	Ni-59	2.70E+04	2.70E-05	2
Nickel-63	Ni-63	9.91E+03	9.91E-06	2
Neptunium-237	Np-237	7.19E+00	7.19E-09	1
Osmium-194	Os-194	1.28E+02	1.28E-07	7
Protactinium-231	Pa-231	1.02E+01	1.02E-08	1
Pb-202	Pb-202	5.48E+00	5.48E-09	8
Pb-203	Pb-203	5.05E+03	5.05E-06	2
Pb-210	Pb-210	1.01E+00	1.01E-09	2
Palladium=107	Pd-107	3.66E+04	3.66E-05	2
Promethium-145	Pm-145	1.10E+04	1.10E-05	8
Promethium-147	Pm-147	5.24E+03	5.24E-06	2
Polonium-208	Po-208	1.64E+00	1.64E-09	10
Polonium-209	Po-209	1.48E+00	1.48E-09	7
Platinum-193	Pt-193	4.61E+04	4.61E-05	2
Plutonium-236	Pu-236	3.33E+01	3.33E-08	1

Non-radiological Constituents:

PARAMETER	GWPL (mg/l)	GWPL (kg/m^3)
Arsenic	0.05	5.00E-05
Barium	2	2.00E-03
Beryllium	0.004	4.00E-06
Cadmium	0.005	5.00E-06
Chromium	0.1	1.00E-04
Copper	1.3	1.30E-03
Lead	0.015	1.50E-05
Mercury	0.002	2.00E-06
Molybdenum	0.04	4.00E-05
Nickel	0.1	1.00E-04
Selenium	0.05	5.00E-05
Silver	0.1	1.00E-04
Zinc	5	5.00E-03

Formerly Characteristic (D-Code) Waste:

PARAMETER	Regulatory Level (mg/l)	Regulatory Level (kg/m^3)
D004 Arsenic	5	5.00E-03
D005 Barium	100	1.00E-01
D018 Benzene	0.5	5.00E-04
D006 Cadmium	1	1.00E-03
D019 Carbon tetrachloride	0.5	5.00E-04
D020 Chlordane	0.03	3.00E-05
D021 Chlorobenzene	100	1.00E-01
D022 Chloroform	6	6.00E-03
D007 Chromium	5	5.00E-03
D023 o-Cresol	200	2.00E-01
D024 m-Cresol	200	2.00E-01
D025 p-Cresol	200	2.00E-01
D026 Cresol	200	2.00E-01
D016 2,4-D	10	1.00E-02
D027 1,4-Dichlorobenzene	7.5	7.50E-03
D028 1,2-Dichloroethane	0.5	5.00E-04
D029 1,1-Dichloroethylene	0.7	7.00E-04
D030 2,4-Dinitrotoluene	0.13	1.30E-04
D012 Endrin	0.02	2.00E-05
D031 Heptachlor	0.008	8.00E-06
D032 Hexachlorobenzene	0.13	1.30E-04
D033 Hexachlorobutadiene	0.5	5.00E-04
D034 Hexachloroethane	3	3.00E-03
D008 Lead	5	5.00E-03
D013 Lindane	0.4	4.00E-04
D009 Mercury	0.2	2.00E-04
D014 Methoxychlor	10	1.00E-02
D035 Methyl ethyl ketone	200	2.00E-01
D036 Nitrobenzene	2	2.00E-03
D037 Pentrachlorophenol	100	1.00E-01
D038 Pyridine	5	5.00E-03
D010 Selenium	1	1.00E-03
D011 Silver	5	5.00E-03
D039 Tetrachloroethylene	0.7	7.00E-04
D015 Toxaphene	0.5	5.00E-04
D040 Trichloroethylene	0.5	5.00E-04
D041 2,4,5-Trichlorophenol	400	4.00E-01
D042 2,4,6-Trichlorophenol	2	2.00E-03
D017 2,4,5-TP (Silvex)	1	1.00E-03

Table 19. Ground Water Protection Levels (GWPLs) for Class A South Cell Monitoring Wells (Continued)

PARAMETER		GWPL (pCi/L)	GWPL (Ci/m^3)	Ref.
Plutonium-236	Pu-236	3.33E+01	3.33E-08	1
Plutonium-238	Pu-238	7.15E+00	7.15E-09	1
Plutonium-239	Pu-239	6.49E+01	6.49E-08	1
Plutonium-240	Pu-240	6.49E+01	6.49E-08	1
Plutonium-241	Pu-241	1.60E+03	1.60E-06	6
Plutonium-242	Pu-242	6.83E+01	6.83E-08	1
Plutonium-244	Pu-244	7.02E+00	7.02E-09	1
Radium-226 + Radium-228	Ra-226	5.30E+00	5.30E-09	4
Rhenium-187	Re-187	5.82E+05	5.82E-04	2
Rubidium-83	Rb-83	6.58E+02	6.58E-07	8
Ruthenium-106	Ru-106	2.03E+02	2.03E-07	2
Selenium-79	Se-79	2.16E+02	2.16E-07	7
Silicon-32	Si-32	5.65E+02	5.65E-07	7
Samarium-151	Sm-151	1.41E+04	1.41E-05	2
Tin-121m	Sn-121m	2.26E+03	2.26E-06	2
Tin-126	Sn-126	2.29E+02	2.29E-07	2
Strontium-90	Sr-90	4.20E+01	4.20E-08	2
Tantalum-182	Ta-182	8.42E+02	8.42E-07	2
Terbium-157	Tb-157	2.19E+03	2.19E-06	8
Terbium-158	Tb-158	1.25E+03	1.25E-06	2
Technicium-99	Tc-99	3.79E+03	3.79E-06	2
Tellurium-123	Te-123	5.48E+02	5.48E-07	8
Thorium-229	Th-229	6.58E-01	6.58E-10	7
Thorium-230	Th-230	6.50E+00	6.50E-09	5
Thorium-232	Th-232	9.18E+01	9.18E-08	1
Titanium-44	Ti-44	7.26E+01	7.26E-08	7
Thallium-204	Tl-204	1.68E+03	1.68E-06	2
Thulium-170	Tm-170	1.03E+03	1.03E-06	2
Uranium-232	U-232	1.02E+01	1.02E-08	1
Uranium-233	U-233	2.56E+01	2.56E-08	1
Uranium-234	U-234	2.59E+01	2.59E-08	1
Uranium-235	U-235	2.65E+01	2.65E-08	1
Uranium-236	U-236	2.74E+01	2.74E-08	1
Uranium-238	U-238	2.62E+01	2.62E-08	1
Vanadium-50	V-50	2.19E+03	2.19E-06	8
Yttrium-88	Y-88	1.60E+02	1.60E-07	6
Zirconium-93	Zr-93	5.09E+03	5.09E-06	2
Zirconium-95	Zr-95	1.46E+03	1.32E-06	8

References:
1- EPA 1991 Proposed Rules, Federal Register, Vol. 56, No. 138, 40 CFR Parts 141 and 142, Appendix C - Alpha Emitters.
2- EPA 1991 Proposed Rules, Federal Register, Vol. 56, No. 138, 40 CFR Parts 141 and 142, Appendix B - Beta Particle and Photon Emitters.
3- State Standard Groundwater Protection Level Exceptions - LARW Wells, Table 1B, Permit No. UGW450005. Lowest value at well I-2-30.
4- State Standard Groundwater Protection Level Exceptions - LARW Wells, Table 1B, Permit No. UGW450005. Lowest value at well GW-24.
5- State Standard Groundwater Protection Level Exceptions - LARW Wells, Table 1B, Permit No. UGW450005. Lowest value at well GW-16R.
6- Used in previous modeling by UDEQ DRC.
7- Most conservative (lowest) value provided in spreadsheet from Loren Morton (UDEQ DRC).
8- Calculated based on FGR-11
9- Not listed in MCLs, FGR 11, or FGR 13. The Ni-94 GWPL was used, and would be lower than Ni-91, -92 based on radioactive half-life, decay products, and decay energies.
10- Calculated using ICRP 30.

5.3 Vertical Input Parameters for Contaminant Release

The transport of constituents from the waste to the water table was modeled using PATHRAE. The input parameters for the vertical model are shown in the model output (Attachment 3) and are described in detail below. The vertical model results (Section 5.5) serve as input to the horizontal PATHRAE model (Section 6.1.)

5.3.1 Waste Source Term Constituents

The Class A South cell will receive Class A low-level radioactive waste, D-Code (Formerly Characteristic) waste, and metals. Radionuclide waste concentrations are input to the PathRAE model in Ci/m^3. while organic and metals concentrations are input in kg/m^3.

5.3.2 Waste Source Term Concentrations

A total of 261 isotopes were evaluated. Table 21 provides source concentrations, half lives, and K_d values for each nuclide.

The waste source term concentrations for the Class A South cell were identical to those used in previous modeling of the Class A cell (Whetstone, 2000e) and were developed from data supplied by the Manifest Information Management System (MIMS). MIMS is managed by the Department of Energy (DOE), and is a summary of national low-level radioactive waste disposal information.

The initial information supplied by MIMS consisted of disposal data from 1986 to 2000. This data was compiled from the disposal facilities at Barnwell, South Carolina, Beatty, Nevada and Richland, Washington. This spreadsheet, WasteClAcVolBC (original), was divided into various waste classes, i.e., Class A-stable, Class B, etc. Each waste class or combination of waste classes was further delineated by radioisotope, volume in cubic feet and activity in curies.

Due to limitations with MIMS, it is not possible to divide the waste classes for received material that was manifested with multiple waste classes, i.e., A-stable, A-unstable, B and C. Therefore, some combined categories, such as, A-stable/B or A-unstable/A-stable/C were deleted. The deleted portions comprised only 2.5% of the total volume of waste disposed (14,774,626 cubic feet) from 1986 to 2000. The radioisotopes, volumes, and activities were arranged into two categories, Class A, which includes stable and unstable, and Class B/C. This was the natural break between stable and unstable waste forms.

The spreadsheet WasteClAcVolBC (original) was edited as follows:

1) Obvious typographical errors, such as, radioisotopes listed by atomic mass number only with no element identification were deleted.
2) Radioisotopes with a half-life less than five years were deleted. The exception to this was radioisotopes that decayed to daughters with half-lives greater than five years. In addition, radioisotopes that are included on Table I or Table II of Utah Radiation Control Rule R313-15-1008, Classification of Radioactive Waste for Land Disposal, were not deleted.
3) Certain conservative assumptions were used, such as:
   a) The activity for "Pu-239+" was combined with the Pu-239 activity. It was unclear what the "+" defined. This occurred also with "Cm-243+."
   b) The activity of Nb-93 was added to Nb-93m since Nb-93 is stable.
   c) The activity for natural thorium was added to the activity for Th-232 since natural thorium is essentially 100% Th-232.
   d) The activities for depleted uranium and natural uranium were added to the activity of U-238 since both are essentially 100% U-238.
   e) The activities for Nb-94 AM and Ni-63 AM were each added to their respective radioisotopes, Nb-94 and Ni-63. The annotation of "AM" is indicative of activated metals, which have specific waste class categories in Table I and II of R313-15-1008.
   f) The activity for Ba-137 was added to the activity of Ba-137m since Ba-137 is stable.

The list of the remaining radioisotopes established by the above criteria was then classified by R313-15-1008 and their respective maximum Class A concentrations determined. If a radioisotope was not listed on Table I or Table II, it is Class A in accordance with R313-15-1008(2)(f). In these cases, the waste source term in the model was set at the specific activity. The specific activity, in pCi/g, was calculated for 46 nuclides using the following formula:

$$SA = \frac{\ln(2)}{t_{1/2}}\left(6.02x10^{23}\,\frac{molecules}{Mole}\right)\left(\frac{1}{GMW_{g/m}}\right) \div \left(3.7x10^{-2}\right)$$

where SA = Specific activity in pCi/g
$t_{1/2}$ = Half life in seconds
GMW= Gram molecular weight in grams per mole

Four isotopes have allowable concentrations that are less than the Class A limits or Specific Activity in the top slope area while five isotopes have limited allowable concentrations under the 0.286 cm/yr side slope and eight isotopes have limited allowable concentrations under the 0.595 cm/yr side slope. For these constituents, the PATHRAE model was used to calculate the highest concentrations that would meet GWPLs at the compliance well for 500 years. The acceptable concentrations of Bk-247, Ca-41, Cl-36, and Re-187 in the top slope area were calculated from PATHRAE fate and transport modeling using an infiltration rate of 0.276 cm/yr and a distance of 76.2 meters (250 ft) to the compliance well.

The acceptable concentrations of Bk-247, Ca-41, Cl-36, Re-187, and Tc-99 in the 0.286 cm/yr side slope area were calculated from PATHRAE fate and transport modeling using an infiltration rate of 0.286 cm/yr and a distance of 27.4 meters (90 ft) to the compliance well. The acceptable concentrations of Bk-247, Ca-41, Cl-36, I-129, K-40, Re-187, Sr-90, and Tc-99 in the 0.595 cm/yr side slope area were calculated using PATHRAE with an infiltration rate of 0.595 cm/yr and a distance of 27.4 meters (90 ft) to the compliance well. The limiting concentrations for top slope and two side slope simulations are shown in Table 20.

Table 20. Limiting Radionuclide Concentrations in Class A South Disposal Cell Top Slope, 0.286 cm/yr Side Slope, and 0.595 cm/yr Side Slope (based on Waste Bulk Density of 1.80 g/cm³)

	Class A South Disposal Cell Top Slope Limiting Concentrations Based on 0.276 cm/yr Infiltration		
ISOTOPE	(pCi/gm)	(Ci/m³)	Source
Bk-247	0.00009833	1.77E-10	Model
Ca-41	2.06	3.70E-06	Model
Cl-36	0.286	5.14E-07	Model
Re-187	17,860	3.21E-02	Model

	Class A South Disposal Cell Side Slope Limiting Concentrations Based on 0.286 cm/yr Infiltration		
ISOTOPE	(pCi/gm)	(Ci/m³)	Source
Bk-247	0.0000906	1.63E-10	Model
Ca-41	1.322	2.38E-06	Model
Cl-36	0.268	4.83E-07	Model
Re-187	5,556	1.00E-02	Model
Tc-99	77,778	1.40E-01	Model

ISOTOPE	Class A South Disposal Cell Side Slope Limiting Concentrations Based on 0.595 cm/yr Infiltration (pCi/gm)	(Ci/m^3)	Source
Bk-247	0.00009111	1.64E-10	Model
Ca-41	1.328	2.39E-06	Model
Cl-36	0.2706	4.87E-07	Model
I-129	0.0667	1.20E-07	Model
K-40	45.0	8.10E-05	Model
Re-187	1.039	1.87E-06	Model
Sr-90	80.0	1.44E-04	Model
Tc-99	2.922	5.26E-06	Model

The 93 nuclides selected for modeling are indicated with a check-mark listed in Table 21. Nuclides that are not modeled directly are represented by a synthetic (dummy) surrogate nuclide. The surrogates are not real nuclides, but have the K_d, half life, and concentration properties appropriate for a conservative surrogate for the real nuclide.

Table 21. List of Class A Radionuclides and Model Surrogates

ELEMENT	NUCLIDE	Maximum Concent. (pCi/gm)	Maximum Concentration (Ci/m3)	Concentration Data Source	Distribution Coefficient (Kd) (L/Kg)	1/2 life		1/2 life (Years)	Isotope to be Modeled	Model Surrogate
Actinium	Ac-225	440000000	488.4	Class A	4.5	10	d	2.74E-02		Ks-23
Actinium	Ac-227	72300000000000	80253000	SA	4.5	21.77	y	2.18E+01	✓	
Silver	Ag-105	440000000	488.4	Class A	2.7	41.3	d	1.13E-01		Ks-23
Silver	Ag-108	440000000	488.4	Class A	2.7	2.37	m	4.51E-06		Ks-23
Silver	Ag-108m	26081000000000	28949910	SA	2.7	418	y	4.18E+02	✓	
Silver	Ag-110m	440000000	488.4	Class A	2.7	249.8	d	6.84E-01		Ks-23
Silver	Ag-111	440000000	488.4	Class A	2.7	7.45	d	2.04E-02		Ks-23
Aluminum	Al-26	18600000000	20646	SA	15	740000	y	7.40E+05	✓	
Americium	Am-241	10000	0.0111	Class A	1	432.2	y	4.32E+02	✓	
Americium	Am-242	440000000	488.4	Class A	1	0.67	d	1.83E-03		Ks-23
Americium	Am-242m	10000	0.0111	Class A	1	141	y	1.41E+02	✓	
Americium	Am-243	10000	0.0111	Class A	1	7370	y	7.37E+03	✓	
Americium	Am-244	440000000	488.4	Class A	1	10.1	h	1.15E-03		Ks-23
Americium	Am-245	440000000	488.4	Class A	1	2.05	h	2.34E-04		Ks-23
Arsenic	As-73	440000000	488.4	Class A	1	80.3	d	2.20E-01		Ks-23
Arsenic	As-74	440000000	488.4	Class A	1	17.77	d	4.87E-02		Ks-23
Gold	Au-195	440000000	488.4	Class A	0.25	186.1	d	5.10E-01		Ks-22
Gold	Au-198	440000000	488.4	Class A	0.25	2.695	d	7.38E-03		Ks-22
Gold	Au-199	440000000	488.4	Class A	0.25	3.14	d	8.60E-03		Ks-22
Barium	Ba-133	256160000000000	284337600	SA	10	10.51	y	1.05E+01	✓	
Barium	Ba-140	440000000	488.4	Class A	10	12.75	d	3.49E-02		Ks-22
Beryllium	Be-10	22000000000	24420	SA	2.5	1510000	y	1.51E+06	✓	
Beryllium	Be-7	440000000	488.4	Class A	2.5	53.29	d	1.46E-01		Ks-23
Bismuth	Bi-205	440000000	488.4	Class A	1	15.31	d	4.19E-02		Ks-23
Bismuth	Bi-206	440000000	488.4	Class A	1	6.243	d	1.71E-02		Ks-23
Bismuth	Bi-207	53670000000000	59573700	SA	1	31.55	y	3.16E+01	✓	
Bismuth	Bi-210m	567820000	630.2802	SA	1	3040000	y	3.04E+06	✓	
Bismuth	Bi-214	440000000	488.4	Class A	1	19.9	m	3.79E-05		Ks-23
Berkelium	Bk-247	0.0001518	1.68E-10	Model	0.001	1400	y	1.40E+03	✓	
Berkelium	Bk-249	440000000	488.4	Class A	0.001	320	d	8.77E-01		Ks-20
Berkelium	Bk-250	440000000	488.4	Class A	0.001	0.134	d	3.68E-04		Ks-20
Carbon	C-14	7207207.21	8.000	Class A	8.52	5730	y	5.73E+03	✓	
Calcium	Ca-41	440000000	488.4	Class A	0.05	103000	y	1.03E+05	✓	
Calcium	Ca-45	440000000	488.4	Class A	0.05	162.61	d	4.46E-01		Ks-21
Calcium	Ca-47	440000000	488.4	Class A	0.05	4.536	d	1.24E-02		Ks-21
Cadmium	Cd-105	440000000	488.4	Class A	1	55.5	m	1.06E-04		Ks-23
Cadmium	Cd-107	440000000	488.4	Class A	1	6.5	h	7.42E-04		Ks-23
Cadmium	Cd-109	440000000	488.4	Class A	1	462.6	d	1.27E+00		Ks-26
Cadmium	Cd-113	0.4303	4.78E-07	SA	1	9.3E+15	y	9.30E+15	✓	
Cadmium	Cd-113m	224520000000000	249217200	SA	1	14.1	y	1.41E+01	✓	
Cerium	Ce-129	440000000	488.4	Class A	1	3.5	m	6.66E-06	✓	Ks-23
Cerium	Ce-133	440000000	488.4	Class A	1	1.6167	h	1.85E-04		Ks-23
Cerium	Ce-137	440000000	488.4	Class A	1	9	h	1.03E-03		Ks-23
Cerium	Ce-139	440000000	488.4	Class A	1	137.6	d	3.77E-01		Ks-23
Cerium	Ce-141	440000000	488.4	Class A	1	32.5	d	8.90E-02		Ks-23
Cerium	Ce-143	440000000	488.4	Class A	1	1.377	d	3.77E-03		Ks-23
Cerium	Ce-144	440000000	488.4	Class A	1	284.9	d	7.81E-01		Ks-23
Cerium	Ce-147	440000000	488.4	Class A	1	56.44944	s	1.79E-06		Ks-23
Californium	Cf-248	440000000	488.4	Class A	2	333.5	d	9.14E-01		Ks-20
Californium	Cf-249	10000	0.011	Class A	2	351	y	3.51E+02	✓	
Californium	Cf-250	500	0.000555	Class A	2	13.08	y	1.31E+01	✓	
Californium	Cf-251	10000	0.0111	Class A	2	898	d	2.46E+00	✓	
Californium	Cf-252	440000000	488.4	Class A	2	2.65	y	2.65E+00	✓	
Chlorine	Cl-36	0.4055	4.50E-07	Model	0.0025	301000	y	3.01E+05	✓	
Curium	Cm-241	440000000	488.4	Class A	93.3	32.8	d	8.99E-02		Ks-24
Curium	Cm-242	440000000	488.4	Class A	93.3	162.8	d	4.46E-01		Ks-24
Curium	Cm-243	10000	0.0111	Class A	93.3	29.1	y	2.91E+01	✓	
Curium	Cm-244	10000	0.0111	Class A	93.3	18.1	y	1.81E+01	✓	
Curium	Cm-245	10000	0.0111	Class A	93.3	8500	y	8.50E+03	✓	
Curium	Cm-246	10000	0.0111	Class A	93.3	4730	y	4.73E+03	✓	
Curium	Cm-247	10000	0.0111	Class A	93.3	1.56E+07	y	1.56E+07	✓	
Curium	Cm-248	10000	0.0111	Class A	93.3	340000	y	3.40E+05	✓	
Curium	Cm-249	440000000	488.4	Class A	93.3	1.07	h	1.22E-04		Ks-23
Cobalt	Co-56	440000000	488.4	Class A	370	77.3	d	2.12E-01		Ks-25
Cobalt	Co-57	440000000	488.4	Class A	370	271.8	d	7.45E-01		Ks-25
Cobalt	Co-58	440000000	488.4	Class A	370	70.86	d	1.94E-01		Ks-25
Cobalt	Co-60	440000000	488.4	Class A	370	5.27	y	5.27E+00	✓	
Cobalt	Co-63	440000000	488.4	Class A	370	27.4	s	8.69E-07		Ks-25
Chromium	Cr-51	440000000	488.4	Class A	1	27.7	d	7.59E-02		Ks-23
Cesium	Cs-134	440000000	488.4	Class A	133	2.065	y	2.07E+00		Ks-25
Cesium	Cs-135	1152100000	1278.831	SA	133	2300000	y	2.30E+06	✓	
Cesium	Cs-136	440000000	488.4	Class A	133	13.16	d	3.61E-02		Ks-25
Cesium	Cs-137	630000	0.6993	Class A	133	30.07	y	3.01E+01	✓	
Copper	Cu-67	440000000	488.4	Class A	1	61.83	d	1.69E-01		Ks-23
Dysprosium	Dy-166	440000000	488.4	Class A	6.5	3.4	d	9.32E-03		Ks-23
Einsteinium	Es-253	440000000	488.4	Class A	0.001	20.47	d	5.61E-02		Ks-20
Einsteinium	Es-254	440000000	488.4	Class A	0.001	275.7	d	7.55E-01		Ks-20
Europium	Eu-152	173050000000000	192085500	SA	6.5	13.54	y	1.35E+01	✓	
Europium	Eu-154	270420000000000	300166200	SA	6.5	8.59	y	8.59E+00	✓	
Europium	Eu-155	440000000	488.4	Class A	6.5	4.76	y	4.76E+00	✓	

Table 21. List of Class A Radionuclides and Model Surrogates (Part 2)

ELEMENT	NUCLIDE	Maximum Concent. (pCi/gm)	Maximum Concentration (Ci/m3)	Concentration Data Source	Distribution Coefficient (Kd) (L/Kg)	1/2 life		1/2 life (Years)	Isotope to be Modeled	Model Surrogate
Europium	Eu-156	440000000	488.4	Class A	6.5	15.2	d	4.16E-02		Ks-23
Iron	Fe-52	440000000	488.4	Class A	1.4	0.345	d	9.45E-04		Ks-23
Iron	Fe-53	440000000	488.4	Class A	1.4	8.51	m	1.62E-05		Ks-23
Iron	Fe-55	440000000	488.4	Class A	1.4	2.73	y	2.73E+00	✓	
Iron	Fe-59	440000000	488.4	Class A	1.4	44.5	d	1.22E-01		Ks-23
Iron	Fe-60	3974800000	4412.028	SA	1.4	1500000	y	1.50E+06	✓	
Fermium	Fm-252	440000000	488.4	Class A	0.001	1.058	d	2.90E-03		Ks-20
Gallium	Ga-67	440000000	488.4	Class A	15	3.26	d	8.93E-03		Ks-23
Gadolinium	Gd-148	32228000000000	35773080	SA	6.5	74.6	y	7.46E+01	✓	
Gadolinium	Gd-151	440000000	488.4	Class A	6.5	124	d	3.40E-01		Ks-23
Gadolinium	Gd-153	440000000	488.4	Class A	6.5	241.6	d	6.62E-01		Ks-23
Germanium	Ge-68	440000000	488.4	Class A	0.25	270.8	d	7.42E-01		Ks-20
Hydrogen	H-3	25000000	27.75	Class A	0.04	12.33	y	1.23E+01	✓	
Hafnium	Hf-172	440000000	488.4	Class A	4.5	1.87	y	1.87E+00		Ks-26
Hafnium	Hf-175	440000000	488.4	Class A	4.5	70	d	1.92E-01		Ks-23
Hafnium	Hf-181	440000000	488.4	Class A	4.5	42.4	d	1.16E-01		Ks-23
Mercury	Hg-194	3546100000000	3936171	SA	10	444	y	4.44E+02	✓	
Mercury	Hg-203	440000000	488.4	Class A	10	46.6	d	1.28E-01		Ks-23
Holmium	Ho-166	440000000	488.4	Class A	2.5	1.115	d	3.05E-03		Ks-23
Holmium	Ho-166m	1800000000000	1998000	SA	2.5	1200	y	1.20E+03	✓	
Iodine	I-123	440000000	488.4	Class A	0.12	13.3	h	1.52E-03		Ks-22
Iodine	I-125	440000000	488.4	Class A	0.12	59.4	d	1.63E-01		Ks-22
Iodine	I-126	440000000	488.4	Class A	0.12	13.11	d	3.59E-02		Ks-22
Iodine	I-129	5000	0.00555	Class A	0.12	15700000	y	1.57E+07	✓	
Iodine	I-131	440000000	488.4	Class A	0.12	8.02	d	2.20E-02		Ks-22
Iodine	I-133	440000000	488.4	Class A	0.12	0.867	d	2.37E-03		Ks-22
Iodine	I-135	440000000	488.4	Class A	0.12	6.57	h	7.50E-04		Ks-22
Iodine	I-137	440000000	488.4	Class A	0.12	24.5	s	7.77E-07		Ks-22
Indium	In-111	440000000	488.4	Class A	15	2.8047	d	7.68E-03		Ks-23
Indium	In-113m	440000000	488.4	Class A	15	0.069	d	1.89E-04		Ks-23
Indium	In-114	440000000	488.4	Class A	15	0.00083	d	2.28E-06		Ks-23
Indium	In-114m	440000000	488.4	Class A	15	49.51	d	1.36E-01		Ks-23
Iridium	Ir-192	440000000	488.4	Class A	1.5	73.8	d	2.02E-01		Ks-23
Potassium	K-40	7003370	7.7737407	SA	0.15	1277000000	y	1.28E+09	✓	
Lanthanum	La-140	440000000	488.4	Class A	6.5	1.678	d	4.60E-03		Ks-23
Manganese	Mn-52	440000000	488.4	Class A	6.4	5.591	d	1.53E-02		Ks-23
Manganese	Mn-52m	440000000	488.4	Class A	6.4	0.0147	d	4.01E-05		Ks-23
Manganese	Mn-53	1800000000	1998	SA	6.4	3740000	y	3.74E+06	✓	
Manganese	Mn-54	440000000	488.4	Class A	6.4	312.3	d	8.56E-01		Ks-23
Molybdenum	Mo-99	440000000	488.4	Class A	1	2.748	d	7.53E-03		Ks-23
Sodium	Na-22	440000000	488.4	Class A	1	2.602	y	2.60E+00	✓	
Niobium	Nb-91	5780000000000	6415800	SA	1.6	680	y	6.80E+02	✓	
Niobium	Nb-92	112000000	124.32	SA	1.6	34700000	y	3.47E+07	✓	
Niobium	Nb-93m	263460000000000	292440600	SA	1.6	16.13	y	1.61E+01	✓	
Niobium	Nb-94	13000	0.01443	Class A	1.6	20300	y	2.03E+04	✓	
Neodymium	Nd-144	4.27	4.74322E-06	SA	6.5	2.29E+15	y	2.29E+15		stable
Neodymium	Nd-147	440000000	488.4	Class A	6.5	10.98	d	3.01E-02		Ks-23
Nickel	Ni-59	14000000	15.54	Class A	10	76000	y	7.60E+04	✓	
Nickel	Ni-63	2200000	2.442	Class A	10	100.1	y	1.00E+02	✓	
Neptunium	Np-235	440000000	488.4	Class A	3	1.085	y	1.09E+00		Ks-26
Neptunium	Np-237	10000	0.0111	Class A	3	2144000	y	2.14E+06	✓	
Osmium	Os-191	440000000	488.4	Class A	4.5	15.4	d	4.22E-02		Ks-23
Osmium	Os-191m	440000000	488.4	Class A	4.5	0.546	d	1.50E-03		Ks-23
Osmium	Os-194	307330000000000	341136300	SA	4.5	6	y	6.00E+00	✓	
Phosphorous	P-32	440000000	488.4	Class A	0.035	14.26	d	3.91E-02		Ks-21
Phosphorous	P-33	440000000	488.4	Class A	0.035	25.3	d	6.93E-02		Ks-21
Protactinium	Pa-231	47000000000	52170	SA	5.5	32760	y	3.28E+04	✓	
Protactinium	Pa-233	440000000	488.4	Class A	5.5	26.967	d	7.39E-02		Ks-23
Protactinium	Pa-234	440000000	488.4	Class A	5.5	6.7014	h	7.65E-04		Ks-23
Protactinium	Pa-234m	440000000	488.4	Class A	5.5	1.172088	m	2.23E-06		Ks-23
Lead	Pb-202	3400000000	3774	SA	19	52500	y	5.25E+04	✓	
Lead	Pb-203	440000000	488.4	Class A	19	2.1614	d	5.92E-03		Ks-23
Lead	Pb-210	76000000000000	84360000	SA	19	22.3	y	2.23E+01	✓	
Lead	Pb-214	440000000	488.4	Class A	19	26.8	m	5.10E-05		Ks-23
Palladium	Pd-103	440000000	488.4	Class A	0.55	16.991	d	4.66E-02		Ks-22
Palladium	Pd-107	510000000	566.1	SA	0.55	6500000	y	6.50E+06	✓	
Promethium	Pm-143	440000000	488.4	Class A	6.5	265	d	7.26E-01		Ks-23
Promethium	Pm-145	140000000000000	155400000	SA	6.5	17.7	y	1.77E+01	✓	
Promethium	Pm-147	440000000	488.4	Class A	6.5	2.6234	y	2.62E+00	✓	
Polonium	Po-208	440000000	488.4	Class A	9	2.9	y	2.90E+00	✓	
Polonium	Po-209	16781000000000	18626910	SA	9	102	y	1.02E+02	✓	
Polonium	Po-210	440000000	488.4	Class A	9	138.4	d	3.79E-01		Ks-23
Polonium	Po-214	440000000	488.4	Class A	9	164.3	us	5.21E-12		Ks-23
Platinum	Pt-193	37000000000000	41070000	SA	0.9	50	y	5.00E+01	✓	
Plutonium	Pu-236	500	0.000555	Class A	10	2.86	y	2.86E+00	✓	
Plutonium	Pu-238	10000	0.0111	Class A	10	87.7	y	8.77E+01	✓	
Plutonium	Pu-239	10000	0.0111	Class A	10	24110	y	2.41E+04	✓	
Plutonium	Pu-240	10000	0.0111	Class A	10	6564	y	6.56E+03	✓	
Plutonium	Pu-241	350000	0.3885	Class A	10	14.35	y	1.44E+01	✓	
Plutonium	Pu-242	10000	0.0111	Class A	10	373300	y	3.73E+05	✓	
Plutonium	Pu-243	500	0.000555	Class A	10	4.956	h	5.66E-04		Ks-23

Table 21. List of Class A Radionuclides and Model Surrogates (Part 3)

ELEMENT	NUCLIDE	Maximum Concent. (pCi/gm)	Maximum Concentration (Ci/m3)	Concentration Data Source	Distribution Coefficient (Kd) (L/Kg)	1/2 life		1/2 life (Years)	Isotope to be Modeled	Model Surrogate
Plutonium	Pu-244	500	0.000555	Class A	10	8.08E+07	y	8.08E+07	✓	
Radium	Ra-225	440000000	488.4	Class A	10	14.9	d	4.08E-02		Ks-23
Radium	Ra-226	10000	0.0111	Class A	10	1600	y	1.60E+03	✓	
Radium	Ra-228	272396000000000	302359560	SA	10	5.75	y	5.75E+00	✓	
Rubidium	Rb-82	440000000	488.4	Class A	0.55	0.0009	d	2.38E-06		Ks-22
Rubidium	Rb-83	440000000	488.4	Class A	0.55	86.2	d	2.36E-01		Ks-22
Rubidium	Rb-84	440000000	488.4	Class A	0.55	32.8	d	8.99E-02		Ks-22
Rubidium	Rb-86	440000000	488.4	Class A	0.55	18.63	d	5.10E-02		Ks-22
Rhenium	Re-183	440000000	488.4	Class A	0.075	70	d	1.92E-01		Ks-21
Rhenium	Re-184	440000000	488.4	Class A	0.075	38	d	1.04E-01		Ks-21
Rhenium	Re-184m	440000000	488.4	Class A	0.075	169	d	4.63E-01		Ks-21
Rhenium	Re-186	440000000	488.4	Class A	0.075	3.719	d	1.02E-02		Ks-21
Rhenium	Re-187	38000	0.04218	Class A	0.075	43500000000	y	4.35E+10	✓	
Rhenium	Re-188	440000000	488.4	Class A	0.075	0.709	d	1.94E-03		Ks-21
Rhodium	Rh-103m	440000000	488.4	Class A	0.001	0.039	d	1.07E-04		Ks-20
Ruthenium	Ru-103	440000000	488.4	Class A	5	39.26	d	1.08E-01		Ks-23
Ruthenium	Ru-106	440000000	488.4	Class A	5	1.02	y	1.02E+00		Ks-26
Sulfur	S-35	440000000	488.4	Class A	0.075	87.5	d	2.40E-01		Ks-21
Antimony	Sb-122	440000000	488.4	Class A	100	2.7	d	7.40E-03		Ks-25
Antimony	Sb-124	440000000	488.4	Class A	100	60.2	d	1.65E-01		Ks-25
Antimony	Sb-125	440000000	488.4	Class A	100	2.76	y	2.76E+00		Ks-25
Antimony	Sb-126	440000000	488.4	Class A	100	12.5	d	3.42E-02		Ks-25
Antimony	Sb-126m	440000000	488.4	Class A	100	0.013	d	3.61E-05		Ks-25
Antimony	Sb-129	440000000	488.4	Class A	100	4.4	h	5.02E-04		Ks-25
Scandium	Sc-41	440000000	488.4	Class A	10	0.596	s	1.89E-08		Ks-23
Scandium	Sc-44	440000000	488.4	Class A	10	0.164	d	4.48E-04		Ks-23
Scandium	Sc-46	440000000	488.4	Class A	10	83.8	d	2.30E-01		Ks-23
Scandium	Sc-47	440000000	488.4	Class A	10	3.349	d	9.18E-03		Ks-23
Selenium	Se-75	440000000	488.4	Class A	1	119.8	d	3.28E-01		Ks-23
Selenium	Se-79	69700000000	77367	SA	1	65000	y	6.50E+04	✓	
Selenium	Se-85	440000000	488.4	Class A	1	31.7	s	1.01E-06		Ks-23
Silicon	Si-32	65000000000000	72150000	SA	0.35	172	y	1.72E+02	✓	
Samarium	Sm-145	440000000	488.4	Class A	2.45	340	d	9.32E-01		Ks-23
Samarium	Sm-151	26320000000000	29215200	SA	2.45	90	y	9.00E+01	✓	
Samarium	Sm-153	440000000	488.4	Class A	2.45	1.928	d	5.28E-03		Ks-23
Tin	Sn-113	440000000	488.4	Class A	50	115.1	d	3.15E-01		Ks-24
Tin	Sn-117m	440000000	488.4	Class A	50	13.6	d	3.73E-02		Ks-24
Tin	Sn-119m	440000000	488.4	Class A	50	293.1	d	8.03E-01		Ks-24
Tin	Sn-121	440000000	488.4	Class A	50	1.128	d	3.09E-03		Ks-24
Tin	Sn-121m	53754000000000	59666940	SA	50	55	y	5.50E+01	✓	
Tin	Sn-126	28391000000	31514.01	SA	50	100000	y	1.00E+05	✓	
Strontium	Sr-81	440000000	488.4	Class A	0.05	22.3	m	4.24E-05		Ks-21
Strontium	Sr-82	440000000	488.4	Class A	0.05	25.55	d	7.00E-02		Ks-21
Strontium	Sr-85	440000000	488.4	Class A	0.05	64.8	d	1.78E-01		Ks-21
Strontium	Sr-87m	440000000	488.4	Class A	0.05	168.18	m	3.20E-04		Ks-21
Strontium	Sr-89	440000000	488.4	Class A	0.05	50.53	d	1.38E-01		Ks-21
Strontium	Sr-90	25000	0.02775	Class A	0.05	28.78	y	2.88E+01	✓	
Tantalum	Ta-182	440000000	488.4	Class A	2.2	114.43	d	3.14E-01		Ks-23
Terbium	Tb-157	15000000000000	16650000	SA	6.5	71	y	7.10E+01	✓	
Terbium	Tb-158	15000000000000	16650000	SA	6.5	180	y	1.80E+02	✓	
Terbium	Tb-160	440000000	488.4	Class A	6.5	72.3	d	1.98E-01		Ks-23
Technetium	Tc-95	440000000	488.4	Class A	0.11	0.833	d	2.28E-03		Ks-22
Technetium	Tc-95m	440000000	488.4	Class A	0.11	61	d	1.67E-01		Ks-22
Technetium	Tc-99	187500	0.208125	Class A	0.11	211100	y	2.11E+05	✓	
Technetium	Tc-99m	440000000	488.4	Class A	0.11	0.250	d	6.86E-04		Ks-22
Tellurium	Te-123	291	0.00032301	SA	1.25	1E+13	y	1.00E+13	✓	
Tellurium	Te-123m	440000000	488.4	Class A	1.25	119.7	d	3.28E-01		Ks-23
Tellurium	Te-125m	440000000	488.4	Class A	1.25	57.4	d	1.57E-01		Ks-23
Tellurium	Te-129	440000000	488.4	Class A	1.25	0.048	d	1.32E-04		Ks-23
Tellurium	Te-129m	440000000	488.4	Class A	1.25	33.6	d	9.21E-02		Ks-23
Thorium	Th-229	212830000000	236241.3	SA	10	7880	y	7.88E+03	✓	
Thorium	Th-230	20628000000	22897.08	SA	10	75380	y	7.54E+04	✓	
Thorium	Th-231	440000000	488.4	Class A	10	1.063	d	2.91E-03		Ks-23
Thorium	Th-232	110000	0.1221	SA	10	14050000000	y	1.41E+10	✓	
Thorium	Th-234	440000000	488.4	Class A	10	24.1	d	6.60E-02		Ks-23
Titanium	Ti-44	156350000000000	173548500	SA	10	63	y	6.30E+01	✓	
Thallium	Tl-201	440000000	488.4	Class A	0.15	3.038	d	8.32E-03		Ks-22
Thallium	Tl-202	440000000	488.4	Class A	0.15	12.23	d	3.35E-02		Ks-22
Thallium	Tl-204	440000000	488.4	Class A	0.15	3.78	y	3.78E+00	✓	
Thallium	Tl-210	440000000	488.4	Class A	0.15	1.3	m	2.47E-06		Ks-22
Thulium	Tm-170	440000000	488.4	Class A	6.5	128.6	d	3.52E-01	✓	
Thulium	Tm-171	440000000	488.4	Class A	6.5	1.92	y	1.92E+00		Ks-26
Uranium	U-228	440000000	488.4	Class A	6	9.1	m	1.73E-05		Ks-23
Uranium	U-230	440000000	488.4	Class A	6	20.8	d	5.70E-02		Ks-23
Uranium	U-232	22028000000000	24451080	SA	6	68.9	y	6.89E+01	✓	
Uranium	U-233	75000	0.08325	Class A	6	159200	y	1.59E+05	✓	
Uranium	U-234	6210000000	6893.1	SA	6	245500	y	2.46E+05	✓	
Uranium	U-235	1900	0.002109	Class A	6	703800000	y	7.04E+08	✓	
Uranium	U-236	64720000	71.8392	SA	6	23420000	y	2.34E+07	✓	
Uranium	U-238	336260	0.3732486	SA	6	4470000000	y	4.47E+09	✓	
Uranium	U-depleted	370000	0.4107	A+ (Class A)	6					U-isotopes

Table 21. List of Class A Radionuclides and Model Surrogates (Part 4)

ELEMENT	NUCLIDE	Maximum Concent. (pCi/gm)	Maximum Concentration (Ci/m3)	Concentration Data Source	Distribution Coefficient (Kd) (L/Kg)	1/2 life		1/2 life (Years)	Isotope to be Modeled	Model Surrogate
Uranium	U-natural	680000	0.7548	SA	6					U-isotopes
Vanadium	V-48	440000000	488.4	Class A	10	15.98	d	4.38E-02		Ks-23
Vanadium	V-50	0.0511	5.6721E-08	SA	10	1.4E+17	y	1.40E+17	✓	
Tungsten	W-181	440000000	488.4	Class A	1.5	121.2	d	3.32E-01		Ks-23
Tungsten	W-185	440000000	488.4	Class A	1.5	75.1	d	2.06E-01		Ks-23
Tungsten	W-187	440000000	488.4	Class A	1.5	23.72	h	2.71E-03		Ks-23
Tungsten	W-188	440000000	488.4	Class A	1.5	69.4	d	1.90E-01		Ks-23
Xenon	Xe-127	440000000	488.4	Class A	0.001	36.4	d	9.97E-02		Ks-20
Xenon	Xe-131m	440000000	488.4	Class A	0.001	11.934	d	3.27E-02		Ks-20
Xenon	Xe-133	440000000	488.4	Class A	0.001	5.245	d	1.44E-02		Ks-20
Xenon	Xe-133m	440000000	488.4	Class A	0.001	2.19	d	6.00E-03		Ks-20
Yttrium	Y-88	440000000	488.4	Class A	1.7	106.7	d	2.92E-01		Ks-23
Yttrium	Y-91	440000000	488.4	Class A	1.7	58.5	d	1.60E-01		Ks-23
Yttrium	Y-99	440000000	488.4	Class A	1.7	1.47	s	4.66E-08		Ks-23
Ytterbium	Yb-169	440000000	488.4	Class A	6.5	32.03	d	8.78E-02		Ks-23
Zinc	Zn-65	440000000	488.4	Class A	0.1	244.3	d	6.69E-01		Ks-22
Zirconium	Zr-88	440000000	488.4	Class A	10	83.4	d	2.28E-01		Ks-23
Zirconium	Zr-93	2514100000	2790.651	SA	10	1530000	y	1.53E+06	✓	
Zirconium	Zr-95	440000000	488.4	Class A	10	64.02	d	1.75E-01		Ks-23
SYNTHETIC (DUMMY) NUCLIDES:										
Surrogate	Ks-20	440000000	488.4		0.001	1	y	1.00E+00	✓	
Surrogate	Ks-21	440000000	488.4		0.01	1	y	1.00E+00	✓	
Surrogate	Ks-22	440000000	488.4		0.1	1	y	1.00E+00	✓	
Surrogate	Ks-23	440000000	488.4		1	1	y	1.00E+00	✓	
Surrogate	Ks-24	440000000	488.4		50	4	y	4.00E+00	✓	
Surrogate	Ks-25	440000000	488.4		100	4	y	4.00E+00	✓	
Surrogate	Ks-26	440000000	488.4		1	2	y	2.00E+00	✓	

NOTES: Class A = Class A limits
SA = Concentration represents the Specific Activity (maximum possible concentration) of the nuclide, rounded to ≈4 significant digits
Model = Maximum concentration of Bk-247 and Cl-36 are calculated to meet the GWPL for 500 years, under the CAC cell top slope
Concentrations in Ci/m3 are based on Class A waste density of 1.11 g/cm^3.

The radionuclide concentrations in picoCuries per gram (pCi/g)) were converted to Ci/m^3 using the waste bulk density of 1.8 gm/cm^3 for input to the PATHRAE model. Since the average bulk density of Class A waste is 1.1 g/cm^3 and the bulk density of Energy*Solutions*' waste is 1.8 g/cm^3, the modeled concentrations in Ci/m^3 were 63.6% higher than those shown in Table 21. The initial source term concentrations for the top slope, 0.507 cm/yr side slope, and 0.451 cm/yr side slope models are shown in Table 22, Table 23, and Table 24, respectively.

Table 22. Waste Maximum Radionuclide Source Concentrations, K_ds, and Fractional Release Rates, based on 0.276 cm/year Infiltration

Waste Characteristics:	Infiltration Rate:	0.00276	m/yr
	Waste Thickness:	1	m
	Waste Moisture Content:	0.059	cm^3/cm^3
	Waste Bulk Density:	1.8	gm/cm^3
Soil Characteristics:	Soil Thickness:	0.392	m
	Soil Moisture Content:	0.1055	cm^3/cm^3
	Soil Bulk Density:	1.558	gm/cm^3
Aquifer Characteristics:	Aquifer Porosity	0.290	cm^3/cm^3
	Hydraulic Conductivity:	7.78E-04	cm/sec
	Gradient:	3.29E-03	m/m
	Aquifer Velocity:	2.744	m/yr
	Aquifer Flux Rate:	0796	$m^3/m^2/yr$

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life		1/2 life (Years)
101	Actinium	Ac-227	72,300,000,000,000	1.30E+08	4.5	3.38E-04	67.455	21.77	y	2.18E+01
102	Silver	Ag-108m	26,081,000,000,000	4.69E+07	2.7	5.61E-04	40.873	418	y	4.18E+02
103	Aluminum	Al-26	20,646	3.72E-02	15	1.02E-04	222.517	740000	y	7.40E+05
48	Americium	Am-241	10,000	1.80E-02	1	1.48E-03	15.768	432	y	4.32E+02
104	Americium	Am-242m	10,000	1.80E-02	1	1.48E-03	15.768	141	y	1.41E+02
105	Americium	Am-243	10,000.00000	1.80E-02	1	1.48E-03	15.768	7370	y	7.37E+03
106	Barium	Ba-133	256,160,000,000,000	4.61E+08	10	1.53E-04	148.678	11	y	1.05E+01
107	Beryllium	Be-10	22,000,000,000	3.96E+04	2.5	6.05E-04	37.919	1,510,000	y	1.51E+06
108	Bismuth	Bi-207	53,670,000,000,000	9.66E+07	1	1.48E-03	15.768	31.55	y	3.16E+01
109	Bismuth	Bi-210m	567,820,000	1.02E+03	1	1.48E-03	15.768	3040000	y	3.04E+06
110	Berkelium	Bk-247	0.00009833	1.77E-10	0.001	4.54E-02	1.015	1400	y	1.40E+03
111	Carbon	C-14	7207207.21	1.30E+01	8.52	1.79E-04	126.821	5730	y	5.73E+03
112	Calcium	Ca-41	2.06	3.70E-06	0.05	1.85E-02	1.738	103,000	y	1.03E+05
113	Cadmium	Cd-113	0.430	7.75E-07	1	1.48E-03	15.768	9.3.E+15	y	9.30E+15
114	Cadmium	Cd-113m	224,520,000,000,000	4.04E+08	1	1.48E-03	15.768	14.1	y	1.41E+01
115	Californium	Cf-249	10,000	1.80E-02	2	7.54E-04	30.536	351	y	3.51E+02
116	Californium	Cf-250	500	9.00E-04	2	7.54E-04	30.536	13.08	y	1.31E+01
117	Californium	Cf-251	10,000	1.80E-02	2	7.54E-04	30.536	898	y	8.98E+02
118	Californium	Cf-252	440,000,000	7.92E+02	2	7.54E-04	30.536	2.65	y	2.65E+00
119	Chlorine	Cl-36	0.286	5.14E-07	0.0025	4.35E-02	1.037	301,000	y	3.01E+05
120	Curium	Cm-243	10,000	1.80E-02	93.3	1.64E-05	1378.833	29	y	2.91E+01
50	Curium	Cm-244	10,000	1.80E-02	93.3	1.64E-05	1378.833	18	y	1.81E+01
121	Curium	Cm-245	10,000	1.80E-02	93.3	1.64E-05	1378.833	8,500	y	8.50E+03
122	Curium	Cm-246	10,000	1.80E-02	93.3	1.64E-05	1378.833	4730	y	4.73E+03
123	Curium	Cm-247	10,000	1.80E-02	93.3	1.64E-05	1378.833	15600000	y	1.56E+07
124	Curium	Cm-248	10,000	1.80E-02	93.3	1.64E-05	1378.833	340000	y	3.40E+05
125	Cobalt	Co-60	440,000,000	7.92E+02	370	4.14E-06	5465.076	5	y	5.27E+00
126	Cesium	Cs-135	1,152,100,000	2.07E+03	133	1.15E-05	1965.114	2,300,000	y	2.30E+06
127	Cesium	Cs-137	630,000	1.13E+00	133	1.15E-05	1965.114	30.07	y	3.01E+01
128	Europium	Eu-152	173,050,000,000,000	3.11E+08	6.5	2.35E-04	96.991	14	y	1.35E+01
129	Europium	Eu-154	270,420,000,000,000	4.87E+08	6.5	2.35E-04	96.991	9	y	8.59E+00
130	Europium	Eu-155	440,000,000	7.92E+02	6.5	2.35E-04	96.991	4.76	y	4.76E+00
131	Iron	Fe-55	440,000,000	7.92E+02	1.4	1.07E-03	21.675	2.73	y	2.73E+00
132	Iron	Fe-60	3,974,800,000	7.15E+03	1.4	1.07E-03	21.675	1500000	y	1.50E+06
133	Gadolinium	Gd-148	32,228,000,000,000	5.80E+07	6.5	2.35E-04	96.991	75	y	7.46E+01
134	Hydrogen	H-3	25,000,000	4.50E+01	0.04	2.11E-02	1.591	12	y	1.23E+01
135	Mercury	Hg-194	3,546,100,000,000	6.38E+06	10	1.53E-04	148.678	444	y	4.44E+02
136	Holmium	Ho-166m	1,800,000,000,000	3.24E+06	2.5	6.05E-04	37.919	1,200	y	1.20E+03
137	Iodine	I-129	5,000	9.00E-03	0.12	1.00E-02	2.772	15,700,000	y	1.57E+07
138	Potassium	K-40	7,003,370	1.26E+01	0.15	8.39E-03	3.215	1,277,000,000	y	1.28E+09
139	Manganese	Mn-53	1,800,000,000	3.24E+03	6.4	2.38E-04	95.514	3,740,000.00	y	3.74E+06
140	Sodium	Na-22	440,000,000	7.92E+02	1	1.48E-03	15.768	3	y	2.60E+00
141	Niobium	Nb-91	5,780,000,000,000	1.04E+07	1.6	9.39E-04	24.628	680	y	6.80E+02
142	Niobium	Nb-92	112,000,000	2.02E+02	1.6	9.39E-04	24.628	34,700,000	y	3.47E+07
143	Niobium	Nb-93m	263,460,000,000,000	4.74E+08	1.6	9.39E-04	24.628	16.13	y	1.61E+01
144	Niobium	Nb-94	13,000	2.34E-02	1.6	9.39E-04	24.628	20300	y	2.03E+04
146	Nickel	Ni-59	14,000,000	2.52E+01	10	1.53E-04	148.678	76000	y	7.60E+04
147	Nickel	Ni-63	2,200,000	3.96E+00	10	1.53E-04	148.678	100.1	y	1.00E+02
42	Neptunium	Np-237	10,000	1.80E-02	3	5.06E-04	45.303	2144000	y	2.14E+06
148	Osmium	Os-194	307,330,000,000,000	5.53E+08	4.5	3.38E-04	67.455	6	y	6.00E+00
149	Protactinium	Pa-231	47,000,000,000	8.46E+04	5.5	2.77E-04	82.223	32760	y	3.28E+04

Table 22. Waste Maximum Radionuclide Source Concentrations, Kds, and Fractional Release Rates, based on 0.276 cm/year Infiltration (Part 2)

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life		1/2 life (Years)
150	Lead	Pb-202	3,400,000,000	6.12E+03	19	8.06E-05	281.588	52500	y	5.25E+04
151	Lead	Pb-210	76,000,000,000,000	1.37E+08	19	8.06E-05	281.588	22.3	y	2.23E+01
152	Palladium	Pd-107	510,000,000	9.18E+02	0.55	2.63E-03	9.122	6500000	y	6.50E+06
153	Promethium	Pm-145	140,000,000,000,000	2.52E+08	6.5	2.35E-04	96.991	17.7	y	1.77E+01
154	Promethium	Pm-147	440,000,000	7.92E+02	6.5	2.35E-04	96.991	2.6234	y	2.62E+00
155	Polonium	Po-208	440,000,000	7.92E+02	9	1.70E-04	133.910	2.9	y	2.90E+00
156	Polonium	Po-209	16,781,000,000,000	3.02E+07	9	1.70E-04	133.910	102	y	1.02E+02
157	Platinum	Pt-193	37,000,000,000,000	6.66E+07	0.9	1.64E-03	14.291	50	y	5.00E+01
158	Plutonium	Pu-236	500	9.00E-04	10	1.53E-04	148.678	2.86	y	2.86E+00
159	Plutonium	Pu-238	10,000	1.80E-02	10	1.53E-04	148.678	87.7	y	8.77E+01
160	Plutonium	Pu-239	10,000	1.80E-02	10	1.53E-04	148.678	24110	y	2.41E+04
45	Plutonium	Pu-240	10,000	1.80E-02	10	1.53E-04	148.678	6564	y	6.56E+03
46	Plutonium	Pu-241	350,000	6.30E-01	10	1.53E-04	148.678	14.35	y	1.44E+01
161	Plutonium	Pu-242	10,000	1.80E-02	10	1.53E-04	148.678	373300	y	3.73E+05
162	Plutonium	Pu-244	500	9.00E-04	10	1.53E-04	148.678	80800000	y	8.08E+07
55	Radium	Ra-226	10,000	1.80E-02	10	1.53E-04	148.678	1600	y	1.60E+03
163	Radium	Ra-228	272,396,000,000,000	4.90E+08	10	1.53E-04	148.678	5.75	y	5.75E+00
164	Rhenium	Re-187	17,860	3.21E-02	0.075	1.42E-02	2.108	43500000000	y	4.35E+10
165	Selenium	Se-79	69,700,000,000	1.25E+05	1	1.48E-03	15.768	65000	y	6.50E+04
166	Silicon	Si-32	65,000,000,000,000	1.17E+08	0.35	4.01E-03	6.169	172	y	1.72E+02
167	Samarium	Sm-151	26,320,000,000,000	4.74E+07	2.45	6.18E-04	37.181	90	y	9.00E+01
168	Tin	Sn-121m	53,754,000,000,000	9.68E+07	50	3.06E-05	739.389	55	y	5.50E+01
169	Tin	Sn-126	28,391,000,000	5.11E+04	50	3.06E-05	739.389	100000	y	1.00E+05
170	Strontium	Sr-90	25,000	4.50E-02	0.05	1.85E-02	1.738	28.78	y	2.88E+01
171	Terbium	Tb-157	15,000,000,000,000	2.70E+07	6.5	2.35E-04	96.991	71	y	7.10E+01
172	Terbium	Tb-158	15,000,000,000,000	2.70E+07	6.5	2.35E-04	96.991	180	y	1.80E+02
173	Technetium	Tc-99	187,500	3.38E-01	0.11	1.07E-02	2.624	211100	y	2.11E+05
174	Tellurium	Te-123	291	5.24E-04	1.25	1.20E-03	19.460	1E+13	y	1.00E+13
175	Thorium	Th-229	212,830,000,000	3.83E+05	10	1.53E-04	148.678	7880	y	7.88E+03
36	Thorium	Th-230	20,628,000,000	3.71E+04	10	1.53E-04	148.678	75380	y	7.54E+04
176	Thorium	Th-232	110,000	1.98E-01	10	1.53E-04	148.678	14050000000	y	1.41E+10
177	Titanium	Ti-44	156,350,000,000,000	2.81E+08	10	1.53E-04	148.678	63	y	6.30E+01
178	Thallium	Tl-204	440,000,000	7.92E+02	0.15	8.39E-03	3.215	3.78	y	3.78E+00
179	Thulium	Tm-170	440,000,000	7.92E+02	6.5	2.35E-04	96.991	128.6	d	3.52E-01
180	Uranium	U-232	22,028,000,000,000	3.97E+07	6	2.54E-04	89.607	68.9	y	6.89E+01
181	Uranium	U-233	75,000	1.35E-01	6	2.54E-04	89.607	159200	y	1.59E+05
182	Uranium	U-234	6,210,000,000	1.12E+04	6	2.54E-04	89.607	245500	y	2.46E+05
183	Uranium	U-235	1,900	3.42E-03	6	2.54E-04	89.607	703800000	y	7.04E+08
40	Uranium	U-236	64,720,000	1.16E+02	6	2.54E-04	89.607	23420000	y	2.34E+07
41	Uranium	U-238	336,260	6.05E-01	6	2.54E-04	89.607	4470000000	y	4.47E+09
184	Vanadium	V-50	0.0511	9.20E-08	10	1.53E-04	148.678	1.4E+17	y	1.40E+17
185	Zirconium	Zr-93	2,514,100,000	4.53E+03	10	1.53E-04	148.678	1530000	y	1.53E+06
186	Surrogate	Ks-20	440,000,000	7.92E+02	0.001	4.54E-02	1.015	1	y	1.00E+00
187	Surrogate	Ks-21	440,000,000	7.92E+02	0.01	3.58E-02	1.148	1	y	1.00E+00
188	Surrogate	Ks-22	440,000,000	7.92E+02	0.1	1.15E-02	2.477	1	y	1.00E+00
189	Surrogate	Ks-23	440,000,000	7.92E+02	1	1.48E-03	15.768	1	y	1.00E+00
190	Surrogate	Ks-24	440,000,000	7.92E+02	50	3.06E-05	739.389	4	y	4.00E+00
191	Surrogate	Ks-25	440,000,000	7.92E+02	100	1.53E-05	1477.777	4	y	4.00E+00
192	Surrogate	Ks-26	440,000,000	7.92E+02	1	1.48E-03	15.768	2	y	2.00E+00

Table 23. Waste Maximum Radionuclide Source Concentrations, K_ds, and Fractional Release Rates, based on 0.286 cm/year Infiltration

Waste Characteristics:	Infiltration Rate:	0.00286	m/yr
	Waste Thickness:	1	m
	Waste Moisture Content:	0.059	cm^3/cm^3
	Waste Bulk Density:	1.8	gm/cm^3
Soil Characteristics:	Soil Thickness:	0.392	m
	Soil Moisture Content:	0.1093	cm^3/cm^3
	Soil Bulk Density:	1.558	gm/cm^3
Aquifer Characteristics:	Aquifer Porosity	0.290	cm^3/cm^3
	Hydraulic Conductivity:	7.78E-04	cm/sec
	Gradient:	3.29E-03	m/m
	Aquifer Velocity:	2.744	m/yr
	Aquifer Flux Rate:	0796	$m^3/m^2/yr$

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life		1/2 life (Years)
101	Actinium	Ac-227	72,300,000,000,000	1.30E+08	4.5	3.51E-04	65.145	21.77	y	2.18E+01
102	Silver	Ag-108m	26,081,000,000,000	4.69E+07	2.7	5.81E-04	39.487	418	y	4.18E+02
103	Aluminum	Al-26	20,646	3.72E-02	15	1.06E-04	214.815	740000	y	7.40E+05
48	Americium	Am-241	10,000	1.80E-02	1	1.54E-03	15.254	432	y	4.32E+02
104	Americium	Am-242m	10,000	1.80E-02	1	1.54E-03	15.254	141	y	1.41E+02
105	Americium	Am-243	10,000.00000	1.80E-02	1	1.54E-03	15.254	7370	y	7.37E+03
106	Barium	Ba-133	256,160,000,000,000	4.61E+08	10	1.58E-04	143.543	11	y	1.05E+01
107	Beryllium	Be-10	22,000,000,000	3.96E+04	2.5	6.27E-04	36.636	1,510,000	y	1.51E+06
108	Bismuth	Bi-207	53,670,000,000,000	9.66E+07	1	1.54E-03	15.254	31.55	y	3.16E+01
109	Bismuth	Bi-210m	567,820,000	1.02E+03	1	1.54E-03	15.254	3040000	y	3.04E+06
110	Berkelium	Bk-247	0.0000906	1.63E-10	0.001	4.70E-02	1.014	1400	y	1.40E+03
111	Carbon	C-14	7207207.21	1.30E+01	8.52	1.86E-04	122.447	5730	y	5.73E+03
112	Calcium	Ca-41	1.322	2.38E-06	0.05	1.92E-02	1.713	103,000	y	1.03E+05
113	Cadmium	Cd-113	0.430	7.75E-07	1	1.54E-03	15.254	9.3.E+15	y	9.30E+15
114	Cadmium	Cd-113m	224,520,000,000,000	4.04E+08	1	1.54E-03	15.254	14.1	y	1.41E+01
115	Californium	Cf-249	10,000	1.80E-02	2	7.82E-04	29.509	351	y	3.51E+02
116	Californium	Cf-250	500	9.00E-04	2	7.82E-04	29.509	13.08	y	1.31E+01
117	Californium	Cf-251	10,000	1.80E-02	2	7.82E-04	29.509	898	y	8.98E+02
118	Californium	Cf-252	440,000,000	7.92E+02	2	7.82E-04	29.509	2.65	y	2.65E+00
119	Chlorine	Cl-36	0.268	4.83E-07	0.0025	4.50E-02	1.036	301,000	y	3.01E+05
120	Curium	Cm-243	10,000	1.80E-02	93.3	1.70E-05	1330.930	29	y	2.91E+01
50	Curium	Cm-244	10,000	1.80E-02	93.3	1.70E-05	1330.930	18	y	1.81E+01
121	Curium	Cm-245	10,000	1.80E-02	93.3	1.70E-05	1330.930	8,500	y	8.50E+03
122	Curium	Cm-246	10,000	1.80E-02	93.3	1.70E-05	1330.930	4730	y	4.73E+03
123	Curium	Cm-247	10,000	1.80E-02	93.3	1.70E-05	1330.930	15600000	y	1.56E+07
124	Curium	Cm-248	10,000	1.80E-02	93.3	1.70E-05	1330.930	340000	y	3.40E+05
125	Cobalt	Co-60	440,000,000	7.92E+02	370	4.29E-06	5275.108	5	y	5.27E+00
126	Cesium	Cs-135	1,152,100,000	2.07E+03	133	1.19E-05	1896.828	2,300,000	y	2.30E+06
127	Cesium	Cs-137	630,000	1.13E+00	133	1.19E-05	1896.828	30.07	y	3.01E+01
128	Europium	Eu-152	173,050,000,000,000	3.11E+08	6.5	2.43E-04	93.653	14	y	1.35E+01
129	Europium	Eu-154	270,420,000,000,000	4.87E+08	6.5	2.43E-04	93.653	9	y	8.59E+00
130	Europium	Eu-155	440,000,000	7.92E+02	6.5	2.43E-04	93.653	4.76	y	4.76E+00
131	Iron	Fe-55	440,000,000	7.92E+02	1.4	1.11E-03	20.956	2.73	y	2.73E+00
132	Iron	Fe-60	3,974,800,000	7.15E+03	1.4	1.11E-03	20.956	1500000	y	1.50E+06
133	Gadolinium	Gd-148	32,228,000,000,000	5.80E+07	6.5	2.43E-04	93.653	75	y	7.46E+01
134	Hydrogen	H-3	25,000,000	4.50E+01	0.04	2.18E-02	1.570	12	y	1.23E+01
135	Mercury	Hg-194	3,546,100,000,000	6.38E+06	10	1.58E-04	143.543	444	y	4.44E+02
136	Holmium	Ho-166m	1,800,000,000,000	3.24E+06	2.5	6.27E-04	36.636	1,200	y	1.20E+03
137	Iodine	I-129	5,000	9.00E-03	0.12	1.04E-02	2.711	15,700,000	y	1.57E+07
138	Potassium	K-40	7,003,370	1.26E+01	0.15	8.69E-03	3.138	1,277,000,000	y	1.28E+09
139	Manganese	Mn-53	1,800,000,000	3.24E+03	6.4	2.47E-04	92.228	3,740,000.00	y	3.74E+06
140	Sodium	Na-22	440,000,000	7.92E+02	1	1.54E-03	15.254	3	y	2.60E+00
141	Niobium	Nb-91	5,780,000,000,000	1.04E+07	1.6	9.73E-04	23.807	680	y	6.80E+02
142	Niobium	Nb-92	112,000,000	2.02E+02	1.6	9.73E-04	23.807	34,700,000	y	3.47E+07
143	Niobium	Nb-93m	263,460,000,000,000	4.74E+08	1.6	9.73E-04	23.807	16.13	y	1.61E+01
144	Niobium	Nb-94	13,000	2.34E-02	1.6	9.73E-04	23.807	20300	y	2.03E+04
146	Nickel	Ni-59	14,000,000	2.52E+01	10	1.58E-04	164.805	76000	y	7.60E+04
147	Nickel	Ni-63	2,200,000	3.96E+00	10	1.58E-04	164.805	100.1	y	1.00E+02
42	Neptunium	Np-237	10,000	1.80E-02	3	5.24E-04	50.141	2144000	y	2.14E+06
148	Osmium	Os-194	307,330,000,000,000	5.53E+08	4.5	3.51E-04	74.712	6	y	6.00E+00
149	Protactinium	Pa-231	47,000,000,000	8.46E+04	5.5	2.87E-04	91.093	32760	y	3.28E+04

Table 23. Waste Maximum Radionuclide Source Concentrations, Kds, and Fractional Release Rates, based on 0.286 cm/year Infiltration (Part 2)

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life		1/2 life (Years)
150	Lead	Pb-202	3,400,000,000	6.12E+03	19	8.35E-05	271.833	52500	y	5.25E+04
151	Lead	Pb-210	76,000,000,000,000	1.37E+08	19	8.35E-05	271.833	22.3	y	2.23E+01
152	Palladium	Pd-107	510,000,000	9.18E+02	0.55	2.73E-03	8.840	6500000	y	6.50E+06
153	Promethium	Pm-145	140,000,000,000,000	2.52E+08	6.5	2.43E-04	93.653	17.7	y	1.77E+01
154	Promethium	Pm-147	440,000,000	7.92E+02	6.5	2.43E-04	93.653	2.6234	y	2.62E+00
155	Polonium	Po-208	440,000,000	7.92E+02	9	1.76E-04	129.289	2.9	y	2.90E+00
156	Polonium	Po-209	16,781,000,000,000	3.02E+07	9	1.76E-04	129.289	102	y	1.02E+02
157	Platinum	Pt-193	37,000,000,000,000	6.66E+07	0.9	1.70E-03	13.829	50	y	5.00E+01
158	Plutonium	Pu-236	500	9.00E-04	10	1.58E-04	143.543	2.86	y	2.86E+00
159	Plutonium	Pu-238	10,000	1.80E-02	10	1.58E-04	143.543	87.7	y	8.77E+01
160	Plutonium	Pu-239	10,000	1.80E-02	10	1.58E-04	143.543	24110	y	2.41E+04
45	Plutonium	Pu-240	10,000	1.80E-02	10	1.58E-04	143.543	6564	y	6.56E+03
46	Plutonium	Pu-241	350,000	6.30E-01	10	1.58E-04	143.543	14.35	y	1.44E+01
161	Plutonium	Pu-242	10,000	1.80E-02	10	1.58E-04	143.543	373300	y	3.73E+05
162	Plutonium	Pu-244	500	9.00E-04	10	1.58E-04	143.543	80800000	y	8.08E+07
55	Radium	Ra-226	10,000	1.80E-02	10	1.58E-04	143.543	1600	y	1.60E+03
163	Radium	Ra-228	272,396,000,000,000	4.90E+08	10	1.58E-04	143.543	5.75	y	5.75E+00
164	Rhenium	Re-187	5,556	1.00E-02	0.075	1.47E-02	2.069	43500000000	y	4.35E+10
165	Selenium	Se-79	69,700,000,000	1.25E+05	1	1.54E-03	15.254	65000	y	6.50E+04
166	Silicon	Si-32	65,000,000,000,000	1.17E+08	0.35	4.15E-03	5.989	172	y	1.72E+02
167	Samarium	Sm-151	26,320,000,000,000	4.74E+07	2.45	6.40E-04	35.923	90	y	9.00E+01
168	Tin	Sn-121m	53,754,000,000,000	9.68E+07	50	3.18E-05	713.717	55	y	5.50E+01
169	Tin	Sn-126	28,391,000,000	5.11E+04	50	3.18E-05	713.717	100000	y	1.00E+05
170	Strontium	Sr-90	25,000	4.50E-02	0.05	1.92E-02	1.713	28.78	y	2.88E+01
171	Terbium	Tb-157	15,000,000,000,000	2.70E+07	6.5	2.43E-04	93.653	71	y	7.10E+01
172	Terbium	Tb-158	15,000,000,000,000	2.70E+07	6.5	2.43E-04	93.653	180	y	1.80E+02
173	Technetium	Tc-99	77,778	1.40E-01	0.11	1.11E-02	2.568	211100	y	2.11E+05
174	Tellurium	Te-123	291	5.24E-04	1.25	1.24E-03	18.818	1E+13	y	1.00E+13
175	Thorium	Th-229	212,830,000,000	3.83E+05	10	1.58E-04	143.543	7880	y	7.88E+03
36	Thorium	Th-230	20,628,000,000	3.71E+04	10	1.58E-04	143.543	75380	y	7.54E+04
176	Thorium	Th-232	110,000	1.98E-01	10	1.58E-04	143.543	14050000000	y	1.41E+10
177	Titanium	Ti-44	156,350,000,000,000	2.81E+08	10	1.58E-04	143.543	63	y	6.30E+01
178	Thallium	Tl-204	440,000,000	7.92E+02	0.15	8.69E-03	3.138	3.78	y	3.78E+00
179	Thulium	Tm-170	440,000,000	7.92E+02	6.5	2.43E-04	93.653	128.6	d	3.52E-01
180	Uranium	U-232	22,028,000,000,000	3.97E+07	6	2.63E-04	86.526	68.9	y	6.89E+01
181	Uranium	U-233	75,000	1.35E-01	6	2.63E-04	86.526	159200	y	1.59E+05
182	Uranium	U-234	6,210,000,000	1.12E+04	6	2.63E-04	86.526	245500	y	2.46E+05
183	Uranium	U-235	1,900	3.42E-03	6	2.63E-04	86.526	703800000	y	7.04E+08
40	Uranium	U-236	64,720,000	1.16E+02	6	2.63E-04	86.526	23420000	y	2.34E+07
41	Uranium	U-238	336,260	6.05E-01	6	2.63E-04	86.526	4470000000	y	4.47E+09
184	Vanadium	V-50	0.0511	9.20E-08	10	1.58E-04	143.543	1.4E+17	y	1.40E+17
185	Zirconium	Zr-93	2,514,100,000	4.53E+03	10	1.58E-04	143.543	1530000	y	1.53E+06
186	Surrogate	Ks-20	440,000,000	7.92E+02	0.001	4.70E-02	1.014	1	y	1.00E+00
187	Surrogate	Ks-21	440,000,000	7.92E+02	0.01	3.71E-02	1.143	1	y	1.00E+00
188	Surrogate	Ks-22	440,000,000	7.92E+02	0.1	1.20E-02	2.425	1	y	1.00E+00
189	Surrogate	Ks-23	440,000,000	7.92E+02	1	1.54E-03	15.254	1	y	1.00E+00
190	Surrogate	Ks-24	440,000,000	7.92E+02	50	3.18E-05	713.717	4	y	4.00E+00
191	Surrogate	Ks-25	440,000,000	7.92E+02	100	1.59E-05	1426.435	4	y	4.00E+00
192	Surrogate	Ks-26	440,000,000	7.92E+02	1	1.54E-03	15.254	2	y	2.00E+00

Table 24. Waste Maximum Radionuclide Source Concentrations, K_ds, and Fractional Release Rates, based on 0.595 cm/year Infiltration

Waste Characteristics:	Infiltration Rate:	0.00595	m/yr
	Waste Thickness:	1	m
	Waste Moisture Content:	0.066	cm^3/cm^3
	Waste Bulk Density:	1.8	gm/cm^3
Soil Characteristics:	Soil Thickness:	0.392	M
	Soil Moisture Content:	0.1128	cm^3/cm^3
	Soil Bulk Density:	1.558	gm/cm^3
Aquifer Characteristics:	Aquifer Porosity	0.290	cm^3/cm^3
	Hydraulic Conductivity:	7.78E-04	cm/sec
	Gradient:	3.29E-03	m/m
	Aquifer Velocity:	2.744	m/yr
	Aquifer Flux Rate:	0.796	$m^3/m^2/yr$

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life		1/2 life (Years)
101	Actinium	Ac-227	72,300,000,000,000	1.30E+08	4.5	7.29E-04	63.154	21.77	y	2.18E+01
102	Silver	Ag-108m	26,081,000,000,000	4.69E+07	2.7	1.21E-03	38.293	418	y	4.18E+02
103	Aluminum	Al-26	20,646	3.72E-02	15	2.20E-04	208.181	740000	y	7.40E+05
48	Americium	Am-241	10,000	1.80E-02	1	3.19E-03	14.812	432	y	4.32E+02
104	Americium	Am-242m	10,000	1.80E-02	1	3.19E-03	14.812	141	y	1.41E+02
105	Americium	Am-243	10,000.00000	1.80E-02	1	3.19E-03	14.812	7370	y	7.37E+03
106	Barium	Ba-133	256,160,000,000,000	4.61E+08	10	3.29E-04	139.121	11	y	1.05E+01
107	Beryllium	Be-10	22,000,000,000	3.96E+04	2.5	1.30E-03	35.530	1,510,000	y	1.51E+06
108	Bismuth	Bi-207	53,670,000,000,000	9.66E+07	1	3.19E-03	14.812	31.55	y	3.16E+01
109	Bismuth	Bi-210m	567,820,000	1.02E+03	1	3.19E-03	14.812	3040000	y	3.04E+06
110	Berkelium	Bk-247	0.00009111	1.64E-10	0.001	8.78E-02	1.014	1400	y	1.40E+03
111	Carbon	C-14	7207207.21	1.30E+01	8.52	3.86E-04	118.679	5730	y	5.73E+03
112	Calcium	Ca-41	1.328	2.39E-06	0.05	3.81E-02	1.691	103,000	y	1.03E+05
113	Cadmium	Cd-113	0.430	7.75E-07	1	3.19E-03	14.812	9.3.E+15	y	9.30E+15
114	Cadmium	Cd-113m	224,520,000,000,000	4.04E+08	1	3.19E-03	14.812	14.1	y	1.41E+01
115	Californium	Cf-249	10,000	1.80E-02	2	1.62E-03	28.624	351	y	3.51E+02
116	Californium	Cf-250	500	9.00E-04	2	1.62E-03	28.624	13.08	y	1.31E+01
117	Californium	Cf-251	10,000	1.80E-02	2	1.62E-03	28.624	898	y	8.98E+02
118	Californium	Cf-252	440,000,000	7.92E+02	2	1.62E-03	28.624	2.65	y	2.65E+00
119	Chlorine	Cl-36	0.2706	4.87E-07	0.0025	8.44E-02	1.035	301,000	y	3.01E+05
120	Curium	Cm-243	10,000	1.80E-02	93.3	3.54E-05	1289.665	29	y	2.91E+01
50	Curium	Cm-244	10,000	1.80E-02	93.3	3.54E-05	1289.665	18	y	1.81E+01
121	Curium	Cm-245	10,000	1.80E-02	93.3	3.54E-05	1289.665	8,500	y	8.50E+03
122	Curium	Cm-246	10,000	1.80E-02	93.3	3.54E-05	1289.665	4730	y	4.73E+03
123	Curium	Cm-247	10,000	1.80E-02	93.3	3.54E-05	1289.665	15600000	y	1.56E+07
124	Curium	Cm-248	10,000	1.80E-02	93.3	3.54E-05	1289.665	340000	y	3.40E+05
125	Cobalt	Co-60	440,000,000	7.92E+02	370	8.93E-06	5111.461	5	y	5.27E+00
126	Cesium	Cs-135	1,152,100,000	2.07E+03	133	2.48E-05	1838.004	2,300,000	y	2.30E+06
127	Cesium	Cs-137	630,000	1.13E+00	133	2.48E-05	1838.004	30.07	y	3.01E+01
128	Europium	Eu-152	173,050,000,000,000	3.11E+08	6.5	5.06E-04	90.778	14	y	1.35E+01
129	Europium	Eu-154	270,420,000,000,000	4.87E+08	6.5	5.06E-04	90.778	9	y	8.59E+00
130	Europium	Eu-155	440,000,000	7.92E+02	6.5	5.06E-04	90.778	4.76	y	4.76E+00
131	Iron	Fe-55	440,000,000	7.92E+02	1.4	2.30E-03	20.337	2.73	y	2.73E+00
132	Iron	Fe-60	3,974,800,000	7.15E+03	1.4	2.30E-03	20.337	1500000	y	1.50E+06
133	Gadolinium	Gd-148	32,228,000,000,000	5.80E+07	6.5	5.06E-04	90.778	75	y	7.46E+01
134	Hydrogen	H-3	25,000,000	4.50E+01	0.04	4.31E-02	1.552	12	y	1.23E+01
135	Mercury	Hg-194	3,546,100,000,000	6.38E+06	10	3.29E-04	139.121	444	y	4.44E+02
136	Holmium	Ho-166m	1,800,000,000,000	3.24E+06	2.5	1.30E-03	35.530	1,200	y	1.20E+03
137	Iodine	I-129	0.0667	1.20E-07	0.12	2.11E-02	2.657	15,700,000	y	1.57E+07
138	Potassium	K-40	45.0	8.10E-05	0.15	1.77E-02	3.072	1,277,000,000	y	1.28E+09
139	Manganese	Mn-53	1,800,000,000	3.24E+03	6.4	5.14E-04	89.397	3,740,000.00	y	3.74E+06
140	Sodium	Na-22	440,000,000	7.92E+02	1	3.19E-03	14.812	3	y	2.60E+00
141	Niobium	Nb-91	5,780,000,000,000	1.04E+07	1.6	2.02E-03	23.099	680	y	6.80E+02
142	Niobium	Nb-92	112,000,000	2.02E+02	1.6	2.02E-03	23.099	34,700,000	y	3.47E+07
143	Niobium	Nb-93m	263,460,000,000,000	4.74E+08	1.6	2.02E-03	23.099	16.13	y	1.61E+01
144	Niobium	Nb-94	13,000	2.34E-02	1.6	2.02E-03	23.099	20300	y	2.03E+04
146	Nickel	Ni-59	14,000,000	2.52E+01	10	3.29E-04	139.121	76000	y	7.60E+04
147	Nickel	Ni-63	2,200,000	3.96E+00	10	3.29E-04	139.121	100.1	y	1.00E+02
42	Neptunium	Np-237	10,000	1.80E-02	3	1.09E-03	42.436	2144000	y	2.14E+06
148	Osmium	Os-194	307,330,000,000,000	5.53E+08	4.5	7.29E-04	63.154	6	y	6.00E+00
149	Protactinium	Pa-231	47,000,000,000	8.46E+04	5.5	5.97E-04	76.966	32760	y	3.28E+04

Table 24. Waste Maximum Radionuclide Source Concentrations, K_ds, and Fractional Release Rates, based on 0.595 cm/year Infiltration (Part 2)

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life		1/2 life (Years)
150	Lead	Pb-202	3,400,000,000	6.12E+03	19	1.74E-04	263.429	52500	y	5.25E+04
151	Lead	Pb-210	76,000,000,000,000	1.37E+08	19	1.74E-04	263.429	22.3	y	2.23E+01
152	Palladium	Pd-107	510,000,000	9.18E+02	0.55	5.63E-03	8.597	6500000	y	6.50E+06
153	Promethium	Pm-145	140,000,000,000,000	2.52E+08	6.5	5.06E-04	90.778	17.7	y	1.77E+01
154	Promethium	Pm-147	440,000,000	7.92E+02	6.5	5.06E-04	90.778	2.6234	y	2.62E+00
155	Polonium	Po-208	440,000,000	7.92E+02	9	3.66E-04	125.309	2.9	y	2.90E+00
156	Polonium	Po-209	16,781,000,000,000	3.02E+07	9	3.66E-04	125.309	102	y	1.02E+02
157	Platinum	Pt-193	37,000,000,000,000	6.66E+07	0.9	3.53E-03	13.431	50	y	5.00E+01
158	Plutonium	Pu-236	500	9.00E-04	10	3.29E-04	139.121	2.86	y	2.86E+00
159	Plutonium	Pu-238	10,000	1.80E-02	10	3.29E-04	139.121	87.7	y	8.77E+01
160	Plutonium	Pu-239	10,000	1.80E-02	10	3.29E-04	139.121	24110	y	2.41E+04
45	Plutonium	Pu-240	10,000	1.80E-02	10	3.29E-04	139.121	6564	y	6.56E+03
46	Plutonium	Pu-241	350,000	6.30E-01	10	3.29E-04	139.121	14.35	y	1.44E+01
161	Plutonium	Pu-242	10,000	1.80E-02	10	3.29E-04	139.121	373300	y	3.73E+05
162	Plutonium	Pu-244	500	9.00E-04	10	3.29E-04	139.121	80800000	y	8.08E+07
55	Radium	Ra-226	10,000	1.80E-02	10	3.29E-04	139.121	1600	y	1.60E+03
163	Radium	Ra-228	272,396,000,000,000	4.90E+08	10	3.29E-04	139.121	5.75	y	5.75E+00
164	Rhenium	Re-187	1.039	1.87E-06	0.075	2.96E-02	2.036	43500000000	y	4.35E+10
165	Selenium	Se-79	69,700,000,000	1.25E+05	1	3.19E-03	14.812	65000	y	6.50E+04
166	Silicon	Si-32	65,000,000,000,000	1.17E+08	0.35	8.55E-03	5.834	172	y	1.72E+02
167	Samarium	Sm-151	26,320,000,000,000	4.74E+07	2.45	1.33E-03	34.840	90	y	9.00E+01
168	Tin	Sn-121m	53,754,000,000,000	9.68E+07	50	6.61E-05	691.603	55	y	5.50E+01
169	Tin	Sn-126	28,391,000,000	5.11E+04	50	6.61E-05	691.603	100000	y	1.00E+05
170	Strontium	Sr-90	80.0	1.44E-04	0.05	3.81E-02	1.691	28.78	y	2.88E+01
171	Terbium	Tb-157	15,000,000,000,000	2.70E+07	6.5	5.06E-04	90.778	71	y	7.10E+01
172	Terbium	Tb-158	15,000,000,000,000	2.70E+07	6.5	5.06E-04	90.778	180	y	1.80E+02
173	Technetium	Tc-99	2.922	5.26E-06	0.11	2.25E-02	2.519	211100	y	2.11E+05
174	Tellurium	Te-123	291	5.24E-04	1.25	2.57E-03	18.265	1E+13	y	1.00E+13
175	Thorium	Th-229	212,830,000,000	3.83E+05	10	3.29E-04	139.121	7880	y	7.88E+03
36	Thorium	Th-230	20,628,000,000	3.71E+04	10	3.29E-04	139.121	75380	y	7.54E+04
176	Thorium	Th-232	110,000	1.98E-01	10	3.29E-04	139.121	14050000000	y	1.41E+10
177	Titanium	Ti-44	156,350,000,000,000	2.81E+08	10	3.29E-04	139.121	63	y	6.30E+01
178	Thallium	Tl-204	440,000,000	7.92E+02	0.15	1.77E-02	3.072	3.78	y	3.78E+00
179	Thulium	Tm-170	440,000,000	7.92E+02	6.5	5.06E-04	90.778	128.6	d	3.52E-01
180	Uranium	U-232	22,028,000,000,000	3.97E+07	6	5.48E-04	83.872	68.9	y	6.89E+01
181	Uranium	U-233	75,000	1.35E-01	6	5.48E-04	83.872	159200	y	1.59E+05
182	Uranium	U-234	6,210,000,000	1.12E+04	6	5.48E-04	83.872	245500	y	2.46E+05
183	Uranium	U-235	1,900	3.42E-03	6	5.48E-04	83.872	703800000	y	7.04E+08
40	Uranium	U-236	64,720,000	1.16E+02	6	5.48E-04	83.872	23420000	y	2.34E+07
41	Uranium	U-238	336,260	6.05E-01	6	5.48E-04	83.872	4470000000	y	4.47E+09
184	Vanadium	V-50	0.0511	9.20E-08	10	3.29E-04	139.121	1.4E+17	y	1.40E+17
185	Zirconium	Zr-93	2,514,100,000	4.53E+03	10	3.29E-04	139.121	1530000	y	1.53E+06
186	Surrogate	Ks-20	440,000,000	7.92E+02	0.001	8.78E-02	1.014	1	y	1.00E+00
187	Surrogate	Ks-21	440,000,000	7.92E+02	0.01	7.08E-02	1.138	1	y	1.00E+00
188	Surrogate	Ks-22	440,000,000	7.92E+02	0.1	2.42E-02	2.381	1	y	1.00E+00
189	Surrogate	Ks-23	440,000,000	7.92E+02	1	3.19E-03	14.812	1	y	1.00E+00
190	Surrogate	Ks-24	440,000,000	7.92E+02	50	6.61E-05	691.603	4	y	4.00E+00
191	Surrogate	Ks-25	440,000,000	7.92E+02	100	3.30E-05	1382.206	4	y	4.00E+00
192	Surrogate	Ks-26	440,000,000	7.92E+02	1	3.19E-03	14.812	2	y	2.00E+00

5.3.2.1 Heavy Metals Concentrations

The heavy metals modeling back-calculated the maximum allowable (or possible) heavy metals concentrations in the waste using the GWPL and metal density. This approach is identical to previous modeling of the Class A cell (Whetstone, 2000d) and 11(e).2 cell (Whetstone, 2001b).

The starting metals concentrations in the model were determined by calculating the maximum possible metals concentration, based on the density of each metal. Those metal densities, and corresponding concentrations in mg/m^3 are given in Table 25.

Table 25. Maximum Possible Metals Concentrations Based on Density

Element	Symbol	Density (gm/cc)	Maximum Possible Metal Concentration (mg/m^3)
Silver	Ag	10.5	1.05E+10
Arsenic	As	5.73	5.73E+09
Barium	Ba	3.5	3.50E+09
Beryllium	Be	1.848	1.85E+09
Cadmium	Cd	8.65	8.65E+09
Chromium	Cr	8.96	8.96E+09
Copper	Cu	8.92	8.92E+09
Mercury	Hg	13.54	1.35E+10
Molybdenum	Mo	10.22	1.02E+10
Nickel	Ni	8.4	8.40E+09
Lead	Pb	11.35	1.14E+10
Selenium	Se	4.79	4.79E+09
Zinc	Zn	7.13	7.13E+09

The PATHRAE model was run using these source term concentrations in the vertical (unsaturated) cases for the top slope, 0.286 cm/yr side slope, and 0.595 cm/yr side slope. The results of the vertical modeling were used as starting concentrations for the horizontal (saturated) model runs.

5.3.2.2 Formerly Characteristic (D-Code) Waste Concentrations

The Formerly Characteristic (D-Code) wastes were modeled using starting concentrations set at ten (10) times the treatment standard (Table 26), except metals which were modeled as described above and compared to the treatment standard.

Table 26. Modeled Starting Concentrations of Formerly Characteristic D-Code Wastes

Waste Code	Contaminant	Regulatory Level (mg/L)	Treatment Standard (nonwastewaters)	Modeled Concentration (mg/Kg)
D004	Arsenic	5.0	5.0 mg/L TCLP	maximum density-derived
D005	Barium	100.0	21 mg/L TCLP	maximum density-derived
D018	Benzene	0.5	10 mg/kg	100
D006	Cadmium	1.0	0.11 mg/L TCLP	maximum density-derived
D019	Carbon tetrachloride	0.5	6.0 mg/kg	60
D020	Chlordane	0.03	0.26 mg/kg	2.6
D021	Chlorobenzene	100.0	6.0 mg/kg	60
D022	Chloroform	6.0	6.0 mg/kg	60
D007	Chromium	5.0	0.60 mg/L TCLP	6
D023	o-Cresol	200.0	5.6 mg/kg	56
D024	m-Cresol	200.0	5.6 mg/kg	56
D025	p-Cresol	200.0	5.6 mg/kg	56
D026	Cresol	200.0	11.2 mg/kg	112
D016	2,4-D	10.0	10 mg/kg	100
D027	1,4-Dichlorobenzene	7.5	6.0 mg/kg	60
D028	1,2-Dichloroethane	0.5	6.0 mg/kg	60
D029	1,1-Dichloroethylene	0.7	6.0 mg/kg	60
D030	2,4-Dinitrotoluene	0.13	140 mg/kg	1400
D012	Endrin	0.02	0.13 mg/kg	1.3
D031	Heptachlor (and its epoxide)	0.008	0.066 mg/kg	0.66
D032	Hexachlorobenzene	0.13	10 mg/kg	100
D033	Hexachlorobutadiene	0.5	5.6 mg/kg	56
D034	Hexachloroethane	3.0	30 mg/kg	300
D008	Lead	5.0	0.75 mg/L TCLP	maximum density-derived
D013	Lindane	0.4	0.066 mg/kg	0.66
D009	Mercury	0.2	0.025 mg/L TCLP	maximum density-derived
D014	Methoxychlor	10.0	0.18 mg/kg	1.8
D035	Methyl ethyl ketone	200.0	36 mg/kg	360
D036	Nitrobenzene	2.0	14 mg/kg	140
D037	Pentachlorophenol	100.0	7.4 mg/kg	74
D038	Pyridine	5.0	16 mg/kg	160
D010	Selenium	1.0	5.7 mg/L TCLP	maximum density-derived
D011	Silver	5.0	0.14 mg/L TCLP	maximum density-derived
D039	Tetrachloroethylene	0.7	6.0 mg/kg	60
D015	Toxaphene	0.5	2.6 mg/kg	26
D040	Trichloroethylene	0.5	6.0 mg/kg	60
D041	2,4,5-Trichlorophenol	400.0	7.4 mg/kg	74
D042	2,4,6-Trichlorophenol	2.0	7.4 mg/kg	74
D017	2,4,5-TP (Silvex)	1.0	7.9 mg/kg	79
D043	Vinyl chloride	0.2	6.0 mg/kg	60

5.3.3 Waste Bulk Density

A value of 1.8 gm/cm^3 was used for the bulk density of the waste. This value is consistent with previous modeling and the range of density determined by Energy*Solutions* (1.75 to 1.80 gm/cm^3) for the compacted, in-place waste.

5.3.4 Partitioning Coefficients (K_d)

The partitioning coefficient (a.k.a. distribution coefficient, or K_d) is the equilibrium ratio of the adsorbed contaminant concentration in soil or waste (mg/kg) to the concentration in the pore water or leachate (mg/l). Higher K_d values indicate that the constituent is more likely to partition to the soil and less likely to be released into groundwater.

5.3.4.1 K_d Values for Inorganic Constituents (Radionuclides and Metals)

The K_d values and data sources for radionuclides and metals are listed in Table 27. The K_ds for inorganic constituents are identical to those used in previous modeling of the Class A and Class A North cells (Whetstone, 2007) and Class A Combined Cell (Whetstone, 2006).

The most conservative (lowest) K_d values found in the literature (Sheppard and Thibault, 1990; Looney et. al, 1987; Baes, et. al, 1984), were applied to all nuclides, except those having site-specific values approved by DRC. The modeling preferentially uses 1) approved site-specific K_d values, 2) the lowest measured soil K_d values published in the literature, and 3) a published K_d value calculated from the soil:plant ratio. The soil:plant ratio is only used where actual measured soil K_d values are not available, and the published K_d value from the soil:plant ratio is decreased by two orders of magnitude to be conservative.

Approved site-specific K_d values were available for Cs, Co, C-14, I-129, Np-237, Tc-99, U and Zn. Enchemica (2002) determined the site-specific zinc K_d is 374 L/kg with a standard deviation of +/- 4.1. DRC approved a site-specific zinc K_d of 368 L/kg (374 – 4.1) in a letter to Envirocare (DRC, Feb 2003).

The californium K_d value of 2.0 L/kg was proposed by Whetstone Associates in a technical memorandum summarizing the results of an extensive literature search for Cf K_d values (Whetstone, 2001c). The available literature indicates that the K_d value of Cf may range from 158 L/kg to 1,378 L/kg. The K_d value of 2.0 is two orders of magnitude lower than the default K_d value of 200 L/kg used in the RESRAD code (EAD, 2001; Yu et al., 1993, 2000). The RESRAD code was developed at Argonne National Laboratory and is authorized for use at DOE Sites, under DOE Order 5400.5. The K_d value for Cf isotopes of 2.0 L/kg was approved by DRC in a letter to Envirocare (DRC, Sept 2001).

5.3.4.2 K_d Values for Organic Constituents (D-Code Wastes)

K_d values are generally not published for organic constituents. Rather, the organic K_ds are calculated from the organic carbon-water partition coefficient (K_{oc}) using adsorption/desorption equation (Domenico and Schwartz, 1990).

$$\log K_d = \log K_{oc} + \log f_{oc}$$

where K_d = waste distribution coefficient (L/kg)
K_{oc} = soil organic carbon-water partition coefficient (L/kg)
f_{oc} = fractional organic content fraction of soil (total organic carbon/1.724)

K_ds were calculated using measured K_{oc} values from literature, where available. In the absence of measured K_{oc}s for specific chemicals, estimated values listed in Table 39 of the EPA Soil Screening Guidance: Users' Guide (EPA, 1996) were used. Estimated K_{oc}s presented in the soil screening guidance document are based on the relationship between measured octonol-water partition coefficients (K_{ow}) and K_{oc}. These estimates consider the variability in behavior between different classes of chemicals, and separate regression relationships were used to estimate K_{oc}s for volatile organic compounds (including chlorinated benzenes and certain chlorinated pesticides) and semi-volatile organic compounds.

Site-specific data for the Clive facility indicate that the total organic carbon (TOC) content of upper 20 feet of the soil horizon is 0.018% (Table 28). The site-specific values were obtained from twelve (12) soil samples collected on December 9, 1999 and analyzed for TOC. The sample locations, sampling methodology, and results are described in the report "Total Organic Carbon, Arsenic and Selenium Survey in Subsurface Soils at Clive, UT", prepared by Envirocare of Utah, Inc. on April 5, 2000. Chain-of-custody forms, photocopies of the original laboratory data sheets, and QA/QC information were included in the report. The samples were analyzed by American West Analytical Laboratories, a Utah-certified laboratory.

Since the groundwater models address transport in the unsaturated zone and the upper one foot of the aquifer (no mixing), the TOC values from the upper 20 feet of soil are considered representative of the transport system. The arithmetic average TOC in this region is 0.018%, as shown in Table 28. Not surprisingly, TOC decreases at depth. The arithmetic average of all 12 samples is 0.015%.

K_d values were calculated using this site-specific TOC value of 0.018%. This TOC value and method for calculating Kds for organic constituents is identical to what was used in previous 11(e).2 cell modeling (Whetstone, 2003). The derived K_d values for Class A South cell organic constituents are given in Table 29.

Table 27. Sorption Coefficient (Kd) Values for Radionuclides and Metals

(See large tables at end of report document)

Table 28. Site-Specific Total Organic Carbon (TOC) Concentrations in Unit 3 Sand

SAMPLE ID	DEPTH (ft)	TOC (mg/kg)
TOC-1	0	120
TOC-2	2	110
TOC-3	3	150
TOC-4	4	250
TOC-5	6	110
TOC-6	10	310
TOC-7	17	300
TOC-8	19	100
TOC-9	20	210
TOC-10	21	76
TOC-11	22	49
TOC-12	25	46
Average (0-25ft)		0.015
Average (0-20ft)		0.018

Table 29. Derivation of Organic Constituent Kd Values

Calculated K_ds are based on the Sorption Equation from Domenico and Schwartz (1990):

$$\log K_d = \log K_{oc} + \log f_{oc}$$

Where: K_d = soil partition coefficient
f_{oc} = organic content fraction of soil = 0.0001 w/w
K_{oc} = soil organic carbon-water partition coefficient (L/kg)

Organic Constituent			Literature Data					Model Kd (Calculated using Sorption Equation)			
#	Constituent	CAS #	SSL Log K_{ow}	Measured K_{oc}	Calculated K_{oc}	Measured Log K_{oc}	Calculated Log K_{oc}	Log K_{oc}	Site f_{oc}	Log K_d	K_d
118	Benzene	71-43-2	2.13	6.17E+01	5.89E+01	1.79	1.77	1.79	0.00018	-1.95	0.011
119	Carbon tetrachloride	56-23-5	2.73	1.52E+02	1.74E+02	2.18	2.24	2.18	0.00018	-1.56	0.027
120	Chlordane	57-74-9	6.32	5.13E+04	1.20E+05	4.71	5.08	4.71	0.00018	0.97	9.23
121	Chlorobenzene	108-90-7	2.86	2.24E+02	2.19E+02	2.35	2.34	2.35	0.00018	-1.39	0.040
122	Chloroform	67-66-3	1.92	5.25E+01	3.98E+01	1.72	1.60	1.72	0.00018	-2.02	0.0094
123	o-Cresol (a)	95-48-7	--	--	2.30E+03	3.36	3.36	3.36	0.00018	-0.38	0.414
124	m-Cresol (a)	108-39-4	--	--	2.30E+03	3.36	3.36	3.36	0.00018	-0.38	0.414
125	p-Cresol (a)	106-44-5	--	--	2.30E+03	3.36	3.36	3.36	0.00018	-0.38	0.414
126	Cresol (a)	1319-77-3	--	--	2.30E+03	3.36	3.36	3.36	0.00018	-0.38	0.414
116	2,4-D	105-67-9	2.36	--	2.09E+02	2.32	2.32	2.32	0.00018	-1.42	0.038
127	1,4-Dichlorobenzene	106-46-7	3.42	6.16E+02	6.17E+02	2.79	2.79	2.79	0.00018	-0.96	0.111
128	1,2-Dichloroethane	107-06-2	1.47	3.80E+01	1.74E+01	1.58	1.24	1.58	0.00018	-2.16	0.007
129	1,1-Dichloroethylene	75-35-4	2.13	6.50E+01	5.89E+01	1.81	1.77	1.81	0.00018	-1.93	0.012
130	2,4-Dinitrotoluene	121-14-2	2.01	--	9.55E+01	1.98	1.98	1.98	0.00018	-1.76	0.017
112	Endrin	72-20-8	5.06	1.08E+04	1.23E+04	4.03	4.09	4.03	0.00018	0.29	1.94
131	Heptachlor (and its epoxide)	76-44-8	6.26	9.53E+03	1.41E+06	3.98	6.15	3.98	0.00018	0.23	1.72
132	Hexachlorobenzene	118-74-1	5.89	8.00E+04	5.50E+04	4.90	4.74	4.90	0.00018	1.16	14.4
133	Hexachlorobutadiene	87-68-3	4.81	--	5.37E+04	4.73	4.73	4.73	0.00018	0.99	9.67
[illegible]	Hexachloroethane	67-72-1	4.00	--	1.78E+03	3.25	3.25	3.25	0.00018	-0.49	0.320
[illegible]	Lindane (a)	58-89-9	--	--	2.42E+02	2.38	2.38	2.38	0.00018	-1.36	0.044
114	Methoxychlor	72-43-5	5.08	8.00E+04	9.77E+04	4.90	4.99	4.90	0.00018	1.16	14.4
135	Methyl ethyl ketone (c)	78-93-3	--	--	4.50E+00	0.65	0.65	0.65	0.00018	-3.09	0.00081
136	Nitrobenzene	98-95-3	1.84	1.19E+02	6.46E+01	2.08	1.81	2.08	0.00018	-1.67	0.021
137	Pentrachlorophenol (b)	--	--	--	4.10E+02	2.61	2.61	2.61	0.00018	-1.13	0.074
138	Pyridine (e)	110-86-1	--	--	--	--	--	--	0.00018	--	0.001
139	Tetrachloroethylene	127-18-4	2.67	2.65E+02	1.55E+02	2.42	2.19	2.42	0.00018	-1.32	0.0477
115	Toxaphene	8001-35-2	5.50	9.58E+04	2.57E+05	4.98	5.41	4.98	0.00018	1.24	17.2
140	Trichloroethylene	79-01-6	2.71	9.43E+01	1.66E+02	1.97	2.22	1.97	0.00018	-1.77	0.017
141	2,4,5-Trichlorophenol (b)	--	--	--	2.98E+02	2.47	2.47	2.47	0.00018	-1.27	0.054
142	2,4,6-Trichlorophenol (b)	--	--	--	1.31E+02	2.12	2.12	2.12	0.00018	-1.63	0.024
117	2,4,5-TP (Silvex) (d)	93-72-1	--	--	1.40E+02	2.15	2.15	2.15	0.00018	-1.60	0.025
143	Vinyl chloride	75-01-4	1.50	--	1.86E+01	1.27	1.27	1.27	0.00018	-2.48	0.003

NOTES: --- = no published value
Except those noted, all K_{oc} are measured values from "Soil Screening Guidance: User's Guide", EPA/540/R-96/018, July 1996.
(a) Koc values from "The Soil Chemistry of Hazardous Materials" (Dragun 1988)
(b) For ionizable organic compounds, ph=8 was assumed and predicted K_{oc} values listed in Table 42 of the "EPA Soil Screening Guidance: Users Guide" (EPA, 1996) were used.
(c) Estimated K_{oc} from "Chemical Summary for Methyl Ethyl Ketone", EPA 749-F-94-015a, September 1994
(d) Koc value from "Handbook of Environmental Degradation Rates" (Howard 1991)
(e) No available data; default K_d value of 0.001 assumed

5.3.5 Half Lives

5.3.5.1 Half Lives for Class A Radionuclides

The half lives used in the Class A modeling are shown in Table 22 through Table 24. Radionuclides were modeled using half lives identical to those used in the previous Class A cell modeling (Whetstone, 2000e) and subsequent modeling reports. The source of the radionuclide half lives are provided in Table 30.

5.3.5.2 Half Lives for Metals

The metals were modeled using a half life of 10^{14} years, which essentially allowed no degradation.

5.3.5.3 Half Lives for Organic Constituents (D-Code Wastes)

The 32 organic constituents (the Formerly Characteristic [D Code] waste constituents) were modeled using published degradation half lives. Man-made organic chemicals in groundwater and soils tend to be degraded by abiotic and bacterially mediated reactions. Abiotic processes that can degrade organic chemical include volitilization hydrolysis, substitution, elimination, oxidation and reduction. Bacterially mediated degradation of organic compounds may occur under aerobic or anaerobic conditions. The rate and extent of degradation, and the composition of the degradation products will be dependent on the chemical species involved and soil and groundwater conditions.

Half lives for 29 of the 32 organic constituents were published in the Handbook of Environmental Degradation Rates (Howard, et. al, 1991), which lists low and high half lives in soil and in groundwater. Half lives for the remaining three compounds (endrin, toxaphene, and silvex) were derived from publications by US EPA (2006, 2007) and the World Health Organization (WHO, 2003).

A weighted-average half life was calculated for each constituent, because PATHRAE allows only a single half life to be entered for each constituent, while the degradation of organic constituents in the environment may differ in different media (soil or aquifer). The half lives were weighted based on the travel time through the vadose zone and aquifer, which are slightly different for the top slope and side slope area of the Class A South cell (Table 31, Part I). To be conservative, the weighted-average calculated based on the high literature values was increased by 2 to 5 times for use in the model. Modeling with a longer half life is environmentally conservative because constituents with longer half lives are more persistent. The travel times, literature-based half lives, weighted average literature-based half lives, and modeled half lives are shown in Table 31.

Table 30. Radionuclide Half-Lives and Data Sources

Nuclide	HALF-LIFE (Years)	DATA SOURCE
Ag-108	4.5E-06	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ag-110m	0.684	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Al-26	740,000	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Am-241	432.2	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Am-243	7,370	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Au-195	0.510	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ba-133	10.51	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Be-7	1.46E-01	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Bi-207	32	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Bi-210m	3,040,000	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Bk-247	1,400	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
C-14	5730	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ca-45	0.446	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cd-109	1.267	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cd-113m	14.1	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Ce-139	0.377	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ce-141	0.089	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ce-144	0.781	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cf-249	351	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cf-250	13.08	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Cf-251	898	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cl-36	301,000	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cm-242	0.446	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cm-243	29.10	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cm-244	18.10	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cm-245	8,500	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Cm-246	4,730	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cm-247	15,600,000	Kocher, David C. Radioactive Decay Data Tables, A Handbook of Decay Data for Application to Radiation Dosimetry and Radiological Assessments, Technical Information Center, US DOE
Cm-248	340,000	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Co-56	0.212	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Co-57	0.745	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Co-58	0.194	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Co-60	5.270	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cr-51	0.076	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cs-134	2.065	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cs-135	2,300,000	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cs-137	30.07	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cu-67	0.169	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Eu-152	13.54	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Eu-154	8.59	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Eu-155	4.76	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Fe-55	2.73	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Fe-59	0.122	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Fe-60	1,500,000	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Gd-148	74.6	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Gd-153	0.662	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ge-68	0.742	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
H-3	12.33	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Hf-181	0.116	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Hg-194	444	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Hg-203	0.128	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ho-166m	1,200	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
I-125	0.163	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
I-129	1.57E+07	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ir-192	0.202	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
K-40	1.28E+09	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Mn-54	0.856	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Na-22	2.6	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Nb-93m	16.13	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Nb-94	20,300	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ni-59	76,000	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.

Table 30. Radionuclide Half-Lives and Data Sources (Part 2)

Nuclide	HALF-LIFE (Years)	DATA SOURCE
Ni-63	100	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Np-237	2,144,000	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Os-194	6	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Pb-210	22.30	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pm-147	2.62	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Po-209	102	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Po-210	0.379	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Pu-236	2.86	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-238	87.70	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-239	24,110	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-240	6,564	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-241	14.35	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-242	373,300	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-243	0.00057	Kocher, David C. Radioactive Decay Data Tables, A Handbook of Decay Data for Application to Radiation Dosimetry and Radiological Assessments, Technical Information Center, US DOE
Pu-244	80,800,000	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ra-226	1,600	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ra-228	5.75	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Rb-83	0.236	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ru-106	1.02	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
S-35	0.240	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sb-124	1.65E-01	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sb-125	2.76	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Sc-46	0.230	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Se-75	0.328	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Se-79	65,000	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Si-32	172	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Sm-151	90	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sn-113	0.315	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sn-121m	55	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Sn-126	100,000	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Sr-85	0.178	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sr-89	0.138	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sr-90	28.8	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ta-182	0.314	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Tc-99	211,100	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Th-229	7,880	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Th-230	75,380	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Th-232	1.41E+10	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ti-44	63	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Tl-204	3.78	Integrated Data Base for 1989, Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics, Prepared for U.S. Dept. of Energy. Nov. 1989.
Tm-170	0.352	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
U-232	68.9	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
U-233	159,200	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
U-234	245,500	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
U-235	7.04E+08	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
U-236	2.34E+07	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
U-238	4.47E+09	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Y-88	0.292	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Y-91	0.160	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Zn-65	0.669	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Zr-95	0.175	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.

Table 31. Half Lives Used in PATHRAE Modeling of Formerly Characteristic Waste

I. Travel Time Used in Calculating Weighted Average Half Lives

	TOP SLOPE	0.286 SIDE SLOPE	0.595 SIDE SLOPE
Vadose Zone Travel Time			
	v_v = 0.0253 m/yr	v_v = 0.0262 m/yr	v_v = 0.0528 m/yr
	d = 3.637 m	d = 3.637 m	d = 3.637 m
	t_v = 143.82 yr	t_v = 138.99 yr	t_v = 68.93 yr
Saturated Zone Travel Time			
	v_h = 2.744 m/yr	v_h = 2.744 m/yr	v_h = 2.744 m/yr
	d = 76.2 m	d = 27.4 m	d = 27.4 m
	t_h = 27.77 yr	t_h = 9.99 yr	t_h = 9.99 yr
Total Travel Time:	153.80 yr	148.98 yr	78.91 yr

Notes: v_v = vadose zone velocity, d = distance, t_v = travel time in vadose zone, v_h = horizontal saturated velocity, t_h = travel time in saturated zone

II. 0.276 cm/yr Top Slope Half Lives

Compound	Vadose Zone Soil $t_{1/2}$ Literature Low hours	Vadose Zone Soil $t_{1/2}$ Literature High hours	Aquifer $t_{1/2}$ Literature Low hours	Aquifer $t_{1/2}$ Literature High hours	Weighted $t_{1/2}$ Low Hours	Weighted $t_{1/2}$ High hours	Modeled $t_{1/2}$ Hours	Modeled $t_{1/2}$ Years	Literature Source
Benzene	120	384	240	17,280	128	1,481	8,175	0.93	Howard, et al, 1991, page 111
Carbon tetrachloride	4,320	8,640	168	8,640	4,050	8,640	17,280	1.97	Howard, et al, 1991, page 34
Chlordane	5,712	33,264	11,424	66,528	6,083	35,424	81,111	9.26	Howard, et al, 1991, page 48
Chlorobenzene	1,632	3,600	3,264	7,200	1,738	3,834	8,778	1.00	Howard, et al, 1991, page 412
Chloroform	672	4,320	1,344	43,200	716	6,844	25,685	2.93	Howard, et al, 1991, page 99
o-Cresol	24	168	48	336	26	179	410	0.05	Howard, et al, 1991, page 294
m-Cresol	48	696	96	1,176	51	727	1,602	0.18	Howard, et al, 1991, page 402
p-Cresol	1	16	2	672	1	59	320	0.04	Howard, et al, 1991, page 366
Cresol	1	696	2	1,176	1	727	1,602	0.18	Howard, et al, 1991, page 641
2,4-D	24	168	48	336	26	179	410	0.05	Howard, et al, 1991, page 362
1,4-Dichlorobenzene	672	4,320	1,344	8,640	716	4,600	10,534	1.20	Howard, et al, 1991, page 368
1,2-Dichloroethane	2,400	4,320	2,400	8,640	2,400	4,600	10,534	1.20	Howard, et al, 1991, page 386
1,1-Dichloroethylene	672	4,320	1,344	3,168	716	4,245	8,135	0.93	Howard, et al, 1991, page 150
2,4-Dinitrotoluene	672	4,320	48	8,640	631	4,600	10,534	1.20	Howard, et al, 1991, page 474
Endrin	168	122,640	168	122,640	168	122,640	245,280	28.00	EPA, 2007
Heptachlor (and its epoxide)	23	129	23	129	23	129	259	0.03	Howard, et al, 1991, page 166
Hexachlorobenzene	23,256	50,136	46,512	100,272	24,766	53,391	122,252	13.96	Howard, et al, 1991, page 452
Hexachlorobutadiene	672	4,320	1,344	8,640	716	4,600	10,534	1.20	Howard, et al, 1991, page 240
Hexachloroethane	672	4,320	1,344	8,640	716	4,600	10,534	1.20	Howard, et al, 1991, page 101
Lindane	330	5,765	142	5,765	318	5,765	11,530	1.32	Howard, et al, 1991, page 52
Methoxychlor	4,320	8,760	1,200	8,760	4,117	8,760	17,520	2.00	Howard, et al, 1991, page 115
Methyl ethyl ketone	24	168	48	336	26	179	410	0.05	Howard, et al, 1991, page 186
Nitrobenzene	322	4,728	48	9,456	304	5,035	11,529	1.32	Howard, et al, 1991, page 328
Pentachlorophenol	552	4,272	1,104	36,480	588	6,363	22,664	2.59	Howard, et al, 1991, page 242
Pyridine	24	168	48	336	26	179	410	0.05	Howard, et al, 1991, page 424
Tetrachloroethylene	4,320	8,640	8,640	17,280	4,600	9,201	21,068	2.40	Howard, et al, 1991, page 502
Toxaphene	122,640	122,640	1,008	1,008	114,743	114,743	191,957	21.91	EPA, 2006
Trichloroethylene	4,320	8,640	7,704	39,672	4,540	10,655	30,884	3.53	Howard, et al, 1991, page 190
2,4,5-Trichlorophenol	552	16,560	1,104	43,690	588	18,321	45,014	5.14	Howard, et al, 1991, page 306
2,4,6-Trichlorophenol	168	1,680	336	43,690	179	4,407	21,777	2.49	Howard, et al, 1991, page 244
2,4,5-TP (Silvex)	192	2,928	192	2,928	192	2,928	5,856	0.67	WHO/SDE/WSH/03.04/44
Vinyl chloride	672	4,320	1,344	69,000	716	8,519	36,996	4.22	Howard, et al, 1991, page 138

III. 0.286 cm/yr Side Slope Half Lives

Compound	Vadose Zone Soil $t_{1/2}$ Literature Low hours	Vadose Zone Soil $t_{1/2}$ Literature High hours	Aquifer $t_{1/2}$ Literature Low hours	Aquifer $t_{1/2}$ Literature High hours	Weighted $t_{1/2}$ Low Hours	Weighted $t_{1/2}$ High hours	Modeled $t_{1/2}$ Hours	Modeled $t_{1/2}$ Years	Literature Source
Benzene	120	384	240	17,280	128	1,516	8,175	0.93	Howard, et al, 1991, page 111
Carbon tetrachloride	4,320	8,640	168	8,640	4,042	8,640	17,280	1.97	Howard, et al, 1991, page 34
Chlordane	5,712	33,264	11,424	66,528	6,095	35,493	81,111	9.26	Howard, et al, 1991, page 48
Chlorobenzene	1,632	3,600	3,264	7,200	1,741	3,841	8,778	1.00	Howard, et al, 1991, page 412
Chloroform	672	4,320	1,344	43,200	717	6,926	25,685	2.93	Howard, et al, 1991, page 99
o-Cresol	24	168	48	336	26	179	410	0.05	Howard, et al, 1991, page 294
m-Cresol	48	696	96	1,176	51	728	1,602	0.18	Howard, et al, 1991, page 402
p-Cresol	1	16	2	672	1	60	320	0.04	Howard, et al, 1991, page 366
Cresol	1	696	2	1,176	1	728	1,602	0.18	Howard, et al, 1991, page 641
2,4-D	24	168	48	336	26	179	410	0.05	Howard, et al, 1991, page 362
1,4-Dichlorobenzene	672	4,320	1,344	8,640	717	4,610	10,534	1.20	Howard, et al, 1991, page 368
1,2-Dichloroethane	2,400	4,320	2,400	8,640	2,400	4,610	10,534	1.20	Howard, et al, 1991, page 386
1,1-Dichloroethylene	672	4,320	1,344	3,168	717	4,243	8,135	0.93	Howard, et al, 1991, page 150
2,4-Dinitrotoluene	672	4,320	48	8,640	630	4,610	10,534	1.20	Howard, et al, 1991, page 474
Endrin	168	122,640	168	122,640	168	122,640	245,280	28.00	EPA, 2007
Heptachlor (and its epoxide)	23	129	23	129	23	129	259	0.03	Howard, et al, 1991, page 166
Hexachlorobenzene	23,256	50,136	46,512	100,272	24,815	53,496	122,252	13.96	Howard, et al, 1991, page 452
Hexachlorobutadiene	672	4,320	1,344	8,640	717	4,610	10,534	1.20	Howard, et al, 1991, page 240
Hexachloroethane	672	4,320	1,344	8,640	717	4,610	10,534	1.20	Howard, et al, 1991, page 101
Lindane	330	5,765	142	5,765	317	5,765	11,530	1.32	Howard, et al, 1991, page 52
Methoxychlor	4,320	8,760	1,200	8,760	4,111	8,760	17,520	2.00	Howard, et al, 1991, page 115
Methyl ethyl ketone	24	168	48	336	26	179	410	0.05	Howard, et al, 1991, page 186
Nitrobenzene	322	4,728	48	9,456	304	5,045	11,529	1.32	Howard, et al, 1991, page 328
Pentachlorophenol	552	4,272	1,104	36,480	589	6,431	22,664	2.59	Howard, et al, 1991, page 242
Pyridine	24	168	48	336	26	179	410	0.05	Howard, et al, 1991, page 424
Tetrachloroethylene	4,320	8,640	8,640	17,280	4,610	9,219	21,068	2.40	Howard, et al, 1991, page 502
Toxaphene	122,640	122,640	1,008	1,008	114,488	114,488	191,957	21.91	EPA, 2006
Trichloroethylene	4,320	8,640	7,704	39,672	4,547	10,720	30,884	3.53	Howard, et al, 1991, page 190
2,4,5-Trichlorophenol	552	16,560	1,104	43,690	589	18,378	45,014	5.14	Howard, et al, 1991, page 306
2,4,6-Trichlorophenol	168	1,680	336	43,690	179	4,496	21,777	2.49	Howard, et al, 1991, page 244
2,4,5-TP (Silvex)	192	2,928	192	2,928	192	2,928	5,856	0.67	WHO/SDE/WSH/03.04/44
Vinyl chloride	672	4,320	1,344	69,000	717	8,655	36,996	4.22	Howard, et al, 1991, page 138

IV. 0.595 cm/yr Side Slope Half Lives

Compound	Vadose Zone Soil $t_{1/2}$		Aquifer $t_{1/2}$		Weighted $t_{1/2}$		Modeled $t_{1/2}$		Literature Source
	Literature Low hours	Literature High hours	Literature Low hours	Literature High hours	Low Hours	High hours	Hours	Years	
Benzene	120	384	240	17,280	135	2,522	8,175	0.93	Howard, et al, 1991, page 111
Carbon tetrachloride	4,320	8,640	168	8,640	3,795	8,640	17,280	1.97	Howard, et al, 1991, page 34
Chlordane	5,712	33,264	11,424	66,528	6,435	37,473	81,111	9.26	Howard, et al, 1991, page 48
Chlorobenzene	1,632	3,600	3,264	7,200	1,839	4,056	8,778	1.00	Howard, et al, 1991, page 412
Chloroform	672	4,320	1,344	43,200	757	9,240	25,685	2.93	Howard, et al, 1991, page 99
o-Cresol	24	168	48	336	27	189	410	0.05	Howard, et al, 1991, page 294
m-Cresol	48	696	96	1,176	54	757	1,602	0.18	Howard, et al, 1991, page 402
p-Cresol	1	16	2	672	1	99	320	0.04	Howard, et al, 1991, page 366
Cresol	1	696	2	1,176	1	757	1,602	0.18	Howard, et al, 1991, page 641
2,4-D	24	168	48	336	27	189	410	0.05	Howard, et al, 1991, page 362
1,4-Dichlorobenzene	672	4,320	1,344	8,640	757	4,867	10,534	1.20	Howard, et al, 1991, page 368
1,2-Dichloroethane	2,400	4,320	2,400	8,640	2,400	4,867	10,534	1.20	Howard, et al, 1991, page 386
1,1-Dichloroethylene	672	4,320	1,344	3,168	757	4,174	8,135	0.93	Howard, et al, 1991, page 150
2,4-Dinitrotoluene	672	4,320	48	8,640	593	4,867	10,534	1.20	Howard, et al, 1991, page 474
Endrin	168	122,640	168	122,640	168	122,640	245,280	28.00	EPA, 2007
Heptachlor (and its epoxide)	23	129	23	129	23	129	259	0.03	Howard, et al, 1991, page 166
Hexachlorobenzene	23,256	50,136	46,512	100,272	26,199	56,480	122,252	13.96	Howard, et al, 1991, page 452
Hexachlorobutadiene	672	4,320	1,344	8,640	757	4,867	10,534	1.20	Howard, et al, 1991, page 240
Hexachloroethane	672	4,320	1,344	8,640	757	4,867	10,534	1.20	Howard, et al, 1991, page 101
Lindane	330	5,765	142	5,765	306	5,765	11,530	1.32	Howard, et al, 1991, page 52
Methoxychlor	4,320	8,760	1,200	8,760	3,925	8,760	17,520	2.00	Howard, et al, 1991, page 115
Methyl ethyl ketone	24	168	48	336	27	189	410	0.05	Howard, et al, 1991, page 186
Nitrobenzene	322	4,728	48	9,456	287	5,326	11,529	1.32	Howard, et al, 1991, page 328
Pentachlorophenol	552	4,272	1,104	36,480	622	8,347	22,664	2.59	Howard, et al, 1991, page 242
Pyridine	24	168	48	336	27	189	410	0.05	Howard, et al, 1991, page 424
Tetrachloroethylene	4,320	8,640	8,640	17,280	4,867	9,733	21,068	2.40	Howard, et al, 1991, page 502
Toxaphene	122,640	122,640	1,008	1,008	107,249	107,249	191,957	21.91	EPA, 2006
Trichloroethylene	4,320	8,640	7,704	39,672	4,748	12,567	30,884	3.53	Howard, et al, 1991, page 190
2,4,5-Trichlorophenol	552	16,560	1,104	43,690	622	19,993	45,014	5.14	Howard, et al, 1991, page 306
2,4,6-Trichlorophenol	168	1,680	336	43,690	189	6,996	21,777	2.49	Howard, et al, 1991, page 244
2,4,5-TP (Silvex)	192	2,928	192	2,928	192	2,928	5,856	0.67	WHO/SDE/WSH/03.04/44
Vinyl chloride	672	4,320	1,344	69,000	757	12,504	36,996	4.22	Howard, et al, 1991, page 138

5.3.6 Fractional Release Rate

The annual fractional release rate, or "leach rate", was calculated using the following equation (Kozak 1990):

$$L = \frac{q_{in}}{d\theta\left(1 + \frac{\rho K_d}{\theta}\right)}$$

where L = fractional annual contaminant release rate (yr^{-1})
q_{in} = water infiltration rate (m/yr)
θ = volumetric moisture content of waste
d = waste layer thickness (meters)
ρ = waste density (g/cm^3)
K_d = waste distribution coefficient (ml/g)

This method of determining the leachate concentration is environmentally-conservative for several reasons. First, PATHRAE assumes that the release rate is constant throughout time. The constituent is leached from the waste at a constant rate, until the initial source concentration is totally mobilized. In reality, the leach rate will decrease as the source concentration decreases. Second, the use of K_d to determine contaminant release rates assumes that all of the constituent is adsorbed and will eventually be completely desorbed (or leached out) by percolating water. In reality, some of the constituent may occur in the refractory phase, which would render it less mobile. Last, the Class A South cell modeling used the lowest literature K_d values, for constituents without site-specific K_ds.

The annual fractional release rates from the waste (vertical simulation) were calculated based on the infiltration rate (q_{in}) from the HELP modeling and the moisture content (θ) from the UNSAT-H modeling. The annual fractional release rates for each nuclide, for the top slope and two side slope infiltration rates, are shown in Table 22 through Table 24.

5.3.7 Container Life

The container life was set to zero, in both the horizontal and vertical PATHRAE modeling. The Class A South Cell modeling disregards the time required for the water to percolate through the cover, and assumes that the clay cover is immediately degraded and that water moves through the cover instantaneously.

In reality, a significant delay will occur for the time required to wet the cover and the waste, to degrade the radon barrier, and for moisture to travel through the cell cover, waste, and liner. Although the initial waste moisture contents cannot be known with certainty due to the inherent variability in the waste and in climatic conditions while the cell is open, previous open-cell modeling suggests that drying of the waste may occur and that the moisture content in the waste at the time of cell closure may be well below the levels assumed at the start of the closed cell modeling.

The Class A South cell model disregards the time required for the water to percolate through the cover and assumes that water moves through the cover instantaneously.

5.3.8 Decay Chain Computation

The natural uranium decay chain (U-238→Th-230→U-234) and the plutonium-241 decay chain (Pu-241→Am-241→Np-237) were calculated by the model. PATHRAE has the ability to model five other decay chains, but these were not modeled.

The simulation of decay chains for Pu-241→ Am-241→ Np-237 and U-238→ Th-230→ Ra-226 require that all decay chain isotopes be contained in a single model run. The vertical model run with decay contained a total of 65 isotopes. The remaining 35 isotopes were modeled in a separate run, which did not invoke the decay chain option. Also, because the decay chain calculations require each isotope in the decay chain to have a different retardation, the Ra-226 K_d was changed from 10.0 to 9.99 in the vertical PathRAE input files.

5.4 Vertical Input Parameters for Flow and Transport

5.4.1 Infiltration

The infiltration rate through the Class A South cell was determined from the HELP3 modeling described in Section 3.4 above. Three infiltration rates were used to evaluate transport. The 0.276 cm/yr infiltration rate was used to evaluate transport from the top slope, while the 0.286 and 0.595 cm/yr infiltration rates were used to evaluate transport from the side slope (Table 32).

Table 32. Infiltration Rates Input to PATHRAE Model

MODEL CASE	INFILTRATION RATE
Top Slope	0.276 cm/yr
Side Slope – 18" Type-B Filter	0.286 cm/yr
Side Slope – 12" Type-B Filter	0.595 cm/yr

5.4.2 Single Homogeneous Medium

PATHRAE is limited to solving the contaminant transport equation in one homogeneous medium for the vertical zone and one for the horizontal zone. In reality, particles migrating out of the landfill cell along the vertical pathway may travel through the waste, the bottom clay liner, the Unit 3 sand, and potentially the Unit 2 clay, all of which have differing hydraulic properties.

For the vertical pathway, the characteristics of individual units were converted to a single equivalent porous medium based on the thickness-weighted averages for moisture content, density, and porosity of the individual units. The equivalent moisture content and soil moisture velocity were calculated using the infiltration rate from the HELP modeling and UNSAT-H modeling. This approach is identical to that used in previous modeling for the Envirocare LARW, 11e.(2), Class A, and Mixed Waste cells. The characteristics of the equivalent porous media for the top slope are given in Table 33. The characteristics of the equivalent porous media for the side slope are given in Table 34 and Table 35.

Table 33. Calculation of Equivalent Porous Media Properties based on Class A South Cell Top Slope Design (0.276 cm/year Infiltration)

Layer	Material Type	Soil Bulk Density (g/cm^3)	Layer Thickness (cm)	Volumetric Water Content	Infiltration (cm/day)	Vadose Velocity (cm/yr)	Vadose Velocity (m/yr)	Saturated Hydraulic Conductivity (cm/sec)	Saturated Hydraulic Conductivity (m/yr)
0	Waste	1.8	50	0.059	0.00076	4.72	0.047	5.00E-04	157.7
1	Clay Liner	1.35	61	0.419	0.00076	0.66	0.007	1.00E-06	0.315
2	Unit 3 Sand	1.6	303	0.047	0.00076	5.90	0.059	3.71E-04	117.0
1+2	Weighted average	1.558		0.109		2.529	0.025	3.09E-04	97.4

Notes: Waste thickness is based on midpoint of unit (1 m^3) block of waste above liner.
Volumetric water content from UNSAT-H model run CAS-T27e
Infiltration from HELP model, Class A South top slope run 11e2-T6
Vadose velocity = Infiltration/effective porosity
Vadose velocity for Clay+Unit 3 = (infiltration) / (weighted average effective porosity)

Table 34. Calculation of Equivalent Porous Media Properties based on Class A South Cell Side Slope Design (0.286 cm/year Infiltration)

Layer	Material Type	Soil Bulk Density (gm/cm^3)	Layer Thickness (cm)	Volumetric Water Content	Infiltration (cm/day)	Vadose Velocity (cm/yr)	Vadose Velocity (m/yr)	Saturated Hydraulic Conductivity (cm/sec)	Saturated Hydraulic Conductivity (m/yr)
0	Waste	1.8	50	0.059	0.00078	4.85	0.049	5.00E-04	157.7
1	Clay Liner	1.35	61	0.419	0.00078	0.68	0.007	1.00E-06	0.315
2	Unit 3 Sand	1.6	303	0.047	0.00078	6.10	0.061	3.71E-04	117.0
1+2	Weighted average	1.558		0.109		2.617	0.026	3.09E-04	97.4

Notes: Waste thickness is based on midpoint of unit (1 m^3) block of waste above liner.
Volumetric water content from UNSAT-H model run CAS-S28c
Infiltration from HELP model, Class A South cell side slope run 11e2S28d
Vadose velocity = Infiltration/effective porosity
Vadose velocity for Clay+Unit 3 = (infiltration) / (weighted average effective porosity)

Table 35. Calculation of Equivalent Porous Media Properties based on Class A South Cell Side Slope Design (0.595 cm/year Infiltration)

Layer	Material Type	Soil Bulk Density (gm/cm^3)	Layer Thickness (cm)	Volumetric Water Content	Infiltration (cm/day)	Vadose Velocity (cm/yr)	Vadose Velocity (m/yr)	Saturated Hydraulic Conductivity (cm/sec)	Saturated Hydraulic Conductivity (m/yr)
0	Waste	1.8	50	0.066	0.0016	9.02	0.090	5.00E-04	157.7
1	Clay Liner	1.35	61	0.421	0.0016	1.41	0.014	1.00E-06	0.315
2	Unit 3 Sand	1.6	303	0.051	0.0016	11.74	0.117	3.71E-04	117.0
1+2	Weighted average	1.558		0.113		5.277	0.053	3.09E-04	97.4

Notes: Waste thickness is based on midpoint of unit (1 m^3) block of waste above liner.
Volumetric water content from UNSAT-H model run CAS-59c
Infiltration from HELP model, Class A South cell side slope run 11e2S59c
Vadose velocity = Infiltration/effective porosity
Vadose velocity for Clay+Unit 3 = (infiltration) / (weighted average effective porosity)

5.4.3 Aquifer Velocity

The aquifer velocity in the vertical model was calculated according to the equation for average linear velocity in the vadose zone (Stephens, 1996):

$$v = q / \theta_e$$

where v = average linear velocity (L/T)
q = infiltration rate (L/T)
θ_e = effective water content that participates in carrying the flow (L^3/L^3)

In this equation, the infiltration rate (q) was determined using the HELP3 model. The moisture content (θ) was determined using the UNSAT-H model for each vadose zone material. For example, the UNSAT-H model used a hydraulic conductivity of 6.04×10^{-4} cm/sec for the Unit 3 sand (as described in Section 4.2), to determine the moisture content on which the vadose zone velocity is based.

The moisture content (θ_e) of the layered vertical profile was calculated as a thickness-weighted average of the clay liner and Unit 3 sand (the equivalent porous media for the materials underlying the Class A South waste materials.) The vadose zone velocities calculated for the equivalent porous media (liner and silty sand) underlying the top slope and two side slope simulations are 0.025, 0.026 and 0.053 m/yr, as shown in Table 33 through Table 35.

5.4.4 Vertical Transport Distance

The vertical pathway represents the distance from the bottom of the waste to the aquifer, including the 2-foot thick clay liner and excluding the capillary fringe. The distance from the bottom of the waste to the top of the aquifer is 13.1 feet, based on the cell design and the measured water levels in four quarters of 1998. Using the measured elevations adjusted for freshwater head (Table 13), and the capillary fringe height predicted by the UNSAT-H modeling (Section 4.3.2), the adjusted distance was calculated as follows:

$$\text{Adjusted Distance} = H_{clay} - H_{aq} - cf$$

$$\text{Adjusted Distance} = 4264.4 - 4251.3 - 1.17 = 11.93 \text{ feet}$$

where H_{clay} = Avg. elevation of the top of the clay (4264.7, based on engineering drawing 07021 V3)
H_{aq} = Elevation of the top of the aquifer (4251.3, see Table 13)
cf = Capillary fringe (1.17 feet, from UNSAT-H modeling)

The PATHRAE model requires distances in meters. The 11.93 feet was converted to 3.64 meters, for the vertical transport distance.

5.4.5 Dispersivity

Dispersivity is an empirical index of the magnitude of variations of the pore velocities in the soil. Dispersivity in the vadose zone tends to be lower than that in the saturated zone. The dispersivity was calculated as 10% of the distance along the vertical pathway. A dispersivity of 10% (equivalent to 0.1 meters) has been used in previous modeling at the site. The actual distance was calculated based on the vertical distance less the capillary fringe, to be determined after the UNSAT-H modeling is complete.

5.4.6 River Flow Rate

The river flow rate in the vertical model was set equal to the infiltration rate, in order to prevent any dilution of concentrations. The river flow rate was set to 0.00276, 0.00286, and 0.00595 for the top slope and two side slope PATHRAE simulations.

5.5 Vertical Transport Model Results

5.5.1 Vertical Top Slope Analysis (0.276 cm/yr)

Eleven of the 100 nuclides[5] modeled exceeded the GWPLs at the water table in less than 500 years, as shown in Table 36, based on the top slope cover design infiltration rate of 0.276 cm/yr (0.109 in/yr) and

[5] 93 real nuclides and 7 synthetic surrogate nuclides

limited starting concentrations for four nuclides. A listing of peak concentrations for all nuclides modeled along with the year in which the GWPLs were exceeded at the water table are provided in Table 37. A complete listing of output times and concentrations for all nuclides that arrived at the water table is provided in Table 38. In all tables, the "Year To Exceed" is conservatively reported as the next *lowest* model output time. None of the surrogate nuclides exceeded a benchmark standard of 1 pCi/L.

Table 36. Summary of Peak Concentrations and Exceedences at the Water Table, PATHRAE Vertical Model Results for Top Slope 0.276 cm/yr Case

Nuclide	Time To Exceed (Year)	Peak Concentration (Ci/m^3)	Peak Concentration (pCi/L)	Peak Year
Sr-90	100	2.12E-04	2.12E+05	230.9
H-3	115	7.54E-04	7.54E+05	174.4
Bk-247	145	6.62E-10	6.62E-01	167.1
Cl-36	155	2.04E-06	2.04E+03	171.5
I-129	155	1.32E-02	1.32E+07	471.5
K-40	160	1.60E+01	1.60E+10	547.5
Tc-99	160	5.25E-01	5.25E+08	445.8
Re-187	185	6.23E-02	6.23E+07	356.3
Si-32	210	1.50E+06	1.50E+15	905.4
Ca-41	215	8.71E-06	8.71E+03	292.4
Pd-107	470	4.07E+02	4.07E+11	1569.6

Most of the nuclides did not exceed GWPLs at the water table, due to a high K_d value, low starting concentration, or short half-life. Radionuclides having the same K_d value arrive at the water table and peak at the time (e.g., Bk-247 and Cl-36 in Figure 11) although the peak concentrations may differ.

The time and concentration curves show generally smooth concentration curves, with dispersion evident by the leading and trailing edges of the concentration curves (Figure 11, Figure 12). A smooth curve is desirable, for defining the discrete source for input to the horizontal modeling. Although most of the radionuclides that exceed GWPLs at the water table within 500 years also peak within 500 years (Figure 11), constituents such as K-40 and Si-32 peak later than 500 years (Figure 12).

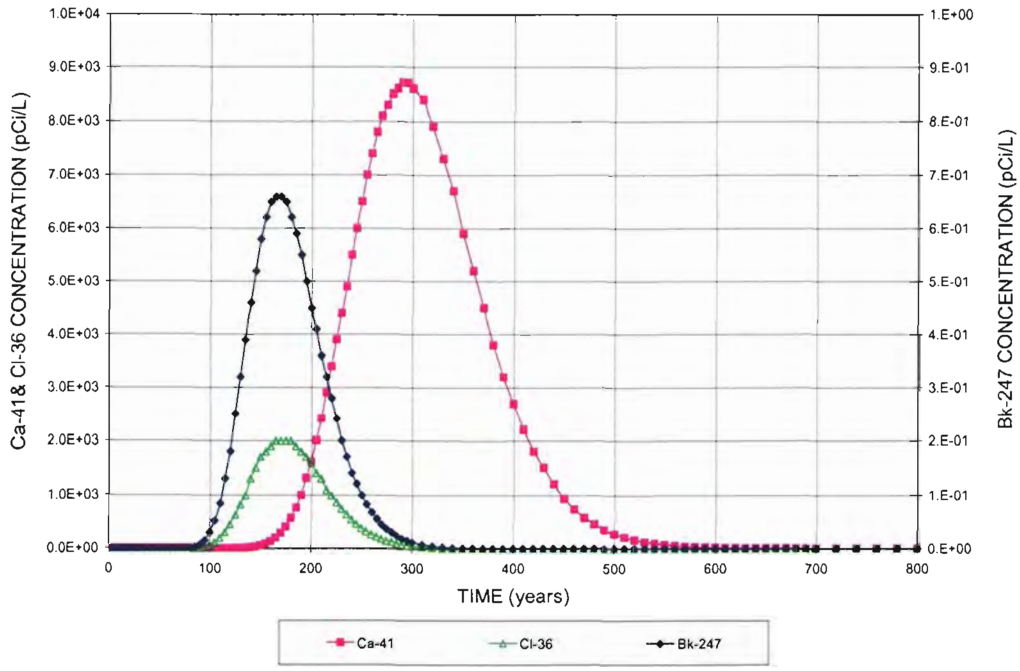

Figure 11. Ca-41, Cl-36, and Bk-247: Example Constituents whose Concentrations (pCi/L) Peak Within 500 Years and Exceed GWPLs at the Water Table, Vertical PATHRAE Model Output Based on 0.276 cm/year Infiltration

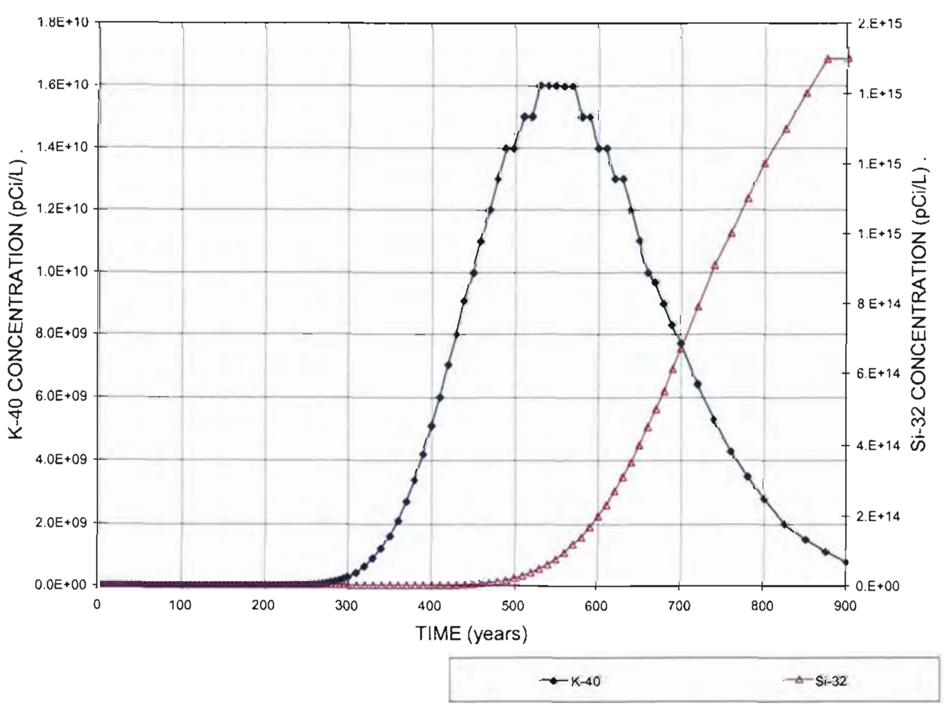

Figure 12. K-40 and Si-32: Constituents whose Concentrations Peak after 500 Years and Exceed GWPLs at the Water Table within 500 Years, Vertical PATHRAE Model Output Based on 0.276 cm/year Infiltration

Table 37. Peak Radionuclide Concentrations and Time to Exceed GWPL at the Water Table, Vertical PATHRAE Results for Class A South Cell Top Slope (0.276 cm/year Infiltration)

(See large tables at end of report document.)

Table 38. Radionuclide Concentrations (pCi/L) at the Water Table, Vertical PATHRAE Model Results for the Class A South Top Slope (0.276 cm/year Infiltration)

(See large tables at end of report document.)

A total of 20 nuclides were carried through to the horizontal PATHRAE modeling. This included the 11 nuclides that exceeded GWPLs at the water table in the 0.276 cm/yr top slope model, and an additional 9 nuclides that were carried through to the horizontal PATHRAE modeling for consistency with the 0.286 cm/yr side slope simulation.

5.5.2 Vertical Side Slope Analysis (0.286 cm/yr)

Eleven of the 100 nuclides and surrogates modeled exceeded the GWPLs at the water table in less than 500 years, as shown in Table 39, based on the side slope cover design infiltration rate of 0.286 cm/yr (0.113 in/yr) and limited starting concentrations for five nuclides. A listing of peak concentrations for all nuclides modeled along with the year in which the GWPLs were exceeded at the water table are provided in Table 40. A complete listing of output times and concentrations for all nuclides that arrived at the water table is provided in Table 41. In all tables, the "Year To Exceed" is conservatively reported as the next *lowest* model output time. None of the surrogate nuclides exceeded a benchmark standard of 1 pCi/L.

Table 39. Summary of Peak Concentrations and Exceedences at the Water Table, PATHRAE Vertical Model Results for Side Slope 0.286 cm/yr Case

Nuclide	Time To Exceed (Year)	Peak Concentration (Ci/m^3)	Peak Concentration (pCi/L)	Peak Year
Sr-90	100	2.63E-04	2.63E+05	223.5
H-3	110	1.10E-03	1.10E+06	169.7
Bk-247	145	6.14E-10	6.14E-01	160.7
I-129	150	1.33E-02	1.33E+07	453.4
Cl-36	155	1.93E-06	1.93E+03	164.9
K-40	155	1.60E+01	1.60E+10	526.5
Tc-99	160	2.18E-01	2.18E+08	428.7
Re-187	195	1.95E-02	1.95E+07	342.7
Si-32	200	1.73E+06	1.73E+15	875.2
Ca-41	220	6.48E-06	6.48E+03	281.5
Pd-107	450	4.08E+02	4.08E+11	1509.5

Most of the nuclides modeled did not exceed GWPLs at the water table due to a high K_d value, low starting concentration, or short half-life. Bi-207, for example, remains well below standards and is predicted to peak at the water table after the 500 years (Figure 13).

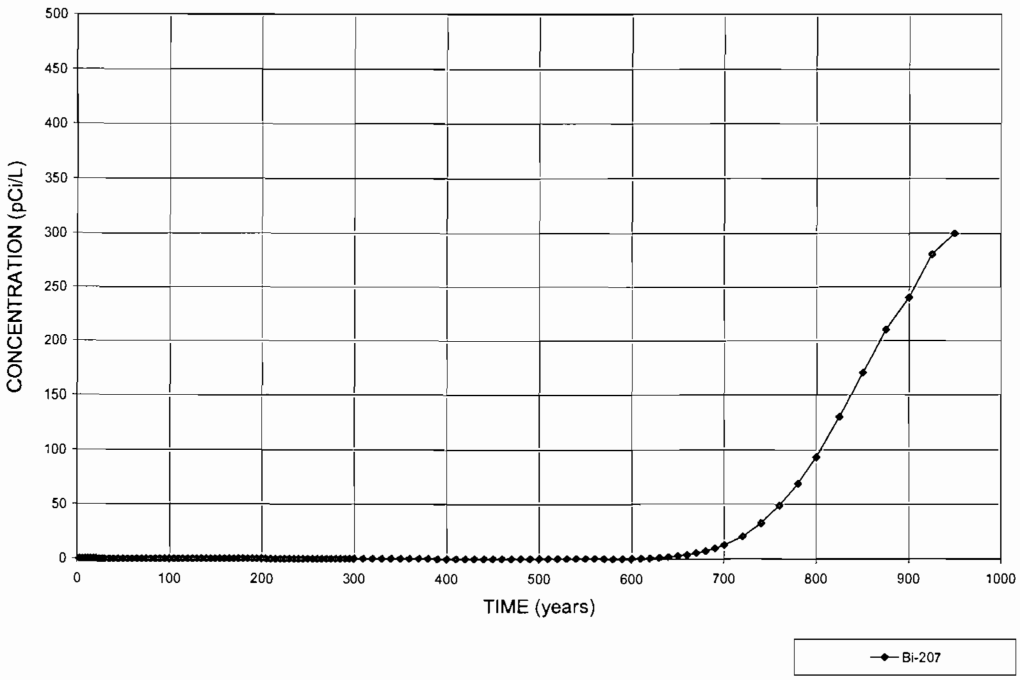

Figure 13. Bi-207: Example Constituent whose Concentrations Peak after 500 Years and Do Not Exceed GWPLs at the Water Table, Vertical PATHRAE Model Output Based on 0.286 cm/year Infiltration

Table 40. Peak Radionuclide Concentrations and Time to Exceed GWPL at the Water Table, Vertical PATHRAE Results for Class A South Cell Side Slope (0.286 cm/year Infiltration)

(See large tables at end of report document.)

Table 41. Radionuclide Concentrations (pCi/L) at the Water Table, Vertical PATHRAE Model Results for the Class A South Side Slope (0.286 cm/year Infiltration)

(See large tables at end of report document.)

A total of 20 nuclides were carried through to the horizontal PATHRAE modeling. This included the 11 nuclides which exceeded GWPLs at the water table in the 0.286 cm/yr side slope model, plus an additional 9 nuclides.

5.5.3 Vertical Side Slope Analysis (0.595 cm/yr)

Twenty of the 100 nuclides[6] modeled exceeded the GWPLs at the water table in less than 500 years, as shown in Table 42, based on the side slope cover design infiltration rate of 0.595 cm/yr (0.234 in/yr) and

[6] 93 real nuclides and 7 synthetic surrogate nuclides

limited starting concentrations for eight nuclides. A listing of peak concentrations for all nuclides modeled along with the year in which the GWPLs were exceeded at the water table are provided in Table 43. A complete listing of output times and concentrations for all nuclides that arrived at the water table is provided in Table 44. In all tables, the "Year To Exceed" is conservatively reported as the next *lowest* model output time. None of the surrogate nuclides exceeded a benchmark standard of 1 pCi/L.

Table 42. Summary of Peak Concentrations and Exceedences at the Water Table, PATHRAE Vertical Model Results for Side Slope 0.595 cm/yr Case

Nuclide	Time To Exceed (Year)	Peak Concentration (Ci/m^3)	Peak Concentration (pCi/L)	Peak Year
H-3	45	2.30E-01	2.30E+08	98.5
Sr-90	60	1.54E-05	1.54E+04	120.8
Bk-247	70	6.28E-10	6.28E-01	79.5
Cl-36	75	1.90E-06	1.90E+03	81.4
Si-32	95	1.18E+07	1.18E+16	449.9
Ca-41	110	5.61E-06	5.61E+03	136.6
K-40	125	1.03E-04	1.03E+05	253.1
I-129	140	1.77E-07	1.77E+02	218.0
Tc-99	155	8.19E-06	8.19E+03	206.6
Pd-107	215	4.12E+02	4.12E+11	719.3
Pt-193	275	9.71E+01	9.71E+10	708.3
Se-79	280	3.20E+04	3.20E+13	1,241.3
Bi-207	290	1.75E-01	1.75E+08	640.6
Bi-210m	300	2.65E+02	2.65E+11	1,243.3
Cd-113m	330	3.39E-07	3.39E+02	460.7
Fe-60	380	1.35E+03	1.35E+12	1,708.2
Am-241	390	4.08E-03	4.08E+06	1,255.0
Am-242m	410	1.98E-05	1.98E+04	999.8
Am-243	410	4.16E-03	4.16E+06	1,237.4
Nb-91	410	2.58E+05	2.58E+14	1,796.7

Eighty of the modeled nuclides did not exceed GWPLs at the water table, due to a high K_d value, low starting concentration, or short half-life. Examples of radionuclides that peaked within 500 years and exceeded GWPLs at the water table are shown in Figure 14. The starting concentration of Re-187 was limited so as not to exceed the GWPL (Figure 15).

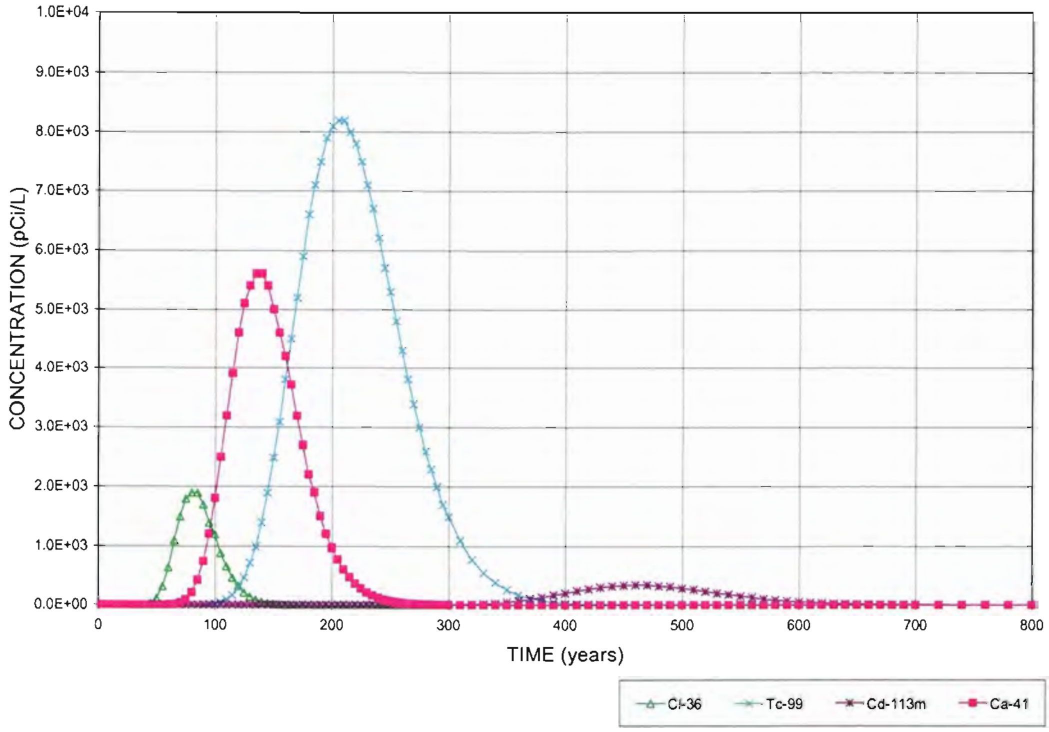

Figure 14. Cl-36, Tc-99, Cd-113m, and Ca-41: Constituents whose Concentrations (pCi/L) Peak Within 500 Years and Exceed GWPLs at the Water Table, Vertical PATHRAE Model Output Based on 0.595 cm/year Infiltration

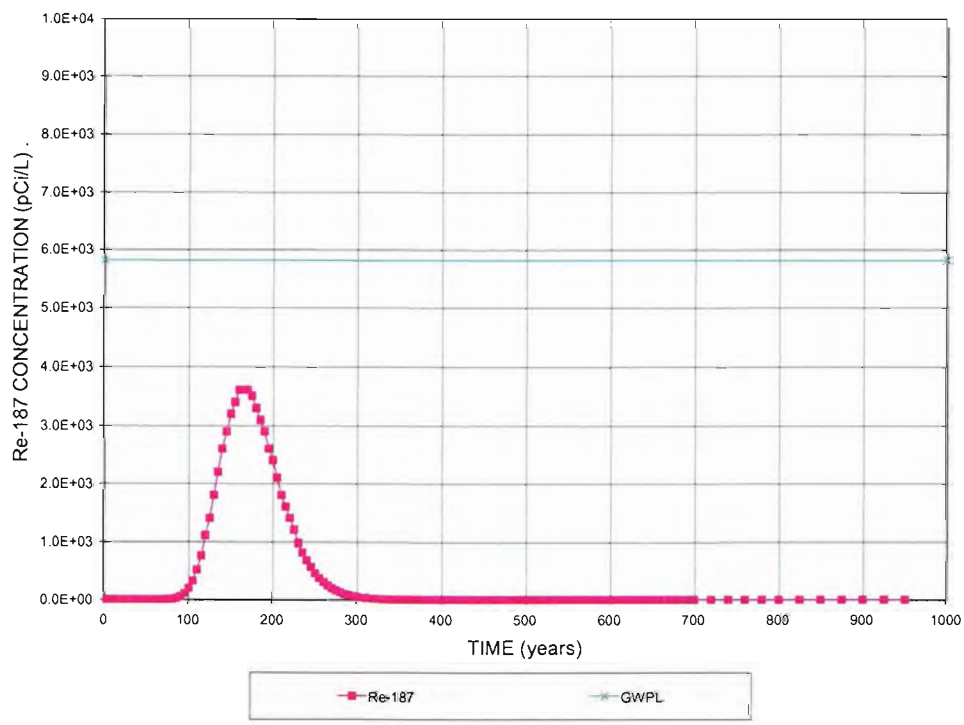

Figure 15. Re-187: Constituent whose Limited Concentration Peaked Within 500 Years but did not Exceed GWPLs at the Water Table, Vertical PATHRAE Model Output Based on 0.595 cm/year Infiltration

Table 43. Peak Radionuclide Concentrations and Time to Exceed GWPL at the Water Table, Vertical PATHRAE Results for Class A South Cell Side Slope (0.595 cm/year Infiltration)

(See large tables at end of report document.)

Table 44. Radionuclide Concentrations (pCi/L) at the Water Table, Vertical PATHRAE Model Results for the Class A South Side Slope (0.595 cm/year Infiltration)

(See large tables at end of report document.)

A total of 21 nuclides were carried through to the horizontal PATHRAE modeling. This included the 20 nuclides that exceeded GWPLs at the water table within 500 years in the 0.595 cm/yr side slope model (vertical PathRAE runs 59La and 59Lb) plus one additional radionuclide (Re-187) for which limiting concentrations were calculated.

5.5.4 Vertical Analysis for Metals and Formerly Characteristic Waste

Vertical PATHRAE modeling for metals and Formerly Characteristic (D Code) wastes was performed for the top slope and both the 0.286 cm/yr and 0.595 cm/yr side slope cases.

The top slope vertical model results indicate that none of the 32 organic constituents modeled would exceed GWPLs at the water table within 1000 years, based on the top slope cover design infiltration rate of 0.276 cm/yr (0.109 in/yr). None of the 13 metals exceed GWPLs at the water table within 750 years. Thirty of the 45 compounds modeled did not arrive at the water table within the 1,000 years modeled. Concentrations of the 15 constituents that arrived at the water table peaked in 83 to 7,058 years (Table 45). A complete listing of output times and concentrations for all nuclides that arrived at the water table is provided in Table 46. In all tables, the "Year To Exceed" is conservatively reported as the next *lowest* model output time.

Table 45. Peak Concentrations and Time to Exceed GWPL at the Water Table, 0.276 cm/yr Top Slope Vertical PATHRAE Model Results for Metals and Formerly Characteristic Waste

SYMBOL	COMPOUND	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Kg/m^3)	PEAK CONCENTRATION (mg/L)	PEAK YEAR
Benz	Benzene	-1	---		
Ctet	Carbon tetrachloride	-1	2.35E-19	2.35E-10	78
Clr	Chlordane	-1	0		> 10,000
ChlB	Chlorobenzene	-1	---		
CF	Chloroform	-1	3.96E-13	0.000396	83
oCrs	o-Cresol	-1	---		
mCrs	m-Cresol	-1	---		
pCrs	p-Cresol	-1	---		
Crs	Cresol	-1	---		
24D	2,4-D	-1	---		
14DCB	1,4-Dichlorobenzene	-1	---		
DCA	1,2-Dichloroethane	-1	---		
DCE	1,1-Dichloroethylene	-1	---		
DNT	2,4-Dinitrotoluene	-1	---		
End	Endrin	-1	---		
Hep	Heptachlor (and its epoxide)	-1	---		
HxCB	Hexachlorobenzene	-1	0		> 10,000
HxCBd	Hexachlorobutadiene	-1	0		> 10,000
HxCh	Hexachloroethane	-1	---		
Lind	Lindane	-1	---		
Mox	Methoxychlor	-1	0		> 10,000
MEK	Methyl ethyl ketone	-1	---		
Nbenz	Nitrobenzene	-1	---		
PCP	Pentachlorophenol	-1	---		
Pyr	Pyridine	-1	---		
TetCE	Tetrachloroethylene	-1	1.81E-19	1.81E-10	95
Tox	Toxaphene	-1	0		> 10,000
TCE	Trichloroethylene	-1	2.06E-12	0.00206	95
245T	2,4,5-Trichlorophenol	-1	2.16E-12	0.00216	136
246T	2,4,6-Trichlorophenol	-1	2.74E-16	0.000000274	85
Silvx	2,4,5-TP (Silvex)	-1	---		
VC	Vinyl chloride	-1	1.09E-09	1.09	92
As	Arsenic	800	461	4.61E+11	2,718
Ba	Barium	-1	0		> 10,000
Be	Beryllium	-1	191	1.91E+11	6,548
Cd	Cadmium	760	461	4.61E+11	2,718
Cr	Chromium	825	461	4.61E+11	2,718
Cu	Copper	900	461	4.61E+11	2,718
Pb	Lead	-1	0		> 10,000
Hg	Mercury	-1	0		> 10,000
Mo	Molybdenum	800	461	4.61E+11	2,718
Ni	Nickel	-1	0		> 10,000
Se	Selenium	800	461	4.61E+11	2,718
Ag	Silver	-1	177	1.77E+11	7,058
Zn	Zinc	-1	0		> 10,000

NOTES: -1 indicates that compound did not exceed standard within the 1,000 years modeled
--- indicates that concentrations do not peak at the water table within 10,000 yrs

The time and concentration results from the vertical modeling (Figure 16) show generally smooth concentration curves, with dispersion evident by the leading and trailing edges of the concentration curves.

Table 46. Concentrations (mg/L) at the Water Table, 0.276 cm/yr Top Slope Vertical PATHRAE Model Results for Metals and Formerly Characteristic Waste

(See large tables at end of report document.)

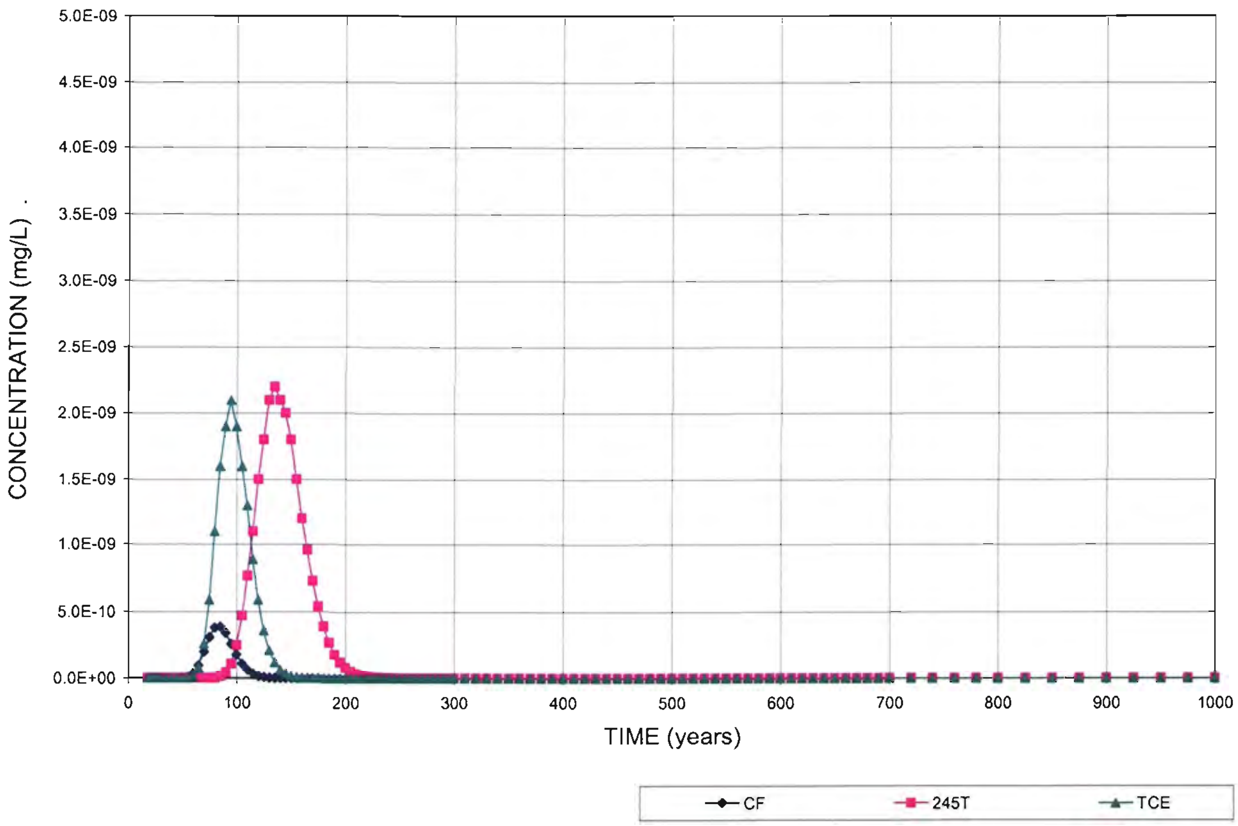

Figure 16. Output Concentrations (mg/L) for Selected Formerly Characteristic Waste Compounds at the Water Table, Vertical PATHRAE Model Output Based on Top Slope (0.276 cm/year Infiltration)

The 0.286 cm/yr side slope vertical model results indicate that none of the 32 organic constituents modeled would exceed GWPLs at the water table within 1000 years and none of the 13 metals would exceed GWPLs at the water table within 700 years. Twenty nine of the 45 compounds modeled did not arrive at the water table within the 1,000 years modeled. Concentrations of the 16 constituents that arrived at the water table peaked in 77 to 6,788 years (Table 47). A complete listing of output times and concentrations for all nuclides that arrived at the water table is provided in Table 48. In all tables, the "Year To Exceed" is conservatively reported as the next *lowest* model output time.

The 0.595 cm/yr side slope vertical model results indicate that none of the 32 organic constituents modeled would exceed GWPLs at the water table within 1000 years and none of the 13 metals would exceed GWPLs at the water table within 325 years. Twenty one of the 45 compounds modeled did not arrive at the water table within the 1,000 years modeled. Concentrations of the 24 constituents that arrived at the water table peaked in 33 to 3,224 years (Table 49). A complete listing of output times and concentrations for all nuclides is provided in Table 50. Example time and concentration curves for the 0.595 cm/yr side slope modeling are shown in Figure 17.

Table 47. Peak Concentrations and Time to Exceed GWPL at the Water Table, 0.286 cm/yr Side Slope Vertical PATHRAE Model Results for Metals and Formerly Characteristic Waste

SYMBOL	COMPOUND	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Kg/m^3)	PEAK CONCENTRATION (mg/L)	PEAK YEAR
Benz	Benzene	-1	---		
Ctet	Carbon tetrachloride	-1	6.84E-19	6.84E-16	77
Clr	Chlordane	-1	0		> 10,000
ChlB	Chlorobenzene	-1	---		
CF	Chloroform	-1	8.49E-13	8.49E-10	81
oCrs	o-Cresol	-1	---		
mCrs	m-Cresol	-1	---		
pCrs	p-Cresol	-1	---		
Crs	Cresol	-1	---		
24D	2,4-D	-1	---		
14DCB	1,4-Dichlorobenzene	-1	---		
DCA	1,2-Dichloroethane	-1	---		
DCE	1,1-Dichloroethylene	-1	---		
DNT	2,4-Dinitrotoluene	-1	---		
End	Endrin	-1	---		
Hep	Heptachlor (and its epoxide)	-1	---		
HxCB	Hexachlorobenzene	-1	0		> 10,000
HxCBd	Hexachlorobutadiene	-1	0		> 10,000
HxCh	Hexachloroethane	-1	---		
Lind	Lindane	-1	---		
Mox	Methoxychlor	-1	0		> 10,000
MEK	Methyl ethyl ketone	-1	---		
Nbenz	Nitrobenzene	-1	---		
PCP	Pentachlorophenol	-1	---		
Pyr	Pyridine	-1	---		
TetCE	Tetrachloroethylene	-1	5.26E-19	5.26E-16	93
Tox	Toxaphene	-1	0		> 10,000
TCE	Trichloroethylene	-1	4.24E-12	4.24E-09	93
245T	2,4,5-Trichlorophenol	-1	4.4E-12	4.40E-09	133
246T	2,4,6-Trichlorophenol	-1	6.91E-16	6.91E-13	84
Silvx	2,4,5-TP (Silvex)	-1	---		
VC	Vinyl chloride	-1	1.95E-09	1.95E-06	89
As	Arsenic	780	4.62E+02	4.62E+05	2,614
Ba	Barium	-1	0		> 10,000
Be	Beryllium	-1	1.92E+02	1.92E+05	6,298
Cd	Cadmium	720	4.62E+02	4.62E+05	2,614
Cr	Chromium	800	4.62E+02	4.62E+05	2,614
Cu	Copper	875	4.62E+02	4.62E+05	2,614
Pb	Lead	-1	0		> 10,000
Hg	Mercury	-1	0		> 10,000
Mo	Molybdenum	780	4.62E+02	4.62E+05	2,614
Ni	Nickel	-1	0		> 10,000
Se	Selenium	780	4.62E+02	4.62E+05	2,614
Ag	Silver	-1	1.78E+02	1.78E+05	6,788
Zn	Zinc	-1	0		> 10,000

NOTES: -1 indicates that compound did not exceed standard within the 1,000 years modeled
--- indicates that concentrations do not peak at the water table within 10,000 yrs

Table 48. Concentrations (mg/L) at the Water Table, 0.286 cm/yr Side Slope Vertical PATHRAE Model Results for Metals and Formerly Characteristic Waste

(See large tables at end of report document.)

Table 49. Peak Concentrations and Time to Exceed GWPL at the Water Table, 0.595 cm/yr Side Slope Vertical PATHRAE Model Results for Metals and Formerly Characteristic Waste

SYMBOL	COMPOUND	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Kg/m^3)	PEAK CONCENTRATION (mg/L)	PEAK YEAR
Benz	Benzene	-1	6.9E-17	6.9E-14	33
Ctet	Carbon tetrachloride	-1	5.69E-12	5.69E-09	51
Clr	Chlordane	-1	0		> 10,000
ChlB	Chlorobenzene	-1	6.1E-20	6.1E-17	41
CF	Chloroform	-1	5.68E-08	5.68E-05	52
oCrs	o-Cresol	-1	---		
mCrs	m-Cresol	-1	---		
pCrs	p-Cresol	-1	---		
Crs	Cresol	-1	---		
24D	2,4-D	-1	---		
14DCB	1,4-Dichlorobenzene	-1	---		
DCA	1,2-Dichloroethane	-1	4.33E-14	4.33E-11	36
DCE	1,1-Dichloroethylene	-1	2.71E-17	2.71E-14	34
DNT	2,4-Dinitrotoluene	-1	6.32E-14	6.32E-11	39
End	Endrin	-1	3.64E-18	3.64E-15	886
Hep	Heptachlor (and its epoxide)	-1	---		
HxCB	Hexachlorobenzene	-1	0		> 10,000
HxCBd	Hexachlorobutadiene	-1	0		> 10,000
HxCh	Hexachloroethane	-1	---		
Lind	Lindane	-1	3.82E-19	3.82E-16	47
Mox	Methoxychlor	-1	0		> 10,000
MEK	Methyl ethyl ketone	-1	---		
Nbenz	Nitrobenzene	-1	1.84E-14	1.84E-11	41
PCP	Pentachlorophenol	-1	4.99E-13	4.99E-10	71
Pyr	Pyridine	-1	---		
TetCE	Tetrachloroethylene	-1	4.76E-12	4.76E-09	62
Tox	Toxaphene	-1	0		> 10,000
TCE	Trichloroethylene	-1	1.58E-07	1.58E-04	59
245T	2,4,5-Trichlorophenol	-1	1.64E-07	1.64E-04	85
246T	2,4,6-Trichlorophenol	-1	5.87E-10	5.87E-07	55
Silvx	2,4,5-TP (Silvex)	-1	---		
VC	Vinyl chloride	-1	7.77E-06	7.77E-03	56
As	Arsenic	370	4.67E+02	4.67E+05	1,243
Ba	Barium	-1	0		> 10,000
Be	Beryllium	850	1.94E+02	1.94E+05	2,992
Cd	Cadmium	340	4.67E+02	4.67E+05	1,243
Cr	Chromium	380	4.67E+02	4.67E+05	1,243
Cu	Copper	420	4.67E+02	4.67E+05	1,243
Pb	Lead	-1	0		> 10,000
Hg	Mercury	-1	0		> 10,000
Mo	Molybdenum	370	4.67E+02	4.67E+05	1,243
Ni	Nickel	-1	0		> 10,000
Se	Selenium	370	4.67E+02	4.67E+05	1,243
Ag	Silver	-1	1.80E+02	1.80E+05	3,224
Zn	Zinc	-1	0		> 10,000

NOTES: -1 indicates that compound did not exceed standard within the 1,000 years modeled
--- indicates that concentrations do not peak at the water table within 10,000 yrs

Table 50. Concentrations (mg/L) at the Water Table, 0.595 cm/yr Side Slope Vertical PATHRAE Model Results for Metals and Formerly Characteristic Waste

(See large tables at end of report document.)

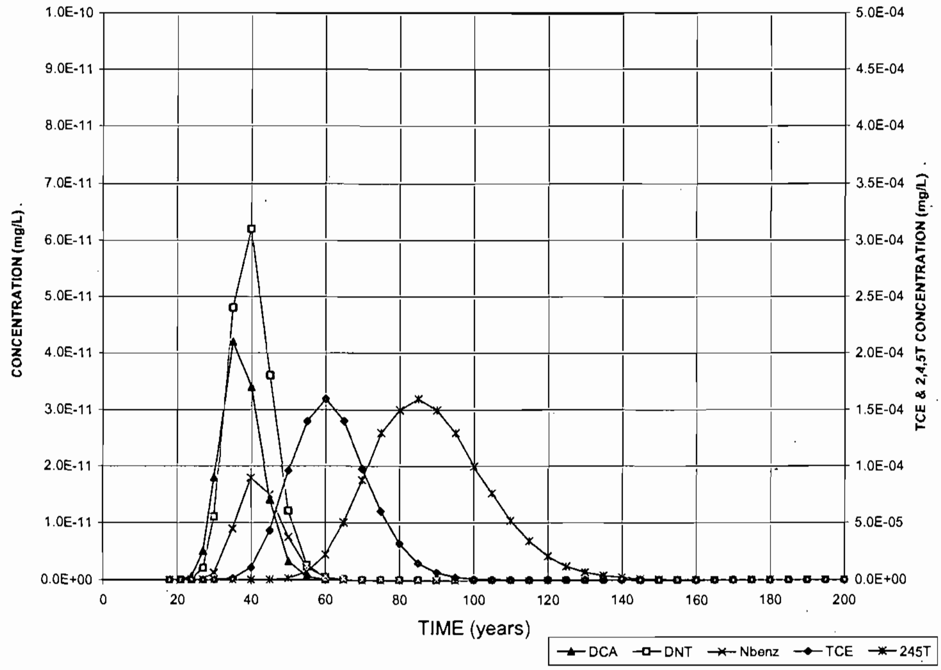

Figure 17. Output Concentrations (mg/L) for Selected Formerly Characteristic Waste Compounds at the Water Table, Vertical PATHRAE Model Output Based on 0.595 cm/year Side Slope

6. HORIZONTAL PATHRAE FATE AND TRANSPORT MODELING

6.1 Horizontal Input Parameters for Contaminant Release

6.1.1 Waste Source Term Concentrations

The source term concentrations for the horizontal model were calculated from the output from the vertical model, as described in Section 5.1. The method involves calculating the concentration in each of the 115± "slices" using the following equation:

$$C = \frac{(C_t + C_{t+n})}{2} \cdot ((t+n) - t)$$

where:

$C =$	Mass/activity of nuclide in a given time slice	[Ci·yrs]
$C_t =$	Output concentration at time t	[Ci/m^3]
$C_{t+n} =$	Output concentration at time t+n	[Ci/m^3]
$t =$	Time at beginning of "time slice"	[years]
$t+n =$	Time at end of "time slice"	[years]
$n =$	Duration of "time slice"	[years]

The leachate concentration in water (Ci/m^3) was converted to a sorbate concentration on aquifer soil (Ci/m^3). The mass ascribed to one cubic meter of aquifer was determined using the following equation:

$$C_{aq} = \frac{C_l(q_{in})}{V_{soil}} = \frac{C_l(q_{in})}{(1\ m^3)}$$

where:

$C_{aq} =$	Concentration of constituent sorbed onto 1 m^3 of aquifer soil [Ci/m^3 soil]
$C_l =$	Concentration in leachate (output of vertical slice) [Ci/m^3 water]
$q_{in} =$	Infiltration rate [m/yr]

6.1.2 Aquifer Bulk Density

The aquifer bulk density in the horizontal model was set at the thickness weighted average bulk density shown in Table 34 through Table 36 (1.558 gm/cm^3.)

6.1.3 Aquifer Moisture Content

The aquifer is saturated, with a moisture content equal to the saturated porosity of 29%. The effective porosity value of 0.29 has been used in previous modeling (DWQ, 1994 August), and is based on site specific data.

6.1.4 Partitioning Coefficients (Kd_s)

The distribution coefficients (K_ds) used in the horizontal model were identical to those used in the vertical model. The radionuclide and metal K_d values used in the modeling were summarized in Table 27 while the organic constituent K_d values were summarized in Table 29.

6.1.5 Fractional Release Rate

The contaminant release rate (or leach rate) for the horizontal simulation was set to 1/yr for all constituents modeled. In this manner, the entire waste concentration in each "time slice" was released "instantaneously". The K_d-limited leach rate was already accounted for in the vertical simulation and the resulting time offset for the "time slices" which was input to the horizontal model.

6.2 Horizontal Input Parameters for Flow and Transport

6.2.1 Hydraulic Conductivity

The geologic materials underlying the Class A South cell area include the Unit 3 sand and Unit 2 clay. The hydraulic conductivity of these two units is not clearly distinct, based on slug test results.

The aquifer hydraulic conductivity (K) has been tested in monitoring wells surrounding the cell, and in wells across the site. The results of slug tests performed and analyzed by Adrian Brown Consultants (1997c), EarthFax Engineering (1999), and Whetstone Associates (2000) are compiled in Table 16. The data from 96 wells indicated that the site wide geometric mean hydraulic conductivity in the shallow aquifer is 6.09×10^{-4} cm/sec. The 90% upper confidence level (UCL) about the geometric mean is 7.67×10^{-4} cm/sec. The 90% UCL was used in the horizontal PATHRAE modeling.

The 7.67×10^{-4} cm/sec UCL saturated hydraulic conductivity was also used in modeling the 11e.(2) cell (Whetstone, 2001).

6.2.2 Hydraulic Gradient

Hydraulic gradients at the Class A South and 11e.(2) cell area have changed over time, in response to site activities. For example, trenching and excavating operations contributed to preferentially increased infiltration and a mound at GW-36 in the mid 1990's. That mound has since greatly dissipated (see the Revised Hydrogeologic Report, Pentacore, 1999). After closure of the cell, the liner, waste, and cover will contribute to a more uniform moisture flux into the subsurface, and gradients are expected to be even lower than at present.

The hydraulic gradient used in the model is not intended to represent future conditions at the Class A South cell and 11e.(2) cell area. Since DRC has required that the gradient used in the modeling serve as a bounding condition, a conservatively high gradient has been selected. The selection of the hydraulic gradient for use in the model was based on a rigorous analysis, the history of which is summarized below:

- Area-weighted average hydraulic gradients were calculated in 1997 for the 11e.(2) and LARW cells. The gradients, calculation method, and sets of well triplets used for each time period were reported in "Volume II LARW Groundwater Fate and Transport Modeling Input Parameters and Results," dated February 12, 1998. The period of record for this analysis was January 1992 – June 1996, and the differences between the average gradients and the area-weighted average gradients were minimal. The gradient was accepted for the LARW cell model. For the 11e.(2) cell, the calculated average gradient for the appropriate well triplets (2.66×10^{-3}) was proposed for modeling in the July 1999 report "11e.(2) Disposal Cell Infiltration and Transport Model Input Parameters".
- DRC responded with a request to "describe and justify why the former hydraulic gradient, 2.66E-3 ft/ft is representative or conservative of the entire record of groundwater head and hydraulic gradient information available for the 11e.(2) facility." DRC pointed out that the horizontal hydraulic gradient value was based on groundwater elevation measurements made between January, 1992 and June 1996, and that since that time, additional groundwater head measurements and equipotential maps had been prepared by Envirocare.
- Whetstone and Envirocare responded by amending the report to reflect the more recent water level data for the 11e.(2) cell area. Hydraulic gradients were calculated monthly for the unconfined shallow groundwater beneath the 11e.(2) cell, using the most current data set (December 1998 – November

1999). The average hydraulic gradient below the 11e.(2) cell for this period was calculated at 6.37×10^{-4} ft/ft, using a direct well comparison method.

- DRC responded with a request to calculate the gradients using a three point method and to "justify why the period of record selected is representative of current and future groundwater conditions" and point out that any hydraulic gradient selected for the purpose of modeling will bound the analyzed condition at the facility.
- Hydraulic gradients were calculated for 1998, 1999, and 2000 using the Surfer program. (Gradients were calculated on 50-ft centers, using the 3-point method in Surfer.) This data set was combined with the 1992 – 1996 data (calculated using a 3-point method, non-area weighted). The results are shown in Figure 18 and Table 51.
- The maximum average hydraulic gradient was 4.63×10^{-3}, measured in July 1995. The maximum hydraulic gradient between any set of three well pairs 9.36×10^{-3}, measured in January 1992. While either of these values could bound the existing data set, future conditions are expected to follow the trend illustrated in Figure 18, that of a decreasing hydraulic gradient after human-induced perturbation of the system has ceased. The trend of decreasing gradient is also illustrated in the following table:

YEAR	AVERAGE
1992	3.37E-03
1993	2.59E-03
1994	2.32E-03
1995	3.30E-03
1996	2.04E-03
1998	9.87E-04
1999	9.71E-04
2000	9.14E-04

The maximum hydraulic gradients (measured between any three well pairs or in a 50x50 ft zone) at the Class A South and 11e.(2) cell area are shown in Table 51. An average maximum gradient for the period from February 1998 – March 2000 is 3.29×10^{-3}. This value was used in the horizontal transport modeling for the Class A South cell (and was used previously for the 11e.(2) cell [Whetstone, 2001]). This value is not considered representative of future conditions. Nor is it representative of conditions from February 1998 – March 2000. It is an average extreme value.

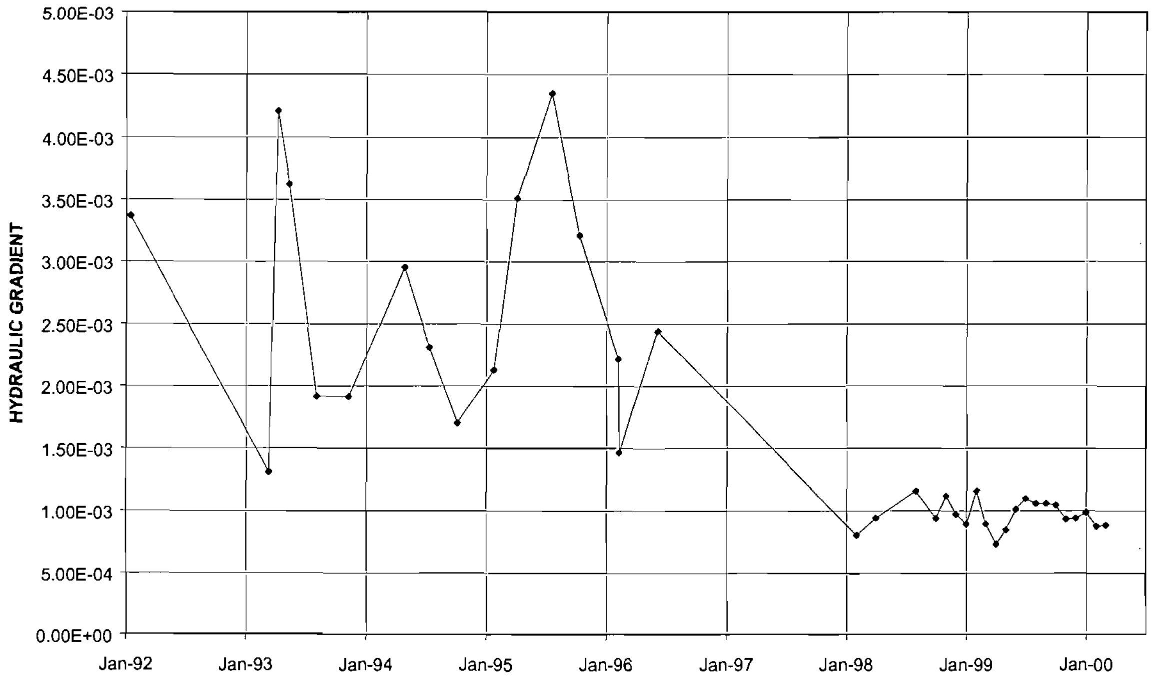

Figure 18. Hydraulic Gradients Measured in the Class A South and 11e.(2) Cell Area

Table 51. Hydraulic Gradient for the Monitoring Wells in the Class A South and 11e.(2) Cell Area

DATE MEASURED	MAXIMUM	MINIMUM	AVERAGE
15-Jan-92	9.36E-03	5.63E-04	3.37E-03
10-Mar-93	7.45E-03	3.34E-04	1.31E-03
07-Apr-93	8.32E-03	6.59E-04	4.21E-03
12-May-93	6.61E-03	6.32E-04	3.62E-03
04-Aug-93	2.82E-03	2.39E-04	1.91E-03
09-Nov-93	2.82E-03	2.39E-04	1.91E-03
28-Apr-94	7.79E-03	9.72E-04	2.95E-03
12-Jul-94	4.07E-03	2.26E-04	2.31E-03
05-Oct-94	3.98E-03	1.53E-04	1.70E-03
25-Jan-95	4.49E-03	1.77E-04	2.13E-03
05-Apr-95	6.94E-03	4.24E-04	3.51E-03
19-Jul-95	7.03E-03	9.11E-04	4.36E-03
11-Oct-95	4.72E-03	5.94E-04	3.21E-03
07-Feb-96	3.37E-03	3.55E-04	2.22E-03
09-Feb-96	2.44E-03	2.15E-04	1.46E-03
05-Jun-96	5.47E-03	1.20E-03	2.44E-03
Feb-98	1.60E-03	2.68E-05	8.02E-04
Apr-98	2.90E-03	2.32E-05	9.40E-04
Aug-98	2.09E-03	8.78E-06	1.15E-03
Oct-98	4.77E-03	2.87E-05	9.34E-04
Nov-98	5.04E-03	1.84E-05	1.12E-03
Dec-98	2.59E-03	3.74E-05	9.71E-04
Jan-99	2.78E-03	2.67E-05	8.92E-04
Feb-99	2.08E-03	1.24E-04	1.16E-03
Mar-99	2.42E-03	4.01E-05	8.94E-04
Apr-99	2.91E-03	4.32E-05	7.30E-04
May-99	3.05E-03	4.31E-05	8.45E-04
Jun-99	4.03E-03	5.23E-05	1.01E-03
Jul-99	4.57E-03	2.45E-05	1.10E-03
Aug-99	4.22E-03	3.89E-05	1.06E-03
Sep-99	4.22E-03	3.10E-05	1.06E-03
Oct-99	3.62E-03	1.30E-05	1.04E-03
Nov-99	2.81E-03	2.83E-05	9.31E-04
Dec-99	2.67E-03	4.78E-06	9.38E-04
Jan-00	5.54E-03	4.93E-05	9.86E-04
Feb-00	2.60E-03	1.67E-05	8.75E-04
Mar-00	2.51E-03	1.84E-05	8.81E-04
Maximum (1/92–3/00)	9.36E-03	1.20E-03	4.36E-03
Minimum (1/92–3/00)	1.60E-03	4.78E-06	7.30E-04
Average (1/92–3/00)	4.23E-03	2.32E-04	1.70E-03
Maximum (2/98–3/00)	5.54E-03	1.24E-04	1.16E-03
Minimum (2/98–3/00)	1.60E-03	4.78E-06	7.30E-04
Average (2/98–3/00)	3.29E-03	3.32E-05	9.68E-04

6.2.3 Effective Porosity

The effective porosity value of 0.29 was used in the calculation of aquifer velocity for all calculations in the saturated zone / horizontal pathway.

6.2.4 Aquifer Average Linear Velocity

The aquifer velocity (v_a) was calculated based on the Darcy equation, such that:

$$\bar{v} = \frac{Ki}{n_e}$$

where	v =	average linear velocity in the aquifer (L/T)
	K =	hydraulic conductivity (L/T)
	i =	hydraulic gradient (L/L)
	n_e =	aquifer effective porosity (L^3/L^3)

Using the effective porosity (0.29), 90% UCL hydraulic conductivity ($7.67x10^{-4}$ cm/sec), and a conservatively extreme hydraulic gradient ($3.29x10^{-3}$) described in the previous sections, the average groundwater linear velocity is 2.744 m/yr (9.0 ft/yr), as shown below:

$$\bar{v} = \frac{Ki}{n_e} = \frac{(7.67x10^{-4}\ \text{cm/sec})(3.29x10^{-3})}{0.29} = 8.70x10^{-6}\ \text{cm/sec} = 2.744\ \text{m/yr}$$

The 2.744 m/yr aquifer velocity used in modeling the Class A South and 11e(2) cell area is 3 to 9 times higher than the aquifer velocity used in modeling other cells at the site. The March 2, 2000 Class A cell modeling report used a linear aquifer velocity of 0.317 m/yr, (1.0 ft/yr), which was based on the average hydraulic gradient and 69 site-wide hydraulic conductivity tests. The June 12, 2000 Class A cell modeling report used an average linear velocity (0.824 m/yr), which was based on the conservative estimate of hydraulic gradient and hydraulic conductivity tests from 81 wells site-wide. The May 2005 CAC cell modeling report used an average linear velocity of 0.846 m/yr.

6.2.5 Horizontal Transport Distance

The horizontal distance was modeled as the distance from the edge of the waste to the nearest compliance monitoring well, which is approximately 90 feet (27.4 meters) for the side slope simulations and 250 feet (76.2 meters) for the top slope simulation.

6.2.6 River Flow Rate

The river flow rate in the horizontal model was set equal to the aquifer flux through a square meter (cross-sectional area) of aquifer. The aquifer flux was calculated based on the hydraulic gradient and hydraulic conductivity:

$$q = Ki$$

This aquifer flux rate was used as the "infiltration rate" and "river flow rate." Values of 0.00276, 0.00286, and 0.00595 m^3/yr were used for the top slope and two side slope river flow rates. These rates assume that there is no dilution along the flow path, and the leachate arrives at the well (or "river") at the same rate it issued from the disposal cell.

6.3 Horizontal Transport Model Results

Horizontal PATHRAE modeling was conducted for the top slope and two side slope infiltration rates. The model results are summarized in Table 52, which shows the time to exceed the GWPLs at the compliance well. The "Year To Exceed" is conservatively reported as the next *lowest* model output time.

Table 52. Summary of Horizontal PATHRAE Model Results—Time to Exceed GWPLs at the Compliance Monitoring Well, based on 0.276, 0.286 and 0.595 cm/yr Infiltration

Radionuclide	Top Slope 0.276 cm/yr Model Results YEAR TO EXCEED	Side Slope 0.286 cm/yr Model Results YEAR TO EXCEED	Side Slope 0.595 cm/yr Model Results YEAR TO EXCEED
Am-241	-1	-1	-1
Am-242m	-1	-1	-1
Am-243	-1	-1	-1
Bi-207	-1	-1	-1
Bi-210m	-1	-1	-1
Bk-247	-1	-1	-1
Ca-41	500	505	-1
Cd-113m	nm	nm	-1
Cl-36	-1	-1	-1
Fe-60	-1	-1	-1
H-3	-1	-1	-1
I-129	555	510	500
K-40	655	600	510
Nb-91	-1	-1	-1
Pd-107	-1	-1	-1
Pt-193	-1	-1	-1
Re-187	500	500	-1
Se-79	-1	-1	-1
Si-32	-1	1500	755
Sr-90	-1	-1	-1
Tc-99	530	510	-1

NOTES: Year to exceed GWPL reported to next lowest model output year.
nm = not modeled in horizontal PathRAE run
-1 indicates nuclide does not exceed GWPL within the 2,000 years modeled

Note that all nuclides that exceeded GWPLs at the water table (in the vertical modeling) were carried forward to the horizontal modeling. The PATHRAE code only produces output for nuclides that arrive at the compliance point. Therefore, several of the nuclides that were input to the horizontal model are not included by PATHRAE in the output files (described below). The output concentration of these nuclides is essentially zero.

6.3.1 Top Slope Horizontal Modeling Results (0.276 cm/yr)

None of the nuclides modeled exceeded the GWPLs at the compliance well within 500 years, based on horizontal modeling of the top slope cover design infiltration rate of 0.276 cm/yr (0.109 in/yr). The concentrations of each constituent at each model output time are given in Table 53.

As described in Section 6.1.1 and listed in Table 20, the source concentrations for Bk-247, Ca-41, Cl-36, and Re-187 used in the top slope model were set to the limiting concentrations that met GWPLs for 500 years at a compliance well located 250 ft from the edge of the waste. All other radionuclides were modeled at Class A limits or Specific Activity and met the groundwater standard for at least 500 years.

Table 53. Radionuclide Concentrations (pCi/L) at the Compliance Well, Horizontal PATHRAE Model Results for Class A South Cell Top Slope (0.276 cm/year Infiltration)

(See large tables at end of report document.)

6.3.2 Side Slope Horizontal Modeling Results (0.286 cm/yr)

None of the nuclides exceeded the GWPLs at the compliance well in less than 500 years, based on the side slope cover design infiltration rate of 0.286 cm/yr (0.113 in/yr), which corresponds to the side slope with an 18-inch thick Type-B filter. The concentrations of each constituent at each model output time are given in Table 54.

As described in Section 6.1.1 and listed in Table 20, the concentrations of five radionuclides (Bk-247, Ca-41, Cl-36, Re-187, and Tc-99) were limited to meet the GWPL in the 0.286 cm/yr side slope simulations. All other modeled constituents would meet the groundwater standard if placed under the 0.286 cm/yr side slope at Class A limits.

Table 54. Radionuclide Concentrations (pCi/L) at the Compliance Well, Horizontal PATHRAE Model Results for Class A South Cell Side Slope (0.286 cm/year Infiltration)

(See large tables at end of report document.)

6.3.3 Side Slope Horizontal Modeling Results (0.595 cm/yr)

None of the nuclides exceeded the GWPLs at the compliance well in less than 500 years, based on the side slope cover design infiltration rate of 0.595 cm/yr (0.234 in/yr), which corresponds to the side slope with a 12-inch thick Type-B filter. The concentrations of each constituent at each model output time are given in Table 55.

As described in Section 6.1.1 and listed in Table 20, the concentrations of eight radionuclides (Bk-247, Ca-41, Cl-36, I-129, K-40, Re-187, Sr-90, and Tc-99) were limited to meet the GWPL in the 0.595 cm/yr side slope simulations. All other modeled constituents would meet the groundwater standard if placed under the 0.595 cm/yr side slope at Class A limits.

Table 55. Radionuclide Concentrations (pCi/L) at the Compliance Well, Horizontal PATHRAE Model Results for Class A South Cell Side Slope (0.595 cm/year Infiltration)

(See large tables at end of report document.)

6.3.4 Horizontal Modeling Results for Metals and Formerly Characteristic Waste

Horizontal modeling was not performed. It was unnecessary because none of the metals or Formerly Characteristic waste constituents exceeded GWPLs at the water table for the top slope (0.276 cm/yr infiltration) or side slope (0.286 and 0.595 cm/yr infiltration) cases. Metals and Formerly Characteristic (D-Code) waste can be placed in the top slope or side slope areas at essentially any concentration.

7. CONCLUSIONS

The infiltration, fate, and transport modeling for Energy*Solutions*' Class A South cell was based on previous modeling of the existing Class A cell and 11e.(2) cell. The input parameters have been selected to provide conservative (environmentally protective) estimates for infiltration through the cell and for fate and transport of constituents from the waste.

The HELP infiltration modeling results indicate that 0.276 cm/yr infiltration would occur through the Class A South cell top slope, while 0.286 cm/yr would infiltrate through the side slope with an 18-inch thick Type-B filter and 0.595 cm/yr would infiltrate through the side slope with a 12-inch thick Type-B filter. Based on these infiltration rates, moisture contents would stabilize at 0.059 v/v in the waste and 0.047 v/v in the native soil below the top slope, at 0.059 and 0.047 v/v in the waste and native soil below the 0.286 cm/yr side slope, and at 0.066 and 0.051 v/v in the waste and native soil below the 0.595 cm/yr side slope.

The PATHRAE fate and transport modeling for the top slope (0.276 cm/yr infiltration case) indicates that all radionuclides modeled would remain below the GWPLs for at least 500 years at a compliance well located 250 feet from the edge of the waste, provided that the concentrations of four radionuclides (Bk-247, Ca-41, Cl-36, and Re-187) are received in limited concentrations shown below. All other modeled constituents would meet the groundwater standard if placed in the top slope area at Class A limits.

	Class A South Disposal Cell Top Slope Limiting Concentrations Based on 0.276 cm/yr Infiltration		
ISOTOPE	(pCi/gm)	(Ci/m^3)	Source
Bk-247	0.00009833	1.77E-10	Model
Ca-41	2.06	3.70E-06	Model
Cl-36	0.286	5.14E-07	Model
Re-187	17,860	3.21E-02	Model

The PATHRAE fate and transport modeling for the side slope with an 18-inch thick Type-B filter (0.286 cm/yr infiltration case) indicates that all radionuclides modeled would remain below the GWPLs for at least 500 years at a compliance well located 90 feet from the edge of the waste, provided that the concentrations of five radionuclides (Bk-247, Ca-41, Cl-36, Re-187, and Tc-99) are received in limited concentrations shown below. All other modeled constituents would meet the groundwater standard if placed under the side slope at Class A limits.

	Class A South Disposal Cell Side Slope Limiting Concentrations Based on 0.286 cm/yr Infiltration		
ISOTOPE	(pCi/gm)	(Ci/m^3)	Source
Bk-247	0.0000906	1.63E-10	Model
Ca-41	1.322	2.38E-06	Model
Cl-36	0.268	4.83E-07	Model
Re-187	5,556	1.00E-02	Model
Tc-99	77,778	1.40E-01	Model

The PATHRAE fate and transport modeling for the side slope with a 12-inch thick Type-B filter (0.595 cm/yr infiltration case) indicates that all radionuclides modeled would remain below the GWPLs for at least 500 years at a compliance well located 90 feet from the edge of the waste, provided that the concentrations of eight radionuclides (Bk-247, Ca-41, Cl-36, I-129, K-40, Re-187, Sr-90, and Tc-99) are received in limited concentrations shown below. All other modeled constituents would meet the groundwater standard if placed under the side slope at Class A limits.

	Class A South Disposal Cell Side Slope Limiting Concentrations Based on 0.595 cm/yr Infiltration		
ISOTOPE	(pCi/gm)	(Ci/m^3)	Source
Bk-247	0.00009111	1.64E-10	Model
Ca-41	1.328	2.39E-06	Model
Cl-36	0.2706	4.87E-07	Model
I-129	0.0667	1.20E-07	Model
K-40	45.0	8.10E-05	Model
Re-187	1.039	1.87E-06	Model
Sr-90	80.0	1.44E-04	Model
Tc-99	2.922	5.26E-06	Model

The transport of heavy metals and Formerly Characteristic (D-Code) waste was modeled using vertical PATHRAE model runs for the 0.276 cm/yr top slope, 0.286 cm/yr side slope, and 0.595 cm/yr side slope areas. The results indicated that all 45 of the metals and D-Code wastes can be placed in the cell at full concentration (ten times the Treatment Standard). The model results showed that concentrations met GWPLs at the water table for the 200-year compliance period.

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Prepared and submitted by:

Whetstone Associates, Inc.

Susan A. Wyman

Susan A. Wyman, P.E., P.G.
Principal Hydrologist / Civil Engineer

8. REFERENCES

Adrian Brown Consultants, 1996a. Envirocare LARW Groundwater Modeling. Prepared for Envirocare of Utah, Inc. January 22, 1996.

Adrian Brown Consultants, 1996b. LARW Open Cell Modeling. Prepared for Envirocare of Utah, Inc. February 12, 1996.

Adrian Brown Consultants, 1996d. Memorandum from S. Wyman to Ken Alkema Regarding Hydraulic Parameters for Pathrae Transport Modeling. December, 23, 1996.

Adrian Brown Consultants, Inc., 1997a. Volume I. LARW Infiltration Modeling Input Parameters and Results, prepared for Envirocare of Utah, Inc. 41 pp plus tables, figures, and attachments. May 15, 1997.

Adrian Brown Consultants, Inc., 1997b. Volume II. LARW Groundwater Fate and Transport Modeling Input Parameters and Results, prepared for Envirocare of Utah, Inc. 37 pp. plus tables, figures and attachments. June 26, 1997.

Adrian Brown Consultants, Inc., 1997c. Final Slug Test Results, prepared for Envirocare of Utah, Inc. 19 pp. plus attachments. October 14, 1997.

Adrian Brown Consultants, Inc., 1997d. Volume I. LARW Infiltration Modeling Input Parameters and Results, prepared for Envirocare of Utah, Inc. 45 pp plus tables, figures, and attachments. December 4, 1997.

Adrian Brown Consultants, Inc., 1998. Volume II. LARW Groundwater Fate and Transport Modeling Input Parameters and Results, prepared for Envirocare of Utah, Inc. 44 pp. plus tables, figures and attachments. February 12, 1998.

Adrian Brown Consultants, Inc., 1999. 11e.(2) Disposal Cell Infiltration and Transport Model Input Parameters, prepared for Envirocare of Utah, Inc. 19 pp. plus tables and figures. July 16, 1999.

Baes, C. F. III, Sharp, R.D, Sjoreen, A.L, and Shor, R.W. , 1984. "A Review and Analysis of Parameters for Assessing Transport of Environmentally Released Radionuclides Through Agriculture". Oak Ridge National Laboratory for US DOE. ORNL-5786.

Beyeler, W.E., et al., 1998. "Review of Parameter Data for the NUREG/CR-5512 Residential Farmer Scenario and Probability Distributions for the DandD Parameter Analysis."

Beyeler, W.E., et al., 1998. "Review of Parameter Data for the NUREG/CR-5512 Residential Farmer Scenario and Probability Distributions for the DandD Parameter Analysis."

Bingham Environmental, 1991. Hydrogeologic Report - Appendix D. Prepared for Envirocare of Utah. October 1992.

Bingham Environmental, 1992. Hydrogeologic Report - Mixed Waste Disposal Area. Prepared for Envirocare of Utah. January 31, 1992.

Bingham Environmental, 1993a. Report on Technical Demonstration Study, Envirocare Waste Disposal Facility, South Clive, Utah. May 6, 1993.

Bingham Environmental, 1993b. Report on Contaminant Transport Modeling at Envirocare of Utah Waste Disposal Facility, South Clive, Utah. August 3.

Bingham Environmental, 1994a. Containment Justification Study of Additional Contaminants in 11e.(2) Waste, 11e.(2) Waste Disposal Facility, Envirocare of Utah, South Cilve, Utah, South Clive, Utah. 29 pp. plus figures and appendices. June 30, 1994

Bingham Environmental, 1994b. Hydrogeologic Report - Mixed Waste Disposal Area. Prepared for Envirocare of Utah. November 18, 1994.

Bingham Environmental, 1995a. Memorandum to George Hellstrom, Envirocare of Utah, Inc. from David Cline and David Waite, Regarding Hydrologic Evaluation of Active Cell LARW Mobile Waste Disposal Cell Clive, Utah. August 15, 1995.

Bingham Environmental, 1995b. Memorandum to George Hellstrom, Envirocare of Utah, Inc. from David Cline and David Waite, Regarding Summary of Results Radionuclide K_d Tests, Envirocare Disposal Landfills, Clive, Utah, 14 pp plus figures and appendices.

Bingham Environmental, 1995c. Memorandum to Vern Andrews, Envirocare of Utah, Inc. from David Cline and David Waite, Regarding PATHRAE Modeling [of] Additional LARW Raionuclides, 4 pp plus appendices. June 1, 1995

Bossert, I.D. and Bartha, R., 1986. Structure-Biodegradability Relationships of Polycyclic Aromatic Hydrocarbons in Soil, Bulletin of Environmental Contaminant Toxicology, 37: 490-495.

Bouwer, E.J. and McCarty, P.L., 1983. Transformations of 1- and 2-Carbon Halogenated Aliphatic Organic Compounds Under Methanogenic Conditions, Applied and Environmental Microbiology, 45: 1286-1294.

Cheng, Jing-Jy, 2001. E-mail correspondence to Susan Wyman (Whetstone Associates) from Jing-Jy Cheng (Environmental Systems Engineer, Environmental Assessment Division, Argonne National Laboratory), RE: Question about RESRAD Default Kd Value. August 17, 2001.

Coover, M.P. and Sims, R.C. 1987. The effect of Temperature on Polycylic Aromatic Hydrocarbon Persistence in unacclimated Agricultural soil, Hazardous Wast and Hazardous Materials 4: 69-82.

Del Debbio, J.A. (1991) Sorption of Strontium, Selenium, Cadmium, and Mercury in Soil. Radiochimica Acta, Vol. 52/53, pp. 181-186

Division of Radiation Control (DRC), 2001. "Re-Modeling Results of Californium-251 for the Class A Cell - DRC Approval", letter to Kenneth L. Alkema (Envirocare) from William J. Sinclair (DRC), Sept. 5, 2001. 3 pp.

Division of Radiation Control, 1995. Memorandum from Loren Morton (DRC) to Charles Judd (Envirocare) regarding May 16, 1995 Bingham Environmental Report Regarding Unit 3 Sand Ground Water Velocity: DRC Conclusions and Request for Additional Information. July10, 1995.

Division of Radiation Control, 1995. Memorandum from Loren Morton (DRC) to Charles Judd (Envirocare) Regarding Unit 3 Sand Ground Water Velocity: DRC Conclusions and Request for Additional Information. July 10, 1995.

Division of Radiation Control, 1996. Memorandum from Loren Morton (DRC) to Envirocare Ground-water Permit File regarding Shallow Aquifer Permeability At Envirocare LARW, 11e(2) And Mixed Waste Disposal Facility, Clive, Utah. October 1, 1996.

Division of Radiation Control, 1997a. Memorandum from Loren Morton (DRC) to Envirocare RE-Licensing File through Dane Finerfrock, regarding Envirocare HELP Model Weather Data: Staff Evaluation of Precipitation and Temperature Analog for Clive, Utah. 12 pp. plus attachments. September 19, 1997.

Division of Radiation Control, 1997b. Memorandum from Loren Morton (DRC) to Envirocare RE-Licensing File through Dane Finerfrock, regarding Envirocare May 15, 1997 HELP Model Infiltration Report: Staff Findings on Miscellaneous HELP Model Weather Input Variables. 3 pp. plus attachments. September 19, 1997.

Division of Radiation Control, 1998. Memorandum from Loren Morton (DRC) to Dane Finerfrock regarding December 4, 1997 Adrian Brown Consultants Infiltration Model Report: DRC Staff Conclusions and Findings for HELP Model Analysis of Envirocare LARW Cell. April 14, 1998.

Division of Radiation Control, 1999. Letter from William J. Sinclair to Daniel B. Shrum (Envirocare) regarding July 16, 1999 Adrian Brown Consultants (ABC) Draft 11e.(2) Disposal Cell Model Input Parameters Report and August 20, 1999 ABC 11e.(2) Disposal Cell Infiltration Modeling Input Parameters and Results: November 2, 1999 Utah Division of Water Quality Stipulation and Consent Order, Docket No. GW-98-06: Notice of Deficiency, and Request for Additional Information. November 4, 1999.

Division of Radiation Control, 2000a. Letter from William J. Sinclair to Daniel Shrum (Envirocare) regarding December 15, 1999 Whetstone Associates Report on 11e.(2) Disposal Cell Modeling Input Parameters Report: Request for Additional Information; and November 2, 1999 Division of Water Quality Settlement Agreement, Docket No. GW-98-06, and February 23, 2000 Envirocare Request for Extension of June 1, 2000 Deadline. March 24, 2000.

Division of Radiation Control, 2000b. Letter from Don A. Ostler to Kenneth L. Alkema (Envirocare) regarding April 26, 2000 Whetstone Associates 11e.(2) Disposal Cell Infiltration and Transport Model Input Parameters Report Approval, November 3, 1999 Stipulation and Consent Order, Docket No. GW-98-06. August 21, 2000.

Division of Water Quality (DWQ), 1992. Memorandum from Loren Morton Regarding Groundwater Flow Models Required by Part I.H.8 of Groundwater Discharge Permit No. UGW450005, January 13, 1992.

Division of Water Quality, 1993. Memorandum from Loren Morton (DRC) to Dane Finerfrock (DRC) regarding HELP Model Analysis to Determine the Effect of Frost Damage on Predicted Infiltration: Envirocare LARW Disposal Facility. December 15, 1993.

Division of Water Quality, 1994. Memorandum from Loren Morton (DWQ) to Dane Finerfrock (DRC) regarding DWQ/USU PATHRAE Contaminant Modeling: Evaluation of Envirocare of Utah's August 30, 1993 Proposed Changes to Embankment Cover Design, February 25, 1994

Domenico P.A., and Schwartz F.W., 1990. Physical and Chemical Hydrogeology. John Wiley and Sons Publishers.

Dragun J., 1988. The Soil Chemistry of Hazardous Materials. Hazardous Materials Control Research Institute, Silver Spring Maryland.

DRC, 2001. "Permit Modification Request to Remove Zinc Limits from Table 6A and Request for Interim Written Executive Secretary Approval to Potentially Exceed Zinc Concentration Limits, Groundwater Quality Discharge Permit UGW450005 ", letter from William J. Sinclair (DRC) to Daniel B. Shrum (Envirocare), Feb. 14, 2003. 4 pp.

DRC, 2001. "Re-Modeling Results of Californium-251 for the Class A Cell - DRC Approval", letter from William J. Sinclair (DRC) to Kenneth L. Alkema (Envirocare), Sept. 5, 2001. 3 pp.

EarthFax Engineering, 1999. Final Report for Slug Withdrawal Testing at Envirocare's Clive, Utah Facility, consultants report prepared for Envirocare of Utah, Inc.

Enchemica, LLC, 2002. In Situ Metals Kd Values at the Envirocare Site, prepared for Envirocare of Utah of Utah, Inc., 8 pp with 2 tables and 3 appendices. May 2, 2002.

Envirocare of Utah, 2000. Total Organic Carbon, Arsenic and Selenium Survey in Subsurface Soils at Clive, Utah. April 5, 2000.

Envirocare of Utah, 2000. Total Organic Carbon, Arsenic and Selenium Survey in Subsurface Soils at Clive, Utah. April 5, 2000.

Envirocare, 2004, Revised Hydrogeologic Report for the Envirocare Waste Disposal Facility, Clive, Utah, August 2004.

Environmental Assessment Division (EAD), 2001. The RESRAD Family of Codes website, Argonne National Laboratory Environmental Assessment Division, http://web.ead.anl.gov/resrad.

Environmental Assessment Division (EAD), 2001. The RESRAD Family of Codes website, Argonne National Laboratory Environmental Assessment Division, http://web.ead.anl.gov/resrad.

EPA 1994. Chemical Summary for Methyl Ethyl Ketone. EPA Document 749-F-94-015a.

EPA 1994. Chemical Summary for Methyl Ethyl Ketone. EPA Document 749-F-94-015a.

EPA, 1996. "Soil Screening Guidance: Users' Guide" EPA/540/R-96/018, July 1996.

EPA, 1996. "Soil Screening Guidance: Users' Guide" EPA/540/R-96/018, July 1996.

EPA, 2006. "Appendix A. Technical Discussion on Toxaphene" in "More Information Is Needed On Toxaphene Degradation Products", Ombudsman Report Report No. 2006-P-00007, December 16, 2005

EPA, 2007. Ground Water and Drinking Water technical fact sheet on: Endrin. http://www.epa.gov/OGWDW/dwh/t-soc/endrin.html, accessed 9/24/07

Fayer, M.J., 1999 (April). UNSAT-H version 2.05, available for down load from website http://etd.pnl.gov:2080/~mj_fayer/topv205.htm, updated April 23, 1999.

Fayer, M.J., and Jones, T.L., 1990 (April). UNSAT-H version 2.0: Unsaturated Soil Water and Heat Flow Model, PNL-6779, Battelle Memorial Institute.

Howard, Philip H., Boethling, Robert S., Jarvis, William F., Meylan, William M, and Michalenko, Edward M., 1991. Handbook of Environmental Degradation Rates, Lewis Publishers, Inc., Chelsea, MI, 725 pp.

Howard, Philip H., Boethling, Robert S., Jarvis, William F., Meylan, William M, and Michalenko, Edward M., 1991. Handbook of Environmental Degradation Rates, Lewis Publishers, Inc., Chelsea, MI, 725 pp.

Isherwood, Dana, 1981. Geoscience Data Base Handbook for Modeling a Nuclear Waste Repository, Lawrence Livermore Laboratory, prepared for U.S. Nuclear Regulatory Commission, NUREG/CR-0912, Volume I. January, 1981.

Kappeler, T. and Wuhrmann, K., 1978a. Microbial Degradation of the Water Soluble Fraction of Gas Oil – II, Bioassays with Pure Strains, Water Research 12: 335-342.

Kappeler, T. and Wuhrmann, K., 1978b. Microbial Degradation of the Water Soluble Fraction of Gas Oil – I, Water Research 12: 327-333.

Kennedy, W.E., and D.L. Strenge, 1992. Residual Radioactive Contamination from Decommissioning, Technical Basis for Translating Contamination Levels for Annual Total Effective Dose Equivalents, Volume I. October, 1992.

Kocher, David C. Radioactive Decay Data Tables, A Handbook of Decay Data for Application to Radiation Dosimetry and Radiological Assessments, Technical Information Center, US DOE, DOE-TIC-11026.

Kozak, M.W., et al., 1990. "Background Information for the Development of a Low-Level Waste Performance Assessment Methodology — Computer Code Implementation and Assessment," U.S. Nuclear Regulatory Commission, NUREG/CR-5453, Vol. 5, August 1990.

Looney, BB., Grant, M.W., and King, C.M., 1987 (March). "Estimation of Geochemical Parameters for Assessing Subsurface Transport at the Savannah River Plant", DuPont DPST-85-904.

McKinley, I.G., Grogan, H.A., 1991. Radionuclide Sorption Database for Swiss Repository Safety Assessments. Radiochimica Acta, Vol. 52/53, pp. 415-420

Merrell, G.B., Rogers, V.C., and Chau, T.K., 1995. The PATHRAE-RAD Performance Assessment Code for the Land Disposal of Radioactive Wastes, Rogers & Associates Engineering Corporation, RAE-9500/2-1. March 1995.

Meyer, P.D., Rockhold, M.L., Nichols, W.E., and Gee, G.W., 1996. Hydrologic Evaluation Methodology for Estimating Water Movement Through the Unsaturated Zone at Commercial Low-Level Radioactive Waste Disposal Sites, prepared for U.S. Nuclear Regulatory Commission, NUREG/CR-6346,PNL-10843, 102p. plus appendices.

MFG Inc., 2000. Evaluation of Low-Level Radioactive Waste Containing Chelating Agents, prepared for Envirocare of Utah. December 7, 2000.

MFG, Inc., 2000. Metals Distribution Coefficient Values Relevant to the Envirocare Site, prepared for Envirocare of Utah, September 18, 2000.

MSI (Meteorological Solutions, Inc.) 2004. October 2003 through September 2004 and July 1992 through June 2004 Summary Report of Meteorological Data Collected at the Envirocare Clive Utah Facility, MSA 12040453, December 2004.

Nuclear Energy Agency (NEA), 1997. Actinide Separation Chemistry In Nuclear Waste Streams And Materials, NEA Nuclear Science Committee, NEA/NSC/DOC(97)19, December 1997.

Nuclear Safety Associates, Inc., 1980, Comparison of Alternatives for Long-Term Management of High-Level Radioactive Waste at the Western New York Nuclear Service Center, prepared by Nuclear Safety Associates, Inc., Bethesda, Md., for Argonne National Laboratory, Argonne, Ill., Appendix IIIC.

Parsons, F., Wood, P.R., and DeMarco, J., 1984. Transformations of Tetrachloroethene and Trichloroethene in Microcosms and Groundwater, Journal AWWA 76: 56-59.

Pentacore Resources, LLC, 1999. Revised Hydrogeologic Report for the Envirocare Waste Disposal Facility, Clive, Utah. October, 1999.

Perrier, E.R., and Gibson, A.C., 1980. Hydrologic simulation on Solid Waste Disposal Sites, Technical Resource Document EPA-SW-868, U.S. Environmental Protection Agency, Cincinnati, OH 111 pp.

Richards, L.A. 1931. Capillary Conduction of Liquids in Porous Mediums. *Physics 1*, 318-313.

Richardson, C.W., and Wright, D.A. 1984. WGEN: A Model for Generating Daily Weather Variables. ARS-8, Agricultural Research Service, USDA. 83pp.

Rogers and Associates Engineering Corporation, 1990. Evaluation of the Potential Public Health Impacts Associated With Radioactive waste Disposal at a Site Near Clive, Utah, Rogers and Associates Engineering Corporation, RAE-9004/2-1, June 1990.

Schroeder, P.R., and Peyton, R.L., 1995. HELP Modeling Workshop, IGWMC Ground-Water Modeling Short Courses, Colorado School of Mines, Golden, CO.

Schroeder, P.R., Aziz, N.M., Lloyd, C.M., and Zappi, P.A., 1994a. The Hydrologic Evaluation of Landfill Performance (HELP) Model: User's Guide for Version 3, EPA/600/R-94/168A; US EPA Office of Research and Development, Washington, D.C.

Schroeder, P.R., Dozier, T.S., Zappi, P.A., McEnroe, B.M., Sjostrom, J.W., and Peyton, R.L., 1994b. The Hydrologic Evaluation of Landfill Performance (HELP) Model: Engineering Guide for Version 3, EPA/600/R-94/168B; US EPA Office of Research and Development, Washington, D.C.

Sheppard, M.I, and Thibault, D.H., 1990. Default soil solid/liquid partition coefficients, Kds, for four major soil types: a compendium, Health Physics, vol. 59, No. 4 (October), pp. 471-482.

Staley, G.B., et al., 1979, "Radionuclide Migration from Low-Level Waste: A Generic Overview," in M.W. Carter et al. (editors), Management of Low-Level Radioactive Waste, Pergamon Press, New York, N.Y., pp. 1041-1072.

Stephens, D.B., 1996. Vadose Zone Hydrology, CRC Press, Inc.,339 pp.

Tabak, H.H., Quave, S.A., Mashni, C.I., and Barth, E.F., 1981. Biodegradability Studies with Organic Priority Pollutant Compounds. Journal of the Water Pollution Control Federation, 53: 1503-1518.

U.S. Nuclear Regulatory Commission, 1980, Final Generic Environmental Impact Statement on Uranium Milling -- Vol. 1, Summary and Text; Vol. 2, Appendices A-F; Vol. 3, Appendices G-V, NUREG-0706, Office of Nuclear Material Safety and Safeguards, Washington, D.C.

Utah Department of Environmental Quality (DEQ) Division of Water Quality, 1993. Memorandum from Loren Morton (DRC) to Dane Finerfrock (DRC) regarding HELP Model Analysis to Determine the Effect of Frost Damage on Predicted Infiltration: Envirocare LARW Disposal Facility. December 15, 1993.

Utah Department of Environmental Quality (DEQ) Division of Water Quality, 1994. Memorandum from Loren Morton (DWQ) to Dane Finerfrock (DRC) regarding DWQ/USU PATHRAE Contaminant Modeling: Evaluation of Envirocare of Utah's August 30, 1993 Proposed Changes to Embankment Cover Design, February 25, 1994.

Verschueren, Karel, 2001. Handbook of Environmental Data on Organic Chemicals, Fourth Edition, John Wiley & Sons, publishers, 2,391 pp.

Whetstone Associates, Inc, 2000. Envirocare of Utah Revised Western LARW Cell Infiltration and Transport Modeling, consultants report dated July 19, 2000. Document Number 4104M.000719.

Whetstone Associates, Inc, 2000a. Envirocare Of Utah Western LARW Cell Infiltration and Transport Modeling, consultants report dated March 2, 2000a. Document Number 4104M.000302.

Whetstone Associates, Inc, 2000b. Soil Distribution Coefficient for Thallium. Technical Memorandum to Tim Orton dated March 29, 2000b. Document Number 4104M.000329

Whetstone Associates, Inc, 2000d. Envirocare of Utah Revised Western LARW Cell Infiltration and Transport Modeling, consultants report dated June 12, 2000c. Document Number 4104M.000612

Whetstone Associates, Inc, 2000d. Mixed Waste Cell Infiltration Modeling Report dated November 22, 2000. Document Number 4101R.001122

Whetstone Associates, Inc, 2000e. Envirocare of Utah Revised Western LARW Cell Infiltration and Transport Modeling, consultants report dated July 19, 2000d. Document Number 4104M.000719

Whetstone Associates, Inc, 2000f. Envirocare of Utah Class A, B, & C Cell Infiltration and Transport Modeling, consultants report dated August 1, 2000e. Document Number 4104O.000801

Whetstone Associates, Inc, 2001a. Revised Envirocare of Utah 11e.(2) Disposal Cell Infiltration and Transport Modeling Report, dated June 5, 2001, Document Number 4101L.010605

Whetstone Associates, Inc, 2001b. Revised Envirocare of Utah 11e.(2) Disposal Cell Infiltration and Transport Modeling Report, dated July 26, 2001, Document Number 4101L.010726

Whetstone Associates, Inc, 2001c. "Results of Cf-251 Modeling for the Class A Cell, Using the 898-Year Half Life", technical memorandum to Dan Shrum, Envirocare of Utah from Susan Wyman, Whetstone Associates, dated August 21, 2001, Document Number 4101M.010821, 5 pp.

Whetstone Associates, Inc, 2003. "Technical memorandum on 11(e).2 Cell Transport Modeling Using New Zn Kd and Higher Radionuclide Concentrations", technical memorandum to Dan Shrum, Envirocare of Utah from Susan Wyman, Whetstone Associates, dated November 10, 2003, Document Number 4101L.031110, 2 pp.

Whetstone Associates, Inc, 2005a. Envirocare of Utah Class A Combined (CAC) Cell Infiltration and Transport Modeling Report, dated June 15, 2005. Document Number 4101W.050615

Whetstone Associates, Inc, 2005b. Envirocare of Utah Class A Combined (CAC) Cell Infiltration and Transport Modeling Report, dated November 18, 2005. Document Number 4101W.051118

Whetstone Associates, Inc, 2006. Energy*Solutions* Class A Combined (CAC) Cell Infiltration and Transport Modeling Report, dated May 29, 2006. Document Number 4101W.060529.

Whetstone Associates, Inc, 2007. Technical memorandum to Dan Shrum, Energy*Solutions*, RE: Formerly Characteristic Waste Modeling of the Class A and Class A North Cells, dated September 25, 2007. Document Number 4101M.070925.

Wilson, J.T., McNabb, J.F., Cochran, J.W., Wang, T.H., Tomson, M.B., and Bedient, P.B., 1985. Influence of Microbial Adaptation on the Fate of Organic Pollutants in Groundwater, Environmental Toxicology and Chemistry 4 721-726.

World Health Organization (WHO), 2003. Chlorophenoxy herbicides (excluding 2,4-D and MCPA) in Drinking-water, Background document for development of WHO Guidelines for Drinking-water Quality. WHO/SDE/WSH/03.04/44.

WRCC, 2005. Western Regional Climate Center, internet downloads of meteorological data from Dugway, Utah NOAA site, http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?utdugw, and http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?utdugw, May 2005.

Yu, C., C. Loureiro, J.-J. Cheng, L.G. Jones, Y.Y. Wang, Y.P. Chia, and E. Faillace, 1993. Data Collection Handbook To Support Modeling Impacts Of Radioactive Material In Soil, Environmental Assessment and Information Sciences Division, Argonne National Laboratory, Argonne, Illinois, April 1993.

Yu, C., D. LePoire, E. Gnanapragasam, J. Arnish, S. Kamboj, B. M. Biwer, J. J. Cheng, A. Sielen, S. Y. Chen, 2000. Development of Probabilistic RESRAD 6.0 and RESRAD-BUILD 3.0 Computer Codes, Prepared for the Division of Risk Analysis and Applications, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, NUREG/CR-6697, December, 2001.

Zoeteman, B.C.J., DeGreef, E., and Brinkmann, F.J.J., 1881. Persistency of Organic Contaminants in Groundwater, Lessons from Soil Pollution Incidents in the Netherlands, The Science of the Total Environment 21: 187-202.

TABLES

TABLE 5. SUMMARY AND EVALUATION OF DAILY TEMPERATURE IN HELP MODEL 100-YEAR SYNTHETIC WEATHER DATA SET

YEAR->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
Jan 1	32.8	39.6	40.5	27.8	30.0	37.3	31.3	35.8	46.6	32.5	28.0	26.5	29.6	35.4	22.5	35.5	40.3	46.4	26.0	17.7	41.9	37.9	23.1	27.8	35.2	40.9	51.6	30.3	39.4	34.6	20.9	31.3	36.1	36.4	34.1	37.9	29.9	15.8	37.1	33.5	24.0	31.1	36.3	28.7	32.0	24.2
Jan 2	29.6	32.4	43.1	32.9	34.0	27.6	29.7	29.4	38.6	26.7	31.4	20.2	37.0	34.9	24.0	34.9	37.8	42.0	29.1	14.5	47.1	36.4	18.4	28.0	38.9	30.2	40.0	30.3	31.0	27.3	23.1	38.0	29.0	36.8	26.9	39.9	28.9	18.7	27.7	38.5	28.4	28.9	39.5	35.4	34.0	26.6
Jan 3	29.5	32.6	38.3	22.6	35.6	32.6	41.9	37.5	25.2	21.6	39.6	14.7	28.9	35.0	31.6	27.1	35.1	38.2	33.8	24.6	41.4	30.4	21.6	24.9	38.7	27.4	28.9	30.4	35.5	33.5	20.0	26.2	33.0	37.7	26.3	39.5	31.8	24.7	28.4	44.4	37.7	41.5	39.9	34.1	31.4	24.6
Jan 4	23.6	26.4	38.7	32.5	23.9	31.1	31.4	38.7	36.6	26.7	38.3	19.9	38.9	26.8	31.5	29.7	38.3	41.6	34.1	24.7	37.7	27.2	37.6	27.3	29.3	29.7	41.5	35.7	33.3	27.9	12.9	20.6	28.7	33.1	43.7	47.1	40.3	31.3	23.6	41.2	37.8	30.0	27.0	22.7	24.7	18.2
Jan 5	29.6	35.2	33.0	28.3	17.5	19.6	35.9	31.8	33.0	20.9	30.8	19.7	29.2	28.7	35.1	37.7	36.3	30.4	31.4	32.8	34.9	34.3	35.4	31.3	32.9	32.2	38.8	36.4	23.5	27.4	17.6	29.0	34.9	40.4	31.9	39.1	51.8	30.0	29.5	41.1	33.3	24.9	29.0	17.0	24.1	14.7
Jan 6	39.1	39.8	30.8	40.1	32.1	21.8	42.1	41.3	32.3	23.0	43.9	40.3	37.3	23.0	28.0	29.3	27.2	24.5	33.2	31.3	35.5	31.9	29.0	33.2	29.5	38.7	42.0	34.2	30.3	23.1	13.8	31.4	29.5	46.6	24.9	32.1	47.8	33.0	30.4	32.4	38.3	33.0	35.0	30.0	21.2	16.8
Jan 7	32.0	39.6	35.3	37.5	39.8	14.9	32.1	36.1	36.0	37.3	36.8	47.2	34.2	29.8	39.7	20.9	27.2	19.5	44.5	24.2	38.4	23.5	26.6	39.7	27.2	24.4	33.6	41.8	25.1	23.1	8.5	30.0	24.6	37.3	24.6	33.0	31.2	34.2	15.4	27.3	34.3	28.4	27.6	22.5	30.7	20.6
Jan 8	33.1	30.6	26.3	41.4	36.7	25.7	28.6	45.8	38.4	40.2	33.7	34.5	33.8	27.0	27.1	26.6	37.2	18.2	46.5	18.1	38.3	29.2	34.2	40.7	27.0	18.0	24.8	35.0	24.0	26.6	20.6	23.6	27.4	32.2	20.9	36.0	39.6	27.8	22.7	29.0	39.3	33.7	27.3	24.7	37.7	31.3
Jan 9	34.6	21.2	19.3	33.3	44.6	23.3	25.8	45.1	28.8	39.3	33.6	29.9	31.9	23.5	24.8	29.8	39.4	26.1	38.9	29.9	33.3	34.6	32.8	31.4	29.0	21.9	41.4	31.6	26.4	29.6	25.6	28.5	24.0	27.1	25.6	37.1	38.1	27.9	18.0	38.6	34.6	23.8	26.0	22.6	33.2	32.5
Jan 10	25.9	22.5	26.1	31.2	28.6	28.9	28.3	38.8	32.8	33.5	26.1	24.6	29.4	34.7	24.9	33.1	41.7	29.8	33.9	29.0	33.3	33.4	26.5	35.0	22.2	39.1	47.6	37.9	40.3	26.1	20.0	22.6	30.7	28.1	22.1	39.7	37.4	25.7	12.1	36.9	36.7	24.8	29.5	30.0	27.2	38.2
Jan 11	31.4	13.8	36.4	27.7	35.7	35.7	26.0	32.2	21.0	50.6	34.4	24.9	36.1	27.7	18.9	37.5	32.9	32.4	26.2	37.9	37.2	46.9	29.0	28.5	26.8	38.1	46.0	23.3	29.0	15.4	16.4	19.6	32.7	26.7	26.5	37.9	36.5	33.8	11.3	21.5	40.0	33.8	31.9	32.6	35.5	31.7
Jan 12	26.1	22.8	35.3	22.0	23.6	31.9	20.8	33.9	20.0	41.3	38.4	29.0	33.6	28.1	18.2	33.4	22.9	35.7	24.2	43.5	27.9	38.9	37.1	28.7	28.3	36.6	37.9	21.9	38.2	22.0	18.0	23.4	33.7	28.7	28.4	30.0	31.6	30.1	19.7	34.6	46.2	36.1	41.5	25.9	35.1	29.7
Jan 13	25.9	12.4	32.6	18.8	21.2	34.3	28.0	35.2	30.3	39.8	32.7	18.8	35.1	24.5	16.5	31.0	31.0	26.1	18.3	28.7	28.2	30.6	25.6	26.1	25.7	32.6	40.1	19.1	37.1	26.6	15.1	38.0	37.6	22.6	25.9	25.3	30.8	35.5	24.3	38.2	44.1	35.5	34.6	22.3	32.9	27.3
Jan 14	19.2	13.2	38.4	29.0	28.0	30.6	24.5	40.9	24.7	27.4	34.6	26.9	38.6	28.1	20.8	30.4	21.9	22.7	12.7	34.6	31.0	31.9	31.0	21.6	30.3	29.9	39.1	32.1	42.0	26.6	13.1	38.9	40.9	32.3	25.2	32.0	31.4	30.9	27.0	30.7	42.2	26.5	25.1	20.0	43.2	26.7
Jan 15	14.6	17.9	35.9	24.7	23.8	21.7	30.8	40.8	27.1	24.2	19.4	28.0	38.3	23.3	20.3	29.9	31.6	26.0	26.5	36.1	42.5	35.1	31.5	24.8	28.0	19.5	38.2	23.6	39.5	32.5	22.4	43.4	45.1	37.5	21.2	33.6	27.1	38.1	31.5	35.1	41.7	27.2	21.1	32.8	33.4	20.3
Jan 16	23.5	22.6	37.2	19.2	11.7	24.7	18.7	37.9	29.8	30.8	17.9	33.6	30.5	26.2	24.5	40.1	28.3	33.4	29.7	35.7	40.0	40.9	31.5	26.4	39.0	23.7	33.0	20.7	28.7	26.9	24.1	36.2	46.2	32.0	21.4	32.8	20.8	34.1	28.9	36.8	31.5	32.2	22.2	37.3	40.2	24.3
Jan 17	28.5	28.2	37.6	17.6	20.2	25.5	20.2	32.0	30.0	32.5	21.8	27.5	37.9	32.7	24.5	37.6	21.6	32.7	29.2	30.9	41.5	42.1	31.3	26.7	30.3	20.1	42.8	23.3	23.8	25.7	28.6	44.6	52.9	33.9	24.7	43.1	25.9	18.4	21.4	41.0	42.6	37.8	28.1	36.3	44.1	24.5
Jan 18	31.0	32.2	34.3	10.4	20.8	21.0	26.6	23.9	27.3	42.5	24.6	22.8	32.4	29.6	28.1	30.0	22.8	41.7	26.3	31.4	36.1	39.1	29.2	28.9	34.2	18.8	39.6	18.6	31.3	30.0	40.4	41.4	43.7	31.4	29.8	34.0	27.5	24.9	18.5	32.9	32.8	37.6	20.8	42.8	38.5	36.6
Jan 19	44.4	34.7	32.7	22.2	17.2	18.7	34.6	28.7	32.5	30.0	19.7	18.2	30.9	25.6	36.1	32.0	25.2	40.3	29.5	38.4	37.7	25.2	29.5	21.6	37.0	19.6	40.4	16.7	23.5	20.5	25.4	41.3	32.5	38.3	32.2	37.2	19.2	35.4	33.9	31.0	32.0	38.3	23.4	41.0	48.0	35.3
Jan 20	41.1	29.7	35.2	23.8	13.5	12.4	38.9	32.8	32.9	15.0	23.7	22.5	23.9	23.7	30.7	41.9	34.1	30.9	29.8	41.2	26.9	38.0	31.1	33.8	47.1	21.6	34.2	25.1	27.0	17.5	28.6	43.5	22.6	42.6	23.6	36.6	16.9	37.0	20.7	39.9	42.4	38.2	21.8	32.7	33.2	40.8
Jan 21	52.8	34.4	36.6	20.9	14.6	24.2	40.3	34.3	38.1	28.2	38.1	25.2	22.0	21.8	42.2	36.4	28.7	23.6	27.7	35.0	25.3	19.5	31.9	25.9	36.1	21.5	35.1	23.1	28.9	20.0	37.7	35.9	33.3	32.1	37.6	23.2	19.3	47.0	19.4	39.8	39.8	24.8	19.3	31.0	34.5	35.5
Jan 22	43.3	28.0	38.8	18.5	24.5	23.3	35.9	40.4	38.4	30.5	37.2	25.9	15.3	22.1	33.7	31.1	25.0	33.6	27.3	42.3	24.1	26.7	32.2	29.8	44.9	20.7	40.3	29.5	23.0	34.7	32.0	32.7	37.2	40.7	30.3	19.8	20.6	42.7	33.5	39.7	45.8	37.2	27.8	28.1	39.2	39.4
Jan 23	44.0	30.7	32.3	23.6	35.5	29.1	45.0	34.1	32.4	35.9	38.8	22.5	28.3	17.7	30.6	28.7	32.3	39.1	18.2	32.3	20.4	31.9	26.6	27.6	30.5	25.5	38.1	41.9	30.5	40.3	32.1	29.3	26.9	35.3	36.7	30.5	21.2	38.1	37.1	30.0	37.9	46.5	19.3	18.0	35.2	32.6
Jan 24	45.3	20.5	37.6	26.4	33.9	21.9	48.7	37.6	31.4	26.8	46.1	20.8	26.6	17.4	29.2	14.8	22.2	40.3	26.8	39.0	22.2	43.0	24.0	27.4	34.3	20.1	32.4	43.6	34.8	38.3	39.8	16.8	31.1	38.3	31.3	26.9	29.2	37.2	36.3	28.4	34.5	45.8	17.1	32.8	28.2	33.3
Jan 25	37.6	25.0	29.1	35.1	29.4	23.8	27.4	33.2	36.5	27.2	45.6	26.9	31.5	30.5	36.6	15.8	23.2	38.0	34.5	33.4	22.9	34.9	23.1	28.8	29.1	29.0	33.8	40.3	28.7	31.6	35.1	19.8	35.9	37.6	30.7	32.1	37.4	37.8	22.5	42.3	42.4	38.6	25.4	36.2	25.9	46.8
Jan 26	39.7	19.2	26.1	31.7	39.9	18.6	26.5	32.0	39.2	43.6	44.3	27.5	30.8	18.5	40.1	23.6	19.9	35.4	29.3	31.5	34.5	38.3	39.7	29.5	30.1	14.7	30.6	43.7	18.4	39.0	30.2	27.6	41.4	37.6	24.5	25.5	32.0	29.4	25.4	48.8	37.4	37.1	43.6	41.3	28.1	44.2
Jan 27	41.4	30.7	22.0	36.9	40.4	22.0	19.5	36.3	39.1	45.9	36.1	14.1	38.5	22.8	31.9	20.7	31.8	39.6	44.5	28.6	29.6	33.0	39.2	31.1	30.5	26.7	32.5	29.2	19.1	40.6	25.1	32.4	41.0	34.9	21.8	24.3	35.2	36.7	25.9	36.5	31.6	21.1	41.9	26.1	36.1	39.5
Jan 28	39.9	32.2	35.4	37.5	46.1	22.6	30.3	40.4	31.0	55.5	29.2	18.1	21.2	16.2	38.6	25.7	20.8	41.5	34.0	23.6	31.6	26.5	31.7	29.7	36.4	39.9	33.7	25.2	11.0	42.0	35.3	36.4	33.9	32.1	22.4	28.4	41.4	46.9	26.1	33.7	42.0	27.9	37.1	31.6	28.6	45.6
Jan 29	37.3	26.9	30.8	44.4	40.9	34.9	31.4	46.3	28.5	44.3	34.0	28.5	16.1	17.3	30.1	39.5	26.1	26.3	38.7	38.0	31.4	25.1	30.2	29.6	33.6	39.4	26.7	28.0	9.2	36.4	32.9	44.9	24.9	29.5	22.2	34.9	41.0	47.0	19.4	35.3	30.5	24.5	34.4	32.5	32.2	43.6
Jan 30	45.4	25.0	41.9	51.8	36.9	32.6	25.4	45.4	22.7	39.2	33.1	28.1	21.7	19.6	28.8	31.5	35.1	29.6	34.2	31.6	29.9	28.6	39.7	19.6	31.1	34.8	25.5	24.2	11.4	31.7	32.6	38.8	19.8	37.9	23.6	40.7	41.0	37.9	19.0	29.9	23.1	18.4	31.6	24.6	23.6	35.0
Jan 31	40.3	25.7	46.2	34.4	43.3	38.2	25.6	55.9	20.7	35.1	37.1	31.4	33.3	30.0	42.5	23.6	29.1	30.6	45.1	29.8	24.6	23.1	41.1	15.5	25.8	26.3	23.7	30.6	12.1	31.3	35.1	45.3	24.8	33.3	31.3	30.0	35.2	28.7	20.9	36.6	35.5	15.1	34.4	21.1	12.9	29.5
Feb 1	26.7	34.1	45.7	38.6	37.3	38.8	19.1	40.6	15.6	31.5	24.8	34.0	30.2	29.7	39.2	23.4	25.4	16.1	36.1	34.5	22.1	27.0	38.1	28.2	36.1	29.3	17.9	28.3	24.5	29.5	41.7	31.1	27.0	37.6	21.1	42.7	35.3	27.4	18.3	29.3	33.7	25.1	30.5	30.4	23.4	22.2
Feb 2	29.2	28.3	40.5	35.4	44.5	36.2	31.0	39.4	23.6	44.6	31.8	18.1	20.1	29.3	31.3	31.6	24.1	14.1	43.9	32.8	20.8	22.5	39.5	31.8	26.6	22.6	28.8	29.5	23.1	20.2	39.7	33.5	31.1	40.6	27.3	34.3	27.1	23.0	29.7	29.1	33.7	21.7	34.9	19.5	34.5	18.2
Feb 3	35.1	24.6	28.2	30.8	34.4	28.0	27.3	29.9	23.8	38.9	35.6	22.4	30.8	27.5	31.3	32.1	29.6	18.6	46.7	27.2	25.7	30.5	44.9	33.5	27.6	28.2	14.6	31.3	30.6	33.0	28.5	26.9	34.0	29.5	23.2	32.7	31.4	25.8	37.4	35.3	30.7	30.6	33.7	18.7	26.4	22.6
Feb 4	22.2	30.5	29.3	27.6	26.5	26.2	34.3	23.2	29.9	25.6	43.6	21.6	23.8	28.3	30.2	34.1	23.8	23.2	41.4	25.7	29.2	25.7	44.3	39.5	21.5	28.6	6.7	30.9	36.4	34.1	26.2	24.2	35.7	31.2	30.6	43.9	25.9	33.5	30.6	36.3	32.4	39.9	39.2	25.2	33.3	28.2
Feb 5	27.6	27.4	32.5	34.7	28.1	18.5	32.0	36.6	29.6	27.3	40.3	29.4	20.4	33.4	28.5	34.9	33.7	26.4	32.9	24.7	22.6	24.5	36.3	41.2	23.2	33.6	13.5	23.8	38.3	23.0	31.5	24.6	28.1	18.7	39.7	25.9	34.7	34.1	29.9	34.3	40.1	27.8	37.5	22.0	30.7	33.1
Feb 6	31.1	24.3	41.6	27.3	27.7	32.7	44.4	37.2	38.2	42.1	33.2	32.1	20.1	29.1	31.8	19.3	39.7	16.5	31.7	37.4	35.8	14.0	45.5	24.6	30.5	38.7	19.1	16.3	35.6	28.4	30.6	24.8	41.3	22.9	35.7	23.8	32.8	23.2	23.5	37.0	37.6	23.7	39.3	27.3	27.0	31.5
Feb 7	42.2	28.8	34.0	31.5	28.0	37.3	43.5	19.1	30.8	29.6	26.4	23.2	22.7	24.6	19.3	20.4	36.6	18.9	41.4	32.2	25.4	22.7	28.5	25.2	32.7	40.0	13.9	16.8	32.1	23.1	32.4	25.5	37.8	14.2	38.3	19.2	35.4	25.9	32.8	28.9	38.8	27.1	35.4	26.5	22.0	35.6
Feb 8	43.0	37.0	37.1	17.7	28.1	36.5	37.9	32.8	32.8	27.6	30.3	13.4	19.4	32.9	19.4	25.3	37.6	11.7	39.0	34.9	27.9	29.4	36.9	21.5	39.5	36.9	25.8	29.8	32.3	18.0	31.4	22.6	39.8	22.4	33.2	24.8	48.8	23.3	40.4	24.5	29.9	21.1	41.9	21.1	17.1	20.6
Feb 9	34.2	37.8	29.6	23.9	17.7	36.1	36.4	34.7	31.0	23.8	29.3	17.9	18.1	49.1	28.0	21.4	37.0	18.4	26.5	29.4	35.3	28.5	33.3	31.9	26.4	34.4	24.9	36.1	20.6	21.9	28.8	25.3	36.8	26.2	37.1	26.6	34.1	13.4	33.5	30.7	41.8	14.9	42.5	25.8	24.3	17.5
Feb 10	47.4	40.9	39.7	17.1	17.9	36.2	27.1	27.9	23.5	33.1	30.6	20.1	24.3	51.0	30.6	30.1	44.6	24.1	17.2	38.4	36.9	33.6	37.1	28.6	24.5	34.5	33.6	38.6	24.6	28.0	29.8	29.8	32.8	35.7	41.8	26.3	42.3	16.9	29.8	28.1	38.9	29.3	41.9	30.3	28.8	26.7
Feb 11	45.2	37.5	37.8	36.8	20.0	32.8	28.6	29.1	29.8	24.0	21.2	10.8	20.1	57.6	29.2	27.0	39.6	24.8	22.1	32.2	24.9	46.4	38.7	20.3	25.0	46.9	40.4	34.3	26.0	29.5	45.0	29.1	36.4	40.7	43.8	29.9	26.1	19.9	24.1	27.6	31.0	25.3	43.4	25.3	28.8	24.2
Feb 12	45.2	39.1	42.0	34.6	22.0	29.4	28.2	16.1	38.6	29.7	20.3	24.9	25.5	47.2	22.7	30.1	32.8	21.8	19.1	34.4	32.7	30.4	30.3	19.3	20.6	45.1	47.0	38.7	21.1	20.0	42.6	21.2	36.7	37.1	50.7	34.5	24.3	30.5	18.0	30.2	28.6	27.6	31.8	28.8	40.7	30.9
Feb 13	49.7	28.6	40.3	44.7	21.2	31.9	20.6	28.2	36.8	34.8	32.2	15.8	30.4	33.7	23.0	18.5	37.9	17.4	31.4	28.6	40.9	24.7	24.1	11.9	24.5	38.6	38.8	31.3	36.1	27.7	38.3	19.5	32.6	46.5	48.0	30.6	37.8	39.3	20.9	28.0	29.9	34.0	25.5	40.6	54.9	38.3
Feb 14	38.0	18.7	36.5	49.7	20.4	30.8	21.7	36.6	30.5	30.3	33.2	30.2	31.4	35.5	23.5	17.5	37.9	22.0	25.3	24.8	28.8	28.5	25.6	23.8	25.1	51.2	23.5	25.2	45.3	34.9	33.1	29.1	31.9	54.9	45.8	26.9	36.7	38.4	28.0	30.4	27.8	29.2	30.0	38.5	45.0	39.7
Feb 15	43.6	31.1	41.9	35.1	21.4	35.5	35.6	45.7	34.4	22.1	28.2	20.4	40.3	30.3	32.7	21.8	23.0	31.4	13.5	25.3	34.5	30.5	27.6	26.8	25.9	42.0	28.7	37.3	38.5	24.8	44.5	25.4	43.9	45.8	43.2	38.7	41.9	32.3	27.2	37.9	25.4	23.5	26.5	28.3	40.2	44.1
Feb 16	41.7	30.1	31.6	36.9	21.2	36.4	31.3	40.9	42.1	29.1	24.1	13.9	41.2	30.0	29.3	27.2	29.0	28.7	19.2	28.9	29.0	37.0	33.3	28.9	30.5	41.4	22.9	35.7	43.6	32.0	40.0	28.1	41.5	38.8	29.9	33.8	30.8	30.1	21.4	28.9	21.4	37.3	41.9	30.0	36.7	37.8
Feb 17	42.2	19.9	24.9	36.4	26.4	23.5	23.2	36.4	32.3	29.0	26.0	14.9	37.6	25.9	32.6	22.8	30.6	33.7	19.1	23.7	20.7	40.0	27.7	39.7	29.2	37.9	23.0	38.1	35.9	23.8	39.3	36.5	40.8	35.4	37.0	36.0	30.1	29.9	15.5	28.4	31.9	36.9	45.8	29.9	34.5	39.3
Feb 18	41.5	21.0	34.5	36.8	36.9	36.2	22.7	38.8	27.9	42.4	29.0	25.5	28.1	30.3	23.7	32.3	29.0	29.7	24.6	25.9	22.3	24.1	33.8	37.5	18.7	37.0	25.4	38.1	43.4	22.3	37.2	31.6	42.2	36.9	31.6	36.4	23.1	29.4	24.2	25.3	20.6	36.6	44.3	28.7	32.9	28.9
Feb 19	36.2	31.4	28.2	34.7	36.1	36.9	22.2	47.4	20.0	35.8	33.9	28.8	25.7	24.6	24.0	34.7	30.9	34.9	31.5	31.7	18.4	22.8	35.8	29.9	25.0	35.5	29.9	40.2	36.2	29.7	29.5	21.3	36.2	34.9	24.7	35.3	27.0	18.5	13.6	29.5	20.3	33.2	42.5	26.3	32.7	40.0
Feb 20	42.6	32.8	28.6	38.9	44.5	29.7	20.3	39.2	28.6	29.2	29.2	28.2	22.1	27.2	40.3	37.3	23.1	24.7	38.4	39.8	19.4	28.4	31.9	26.1	19.8	44.0	39.7	43.6	24.4	30.5	25.0	29.5	37.3	34.0	25.4	33.3	33.8	27.5	15.8	30.9	17.6	26.9	28.8	39.5	30.5	26.3
Feb 21	34.0	32.4	32.5	36.4	32.7	29.1	23.3	35.1	27.5	24.8	34.3	30.2	18.9	25.5	29.1	31.3	29.4	21.5	33.6	42.7	26.9	27.9	38.3	33.5	27.3	38.7	36.7	35.4	27.5	17.5	28.0	30.1	33.5	31.4	31.9	30.0	36.0	22.2	17.4	36.7	25.0	24.7	29.5	48.0	34.9	28.4
Feb 22	28.6	23.0	32.7	49.6	41.5	40.4	23.7	43.2	40.5	30.5	33.5	39.2	24.7	28.5	38.5	29.6	30.3	24.6	32.9	41.7	28.9	38.5	32.0	22.9	30.1	31.6	28.5	37.8	31.9	31.9	13.5	29.3	37.0	32.5	29.5	43.5	18.7	25.2	19.2	32.0	25.1	14.7	33.3	37.8	34.0	30.8
Feb 23	26.0	27.0	27.3	41.5	36.6	48.2	23.8	37.0	31.8	23.0	33.8	38.9	23.5	44.4	44.3	27.5	19.9	31.4	31.3	42.3	31.3	30.7	34.6	25.1	25.8	41.6	30.1	34.6	34.4	38.0	6.7	24.5	47.4	29.1	32.8	53.2	17.7	30.1	25.7	32.2	24.0	14.7	37.1	44.0	41.6	34.3
Feb 24	34.9	34.2	24.3	32.0	43.0	45.1	33.2	30.9	31.8	40.5	29.4	42.1	29.0	43.8	30.3	27.0	21.6	20.2	34.1	39.2	31.9	34.3	26.8	38.5	33.8	47.2	28.6	34.7	15.9	43.1	30.0	24.1	54.0	35.4	49.3	47.0	22.6	25.5	33.9	48.7	30.3	31.1	42.8	40.2	38.8	30.9
Feb 25	30.0	29.3	24.6	38.6	34.7	41.0	35.5	36.2	27.2	42.1	29.3	30.9	37.0	35.1	22.8	36.0	36.1	12.6	27.5	30.8	34.4	44.2	31.3	34.3	46.2	42.9	39.2	42.2	27.6	41.4	36.9	34.1	50.7	39.0	41.3	33.6	34.4	29.6	30.9	40.9	23.7	36.2	33.1	26.8	39.2	38.0
Feb 26	33.8	24.4	35.3	32.5	31.2	40.9	44.2	46.4	23.3	48.7	42.3	35.5	33.0	40.2	36.4	41.1	35.5	11.6	27.4	33.3	49.5	38.7	33.9	36.5	51.8	30.8	29.5	46.4	33.4	27.0	41.4	39.5	34.8	36.5	34.9	32.8	28.0	27.4	35.8	43.5	28.6	43.1	30.9	23.2	45.3	39.8
Feb 27	34.4	35.5	40.0	32.6	33.3	34.8	43.8	40.4	19.5	53.3	34.0	43.3	35.8	33.3	29.6	30.8	35.7	21.7	32.1	24.5	44.2	40.8	40.6	40.7	60.9	31.1	27.9	38.7	42.6	28.3	39.4	43.0	32.8	36.8	30.0	25.9	32.0	34.3	38.6	40.1	32.3	37.1	40.4	29.3	59.0	39.4
Feb 28	35.6	28.7	41.8	36.2	34.0	39.4	49.4	49.2	22.8	33.7	35.6	46.5	33.1	39.5	32.8	37.3	29.8	24.9	26.2	26.5	32.3	39.6	39.3	43.2	43.2	36.9	37.2	37.3	44.1	36.2	27.2	49.5	25.0	39.3	33.9	31.5	42.7	35.8	27.7	55.8	34.0	32.0	49.9	28.0	52.8	51.4
Feb 29	34.6	29.7	34.7	30.0	28.3	42.6	56.8	41.4	16.6	33.5	37.6	37.8	45.2	40.1	43.2	42.7	29.8	31.2	32.8	24.3	41.2	39.1	47.1	37.0	44.9	42.0	37.3	37.2	37.9	44.3	33.9	41.8	28.6	35.3	40.3	39.9	37.2	38.8	33.1	44.7	38.0	43.7	46.0	24.9	48.4	51.9
Mar 1	24.9	27.5	30.8	30.9	28.1	45.1	57.3	37.3	21.7	32.1	44.6	45.9	48.9	29.6	40.0	40.6	32.1	30.9	39.1	31.7	37.5	31.8	46.4	42.5	38.3	30.6	40.1	32.2	38.9	37.4	40.8	46.3	42.9	41.5	39.0	40.0	37.1	35.1	39.4	44.4	43.4	49.6	41.0	27.3	46.7	47.1
Mar 2	20.5	22.1	25.3	28.3	34.5	41.4	46.9	35.9	37.0	34.3	38.5	40.4	48.5	40.5	48.0	50.7	33.2	37.1	41.3	33.9	35.0	39.5	54.3	46.3	38.2	35.1	37.0	27.9	34.1	45.7	40.3	41.1	41.2	45.9	35.3	50.9	38.4	35.0	51.5	44.1	41.0	47.0	42.9	27.8	38.9	40.6
Mar 3	38.3	22.5	44.8	27.1	37.6	30.9	53.6	41.3	36.1	27.9	46.7	32.8	43.1	39.0	42.4	47.4	34.1	39.7	35.3	34.6	39.2	39.2	52.3	43.9	37.2	44.6	37.9	23.4	34.8	45.4	47.0	36.9	42.2	49.0	39.9	59.3	33.4	35.6	57.4	31.5	42.1	49.4	30.7	31.9	28.7	43.8
Mar 4	40.1	24.3	33.9	21.4	42.2	44.4	53.8	35.9	31.0	42.7	51.3	33.8	32.9	29.0	37.4	40.9	40.2	49.4	31.5	27.4	45.1	46.8	49.6	31.9	40.5	35.3	36.3	37.4	34.5	37.4	48.1	41.4	36.5	37.2	30.9	59.7	29.9	39.5	42.2	46.0	49.9	40.8	46.2	39.3	33.6	35.3
Mar 5	34.0	39.3	34.1	33.1	28.1	39.5	52.5	30.1	24.1	42.6	36.7	36.2	32.1	40.1	28.5	45.9	47.8	44.0	34.2	29.9	43.2	40.0	40.4	36.1	42.6	39.6	43.9	31.8	38.6	44.1	47.5	39.0	37.0	26.7	34.0	45.4	24.6	36.1	44.8	35.9	52.9	41.3	44.5	41.9	25.6	31.1
Mar 6	31.3	49.5	43.7	39.3	30.9	33.3	52.0	35.1	29.2	49.5	42.4	37.7	46.5	40.6	33.8	42.0	47.9	47.8	39.8	24.5	40.8	40.1	32.5	40.5	48.6	44.3	42.5	28.3	35.6	40.0	50.5	42.9	33.7	31.7	36.3	54.1	29.9	31.6	48.5	41.5	47.1	41.7	52.5	31.5	23.2	27.0
Mar 7	44.9	42.3	40.6	35.4	36.3	35.3	46.6	37.9	34.1	46.3	45.0	38.5	43.7	55.8	28.0	49.7	48.6	36.7	31.6	27.4	47.5	44.7	31.4	36.9	49.1	34.1	34.7	21.6	44.3	43.1	41.6	32.1	40.3	37.7	47.9	37.6	38.9	36.8	38.0	37.4	49.6	40.1	44.8	41.8	38.9	18.4
Mar 8	28.9	46.5	39.5	34.8	58.9	27.5	50.4	41.9	43.0	44.5	39.7	42.1	40.3	39.8	43.3	41.1	57.9	30.0	37.1	26.0	38.3	44.5	35.8	37.4	48.0	33.7	33.2	17.4	43.6	43.7	44.6	43.6	41.4	36.9	52.3	32.3	39.0	33.0	47.8	27.6	49.3	38.3	46.1	30.3	37.5	25.6
Mar 9	35.7	41.4	49.9	39.0	63.3	23.7	41.1	36.8	43.7	44.8	34.1	38.4	36.5	39.9	39.0	42.8	49.1	32.8	36.8	20.2	36.5	50.3	38.4	36.8	40.1	39.2	28.9	17.7	43.6	41.3	42.9	39.8	35.9	43.5	45.1	31.7	41.6	29.5	38.2	36.0	55.9	28.5	39.0	26.3	33.6	31.4
Mar 10	27.8	39.1	39.9	34.5	66.3	36.1	46.2	38.5	38.6	44.7	44.5	35.9	32.6	34.3	34.5	42.6	38.3	36.9	37.0	22.6	34.9	53.3	49.4	33.3	36.0	38.1	32.4	27.3	43.6	44.5	41.6	42.1	26.1	53.3	49.7	26.2	39.1	36.2	46.9	28.6	56.7	25.8	40.5	22.4	29.2	38.8
Mar 11	29.6	41.6	30.9	36.5	60.0	43.5	47.7	38.0	37.8	40.8	44.6	41.3	36.4	40.7	25.3	50.2	42.6	45.0	32.2	32.6	38.7	55.5	51.8	36.3	36.6	43.2	22.2	28.4	45.9	52.7	30.4	44.6	18.3	54.5	45.0	22.3	37.0	29.2	29.4	30.7	68.9	32.9	48.7	27.6	30.9	31.8
Mar 12	27.1	51.7	19.7	40.5	50.4	40.2	56.4	48.1	28.2	51.1	47.2	39.6	41.1	46.9	36.2	54.9	48.1	42.6	40.2	42.0	33.9	41.8	41.8	36.7	33.5	43.5	10.5	38.6	57.4	35.6	19.2	43.5	38.5	39.6	45.6	37.6	41.8	44.7	30.6	31.1	59.6	40.8	36.7	33.1	34.5	36.2
Mar 13	33.4	53.8	35.9	30.6	51.5	35.1	45.4	41.9	39.4	49.8	46.9	42.1	43.8	57.8	47.2	44.8	43.7	44.0	45.8	47.3	33.4	43.7	39.2	40.3	36.7	41.3	23.3	36.8	58.6	35.7	19.2	44.4	36.0	44.7	52.3	50.1	37.9	51.7	34.4	32.4	55.4	47.1	37.0	40.7	35.5	36.7
Mar 14	40.8	43.8	31.9	37.8	54.7	46.0	50.4	33.4	40.3	56.1	42.7	34.8	39.7	52.9	43.6	40.4	41.7	50.7	47.5	52.6	41.1	35.0	44.9	48.6	26.1	37.2	29.2	40.0	49.5	48.8	24.4	40.5	31.5	33.0	57.9	49.6	27.4	49.6	26.5	38.4	55.4	44.2	41.4	36.2	49.8	45.6
Mar 15	47.7	46.7	38.8	24.0	61.2	42.1	34.1	26.7	35.9	51.2	52.3	40.7	44.2	46.5	44.5	31.5	37.3	35.3	56.1	55.0	57.4	36.7	41.7	44.3	28.7	47.3	32.2	29.6	47.0	43.9	38.5	35.5	26.0	35.7	60.2	40.0	31.6	39.5	27.7	33.0	55.3	50.9	35.8	52.3	34.6	40.0

TABLE 5. SUMMARY AND EVALUATION OF DAILY TEMPERATURE IN HELP MODEL 100-YEAR SYNTHETIC WEATHER DATA SET

YEAR->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mar 16	41.4	47.3	35.1	29.0	60.6	40.4	44.8	43.6	43.4	47.4	54.1	44.1	50.6	41.5	50.4	33.3	40.5	39.7	55.6	45.8	64.6	33.0	41.0
Mar 17	32.4	47.8	39.2	28.9	45.7	40.4	39.6	48.5	44.5	52.7	47.4	42.9	54.5	36.5	42.2	40.0	51.4	41.9	43.9	39.3	54.2	34.8	36.7
Mar 18	47.6	31.6	41.3	42.6	51.2	37.4	25.3	53.3	40.4	43.9	50.3	39.1	69.9	49.9	33.7	36.0	51.2	41.6	49.9	41.0	54.9	32.7	40.9
Mar 19	59.4	28.7	34.7	47.3	49.7	50.8	37.2	51.1	44.4	57.2	46.6	34.8	62.1	51.7	35.5	44.0	54.7	44.1	46.5	43.0	63.1	40.7	38.2
Mar 20	47.9	31.9	38.8	46.2	47.7	49.6	27.3	54.2	47.4	54.8	43.3	45.6	46.7	53.7	44.5	43.6	49.7	37.2	56.0	45.5	54.3	34.9	43.3
Mar 21	45.6	39.7	37.7	49.7	43.5	43.1	29.3	58.2	51.3	48.6	42.3	50.5	41.9	50.9	44.4	55.6	57.3	43.6	50.9	44.1	43.4	50.6	42.5
Mar 22	43.7	35.8	44.2	36.2	37.4	56.3	34.9	54.8	40.4	50.4	43.7	42.6	40.6	43.6	49.0	44.8	57.8	41.3	49.7	32.0	52.6	57.8	48.4
Mar 23	44.7	54.9	40.4	44.9	38.6	47.3	38.7	40.8	36.4	56.1	45.4	34.1	47.9	31.4	53.4	47.1	60.2	50.4	52.8	33.1	45.2	49.5	42.9
Mar 24	54.5	62.0	49.4	35.2	38.5	49.5	47.3	34.8	46.7	43.5	54.0	35.8	45.0	35.3	52.6	61.7	63.1	37.5	37.8	28.5	47.9	47.8	52.2
Mar 25	57.0	59.8	46.5	34.9	42.5	56.4	43.3	34.2	51.6	43.6	53.2	42.6	46.5	41.1	55.5	49.5	68.9	41.6	38.3	32.4	49.7	47.4	53.4
Mar 26	58.8	61.0	39.9	28.9	41.7	51.2	38.3	34.8	51.9	49.2	41.3	42.0	45.9	41.3	54.3	54.2	67.2	52.0	45.7	36.7	53.2	46.8	44.8
Mar 27	44.8	49.7	37.8	37.5	42.7	45.1	36.9	34.9	48.6	46.7	40.7	41.9	55.7	31.9	60.8	37.2	67.1	61.7	48.2	45.1	44.2	41.9	44.8
Mar 28	53.2	53.4	27.9	42.0	36.4	43.0	43.1	41.1	56.0	37.5	44.2	41.9	57.5	44.0	66.6	35.9	62.5	53.3	43.0	38.0	41.1	43.5	40.2
Mar 29	58.4	52.6	40.3	51.8	41.6	45.0	36.9	50.4	49.3	35.7	34.9	50.7	54.0	34.3	62.8	35.2	54.4	66.1	35.4	50.8	43.2	47.5	52.2
Mar 30	52.9	57.1	38.5	50.6	38.0	46.9	31.0	51.4	54.7	45.5	35.9	54.6	49.9	42.2	53.2	46.4	54.6	69.5	44.0	47.6	55.0	44.1	35.2
Mar 31	48.0	49.8	41.1	40.4	38.0	35.9	45.9	53.6	44.4	49.2	37.0	51.5	49.9	46.6	54.1	39.8	49.7	66.8	40.2	42.1	49.3	43.9	33.8
Apr 1	61.3	51.9	43.8	31.0	29.4	33.6	53.3	43.0	34.4	38.3	28.2	48.8	48.0	39.6	49.2	45.0	57.7	56.9	30.3	32.7	57.6	50.6	35.6
Apr 2	57.1	55.7	42.4	37.7	26.4	39.1	47.1	51.1	37.7	40.3	39.4	59.7	51.4	44.9	48.6	54.8	58.3	58.9	36.6	38.2	51.8	40.0	36.8
Apr 3	37.6	52.6	42.2	44.9	39.1	46.7	50.7	33.1	44.3	35.5	25.4	56.1	51.9	46.7	53.5	63.5	51.3	49.6	38.7	36.6	51.1	42.6	37.4
Apr 4	40.8	43.8	42.8	37.5	37.5	59.8	52.1	41.8	42.1	37.0	36.6	46.8	40.0	48.7	51.8	57.1	56.0	51.1	35.6	37.1	45.6	31.2	32.5
Apr 5	32.9	44.5	38.0	51.8	34.0	60.2	52.6	35.3	44.7	31.6	44.4	41.5	42.7	56.7	47.1	60.0	40.6	53.2	40.9	34.1	60.2	48.2	38.3
Apr 6	34.4	39.6	44.2	50.3	38.0	62.1	42.9	45.0	45.7	41.6	56.5	48.3	37.4	50.6	61.3	49.3	58.9	43.7	50.3	43.3	47.9	36.6	36.5
Apr 7	39.5	47.9	38.2	52.7	36.3	59.3	33.5	53.6	38.8	41.8	54.8	54.4	39.1	45.1	52.0	52.9	44.7	44.2	37.6	46.8	39.8	45.0	44.5
Apr 8	26.1	45.3	45.3	52.5	31.7	54.4	36.5	41.3	42.3	49.9	46.4	46.5	45.5	39.9	54.9	55.8	43.7	48.3	39.7	54.3	36.8	46.7	35.2
Apr 9	46.9	41.2	47.8	53.5	41.3	50.5	40.3	45.0	56.5	42.6	34.0	40.8	42.7	41.0	52.3	64.8	49.0	36.0	42.1	62.1	39.6	44.0	36.7
Apr 10	35.7	54.6	54.3	49.7	33.2	66.0	37.4	49.8	56.9	39.0	33.3	39.8	38.7	51.6	44.8	57.5	53.7	34.2	43.4	56.0	37.8	48.3	36.5
Apr 11	39.3	68.9	49.4	42.3	31.1	59.8	40.7	49.2	68.3	47.6	39.2	40.0	54.3	56.5	47.5	55.3	44.9	33.2	38.4	66.6	32.2	48.0	46.0
Apr 12	45.6	62.4	40.4	43.1	45.0	49.7	34.1	51.4	59.0	52.8	53.1	49.9	64.4	64.9	48.6	49.0	40.2	37.4	54.5	54.8	29.5	55.2	45.0
Apr 13	53.3	66.4	52.2	41.6	37.1	46.7	44.6	62.9	54.0	46.8	58.3	48.9	61.0	63.7	58.0	45.5	49.1	40.5	56.0	77.2	24.9	57.2	46.3
Apr 14	47.8	56.6	49.8	37.9	37.0	52.7	53.9	62.9	53.2	47.3	64.9	51.0	65.3	57.6	59.8	45.8	43.2	38.2	59.2	82.1	31.7	58.3	57.4
Apr 15	53.9	50.6	46.8	36.9	41.1	53.5	58.0	57.9	61.9	51.1	49.7	52.6	50.7	54.1	61.2	48.8	48.4	49.4	66.6	68.7	44.7	67.1	41.8
Apr 16	63.6	42.7	48.9	37.4	40.6	41.9	68.6	59.7	50.0	54.4	46.7	60.2	57.9	61.8	56.5	40.7	54.9	39.5	58.7	54.8	57.4	62.1	46.2
Apr 17	66.3	51.2	62.0	46.3	42.9	53.5	59.3	45.3	47.7	51.2	49.9	61.1	53.1	57.5	58.3	44.2	45.8	40.9	49.5	46.6	60.7	53.3	45.6
Apr 18	71.6	55.2	56.2	45.3	39.4	58.9	52.5	49.0	50.9	52.7	60.5	51.4	44.5	66.4	46.9	42.5	45.3	53.2	53.5	45.6	64.1	52.4	38.5
Apr 19	68.8	44.1	60.8	58.2	52.1	49.7	46.3	54.6	57.3	60.8	64.8	45.7	48.9	57.2	50.8	51.6	38.9	40.6	59.5	48.0	50.5	55.8	33.3
Apr 20	70.6	50.3	60.0	67.3	48.2	52.5	43.2	58.1	59.6	62.4	57.3	54.6	51.0	54.9	54.2	57.8	40.2	45.2	52.6	55.3	54.7	48.6	44.0
Apr 21	55.7	53.3	62.5	57.1	58.2	57.3	56.4	57.5	52.2	63.7	63.3	49.2	46.0	55.1	53.1	64.7	40.0	47.1	52.3	55.5	47.2	42.9	45.5
Apr 22	47.3	59.1	59.4	51.1	61.9	45.3	50.5	60.8	53.2	67.3	66.7	40.9	51.4	55.8	49.9	61.9	53.7	58.0	58.9	55.2	52.4	53.9	44.6
Apr 23	51.2	64.7	63.7	50.8	61.4	40.7	42.9	47.9	44.9	63.3	57.7	40.3	62.8	57.2	51.3	51.6	54.0	46.6	61.4	49.3	50.3	55.6	45.0
Apr 24	52.5	62.5	55.4	60.1	46.7	43.3	51.7	47.5	46.4	54.9	52.9	45.8	70.6	47.3	42.8	70.9	53.7	35.3	53.5	49.2	47.7	45.4	53.8
Apr 25	45.3	51.0	63.1	56.0	46.5	40.7	46.7	44.1	51.4	46.3	57.0	47.0	71.1	41.5	40.3	69.6	58.4	39.9	58.7	71.4	48.6	52.1	53.3
Apr 26	55.3	50.5	61.5	55.3	49.2	39.4	58.3	48.1	65.3	46.0	62.1	58.4	57.8	52.9	49.9	56.2	47.2	49.0	64.7	56.2	54.6	62.4	45.1
Apr 27	42.9	39.0	68.1	48.1	47.9	51.1	63.7	49.9	56.3	43.2	66.3	61.7	52.0	48.9	53.5	48.2	43.7	51.4	69.4	68.7	44.3	49.8	41.3
Apr 28	47.9	53.6	57.1	51.9	52.5	44.9	59.3	61.6	51.9	47.8	61.7	66.2	53.4	55.8	59.7	49.7	61.2	47.9	54.3	69.2	45.6	46.4	48.6
Apr 29	54.2	57.4	53.0	49.7	60.5	53.9	54.8	61.3	52.8	54.2	64.5	63.1	49.1	60.4	49.3	50.7	60.6	51.8	60.6	59.6	38.0	56.6	58.2
Apr 30	52.1	56.1	58.8	56.4	62.9	51.9	59.0	61.7	54.4	52.3	62.0	71.2	58.4	53.6	50.8	53.5	56.2	44.7	44.0	57.8	51.1	49.3	55.3
May 1	55.7	61.2	51.6	59.0	52.7	53.4	55.0	59.8	54.4	53.3	56.0	60.4	57.0	54.3	57.0	57.6	54.9	48.4	50.2	65.4	62.7	45.4	51.3
May 2	55.8	48.9	54.0	60.2	42.2	63.5	60.6	59.3	51.9	54.8	57.5	56.1	51.5	58.3	55.2	53.0	58.7	50.6	43.7	71.7	60.1	50.8	55.7
May 3	64.0	60.5	51.8	66.0	52.7	61.3	60.1	60.0	57.4	54.8	55.7	56.9	54.1	61.7	67.0	50.2	50.3	59.3	51.0	64.9	60.8	56.1	50.1
May 4	62.7	67.7	47.7	64.3	52.3	57.2	57.7	55.7	61.0	55.5	55.2	60.9	59.1	67.2	75.2	54.2	44.3	55.3	57.3	63.4	54.9	44.7	52.4
May 5	59.8	52.6	61.1	56.1	54.9	65.4	53.1	65.7	62.3	56.2	52.2	51.8	54.1	60.0	62.3	60.8	49.9	55.8	57.2	64.1	51.3	59.6	64.4
May 6	55.8	58.9	59.3	56.1	61.3	57.4	59.2	61.3	55.4	61.4	48.1	55.4	50.1	57.0	59.3	50.4	44.8	47.7	52.0	60.9	45.8	60.2	60.9
May 7	58.7	63.8	57.1	59.8	60.2	55.6	55.2	64.5	57.5	68.6	54.0	61.5	47.7	56.1	63.7	63.8	52.7	55.6	52.6	57.4	55.4	69.5	68.2
May 8	64.9	64.5	57.8	57.3	60.0	58.2	50.8	74.3	61.5	58.9	59.9	59.5	47.1	54.0	65.9	53.8	56.7	53.4	46.0	63.4	51.4	64.7	54.9
May 9	55.2	61.5	59.0	62.7	58.4	55.5	54.4	66.5	55.6	57.8	62.9	58.9	50.7	46.0	60.0	48.1	52.6	58.9	46.9	64.0	56.8	64.2	58.3
May 10	58.5	62.6	64.0	63.0	51.3	46.5	58.7	66.0	61.4	62.3	61.7	60.8	57.5	52.4	68.1	60.0	56.0	52.7	55.5	61.7	55.9	66.3	70.1
May 11	63.4	60.3	54.0	68.4	52.2	58.7	55.9	72.6	51.6	58.9	53.8	59.2	53.7	46.0	62.3	59.5	61.2	54.6	50.0	55.0	56.8	53.7	60.2
May 12	63.7	56.3	56.9	68.7	60.4	68.0	59.5	62.5	50.9	58.6	56.9	63.3	55.3	55.1	62.1	61.3	63.3	53.9	62.3	51.8	55.0	53.4	59.1
May 13	58.9	48.7	58.1	61.4	63.8	70.9	57.9	52.1	57.0	64.2	54.2	67.3	57.7	54.1	69.0	64.8	71.9	46.5	59.6	60.1	56.8	59.2	53.7
May 14	62.3	44.4	60.1	57.0	63.6	70.6	48.7	51.2	57.2	56.5	53.4	60.8	62.5	49.0	69.2	61.1	66.3	49.2	60.9	53.1	52.5	52.4	60.7
May 15	62.0	41.2	60.4	66.9	70.9	70.6	56.2	57.9	60.1	58.6	54.9	55.3	61.5	54.5	57.5	66.7	62.8	60.2	53.5	56.1	48.7	48.6	78.1
May 16	58.4	40.6	56.4	69.8	70.7	62.9	51.2	55.4	58.6	62.6	61.9	51.0	72.7	56.8	61.8	64.1	62.9	64.1	59.3	62.8	47.6	52.7	69.4
May 17	60.7	45.4	60.2	66.6	62.2	67.6	58.6	64.4	60.8	65.6	60.2	60.9	66.9	65.9	60.4	57.1	63.0	66.3	62.2	63.2	62.0	57.2	75.6
May 18	57.7	50.6	55.4	60.1	53.4	68.3	64.4	68.6	59.2	65.4	61.3	55.6	74.1	70.7	64.3	57.1	63.6	63.2	66.4	59.5	64.4	64.5	71.6
May 19	59.9	60.5	51.7	57.4	60.5	74.7	67.8	61.4	54.9	67.6	62.6	60.4	70.1	72.6	57.0	56.2	59.1	49.6	58.8	59.8	62.5	59.4	70.0
May 20	52.8	56.0	53.9	52.8	59.8	73.0	61.8	57.6	59.0	60.1	66.5	64.7	71.2	79.4	61.0	56.9	59.3	58.1	53.4	59.1	59.3	62.9	62.4
May 21	61.6	62.4	61.6	55.6	57.5	64.5	63.9	48.7	60.5	54.3	76.3	64.6	66.3	70.1	55.7	61.4	68.0	54.0	56.7	63.1	71.9	59.1	60.4
May 22	62.3	60.1	63.8	60.7	64.7	60.9	60.7	48.9	67.6	58.2	71.6	52.9	68.4	66.0	73.4	61.5	60.8	56.2	56.5	61.0	72.8	57.3	60.1
May 23	51.5	55.2	64.1	62.9	61.7	62.7	60.1	55.0	66.8	66.6	70.8	58.6	65.3	65.9	71.0	64.6	60.8	65.0	51.3	61.2	77.3	60.9	67.0
May 24	57.5	55.3	63.7	61.2	72.2	68.1	49.7	50.5	62.5	61.8	70.8	64.5	67.1	61.4	60.5	58.2	54.2	69.2	64.6	69.1	71.5	57.5	56.5
May 25	53.5	62.1	61.3	58.6	72.7	59.5	47.2	56.5	55.6	65.4	69.7	55.8	68.8	66.5	61.2	57.0	57.2	80.8	60.9	62.8	71.1	55.9	52.9
May 26	62.4	62.1	58.2	51.0	64.0	66.0	57.2	62.1	65.4	65.3	66.8	53.5	62.7	65.0	71.9	62.9	65.5	75.2	62.2	59.4	67.0	62.4	53.9
May 27	65.7	64.1	58.0	47.4	70.9	59.8	58.3	50.2	63.2	55.6	67.6	57.0	56.8	68.7	70.9	73.2	71.5	77.1	63.4	65.0	70.1	64.7	55.4
May 28	64.9	52.5	67.3	52.8	67.5	66.6	68.8	51.6	64.4	65.0	64.1	60.7	59.4	60.0	62.5	72.2	76.2	80.0	68.2	68.6	58.5	64.4	56.5
May 29	72.8	59.5	66.7	52.3	70.9	68.4	75.0	62.6	67.0	63.0	63.5	66.9	67.2	66.2	59.5	70.4	77.0	80.2	62.7	65.7	60.6	58.3	62.1

YEAR->	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
Mar 16	42.7	36.0	42.0	47.4	33.1	50.1	37.3	45.6	44.4	37.6	39.2	52.4	46.8	28.5	44.6	43.8	31.8	47.8	44.2	37.3	44.3	54.3	29.6
Mar 17	35.8	42.1	36.1	51.7	29.3	57.7	38.8	51.5	52.8	37.5	46.3	47.7	51.7	37.5	47.9	30.5	35.5	58.4	37.8	42.9	48.7	52.0	28.3
Mar 18	41.9	52.5	29.8	46.9	30.5	49.7	44.4	44.0	62.5	39.2	47.9	55.9	59.4	37.4	54.2	33.7	30.5	58.9	44.8	58.0	46.1	55.2	38.7
Mar 19	46.2	38.2	37.8	44.1	30.8	58.5	37.6	39.7	53.9	39.0	42.6	69.2	46.9	41.6	58.5	21.9	31.4	68.9	41.1	66.0	49.5	48.5	44.0
Mar 20	43.2	39.3	26.7	33.3	28.0	56.9	37.1	42.2	43.7	47.2	39.5	50.7	54.1	37.5	39.5	29.3	26.8	66.9	41.9	56.8	51.4	49.4	37.4
Mar 21	39.2	42.8	33.6	22.2	24.3	50.3	47.8	43.5	54.0	43.6	40.1	40.9	45.9	45.3	53.3	43.2	28.3	61.6	50.8	54.5	41.7	33.5	38.9
Mar 22	34.9	48.8	44.7	30.3	30.6	45.4	46.0	43.4	43.5	61.4	42.8	48.0	45.6	37.6	41.9	36.5	38.0	55.8	52.4	53.0	49.6	44.7	46.2
Mar 23	39.9	53.3	35.3	50.5	46.4	48.2	51.5	43.4	40.9	55.2	53.6	42.6	53.0	47.7	41.1	30.8	45.0	50.8	53.7	50.9	54.0	33.0	43.3
Mar 24	35.9	54.5	39.0	51.7	41.7	43.1	50.3	39.2	35.1	53.4	62.0	49.1	46.7	47.7	49.6	28.8	41.3	47.4	51.9	47.6	42.3	47.0	44.7
Mar 25	43.3	48.5	40.9	46.5	31.4	47.3	51.1	34.6	39.7	53.0	59.1	45.8	54.7	44.0	49.9	45.8	44.2	42.4	53.9	47.7	52.0	51.8	42.6
Mar 26	41.7	46.4	47.1	47.9	40.5	47.4	56.0	27.5	47.8	46.2	52.3	34.7	46.0	52.2	64.0	45.7	45.5	50.9	49.2	45.9	57.2	54.1	34.7
Mar 27	44.2	39.5	68.7	45.3	32.6	41.9	47.5	39.2	56.1	36.2	52.1	38.2	39.2	52.2	55.5	40.7	35.4	53.6	39.8	45.0	43.0	56.3	51.1
Mar 28	46.0	49.5	71.7	40.1	32.6	52.2	55.1	46.2	50.2	34.8	51.4	48.0	33.0	46.2	54.2	46.6	32.8	64.4	41.4	37.7	53.0	42.7	52.9
Mar 29	41.0	45.4	70.9	47.8	43.6	49.5	57.7	40.7	48.3	42.6	44.5	50.6	30.9	33.3	62.0	44.8	38.7	52.1	32.9	50.8	57.1	37.2	53.4
Mar 30	42.3	44.2	54.3	51.9	48.4	36.6	42.8	35.5	48.1	38.8	46.7	58.0	38.8	35.0	65.6	50.0	45.9	47.6	33.7	61.7	55.9	33.3	53.6
Mar 31	45.3	37.5	62.9	50.3	47.2	41.3	54.8	29.7	34.7	37.2	27.8	52.2	25.1	24.2	58.4	45.0	41.2	52.6	24.9	66.3	46.6	30.3	50.7
Apr 1	27.2	38.3	59.8	55.1	41.7	46.0	47.0	43.3	34.7	31.5	28.2	35.5	35.5	33.7	51.3	43.1	44.7	58.5	38.6	58.1	40.5	36.4	40.8
Apr 2	24.0	31.7	58.9	62.3	42.3	42.6	47.3	31.9	34.3	50.5	40.1	36.8	37.3	36.8	54.5	52.1	43.8	45.2	40.4	50.6	45.4	42.5	36.9
Apr 3	28.7	43.9	43.3	58.8	40.1	56.7	47.5	42.0	46.3	38.8	34.6	47.6	47.4	49.2	44.8	58.4	53.9	45.7	49.4	48.7	37.8	50.6	33.2
Apr 4	29.5	37.0	50.5	57.3	37.8	47.1	55.6	43.8	55.1	40.3	35.5	43.8	47.4	39.3	44.5	59.7	63.9	41.4	43.5	48.8	37.3	45.9	43.3
Apr 5	32.0	28.3	44.5	64.4	32.3	41.4	59.2	43.1	59.2	35.8	42.5	45.6	39.9	46.6	44.4	55.7	63.6	44.7	44.1	62.4	45.6	49.7	38.6
Apr 6	31.1	33.2	45.2	62.5	42.3	40.5	57.6	49.9	53.6	41.3	38.2	40.9	44.1	41.7	45.7	56.9	55.2	52.1	43.8	58.2	62.6	54.6	37.8
Apr 7	33.0	46.3	46.8	47.6	43.2	31.7	42.4	41.3	64.7	47.3	44.4	39.2	42.5	39.7	53.9	54.4	46.5	61.9	54.0	63.2	53.1	60.3	37.0
Apr 8	43.2	37.5	37.7	57.3	49.9	42.7	53.5	43.2	63.6	39.4	44.0	39.0	51.1	51.4	48.1	55.8	42.0	57.8	47.7	49.7	59.5	56.9	43.9
Apr 9	45.4	42.0	46.1	62.7	39.8	47.3	39.1	36.0	45.6	32.3	43.5	36.6	41.2	59.4	41.3	51.2	44.6	53.0	57.9	59.6	61.7	65.4	43.1
Apr 10	47.1	41.5	31.9	60.5	56.7	51.4	34.4	40.2	42.9	38.4	38.1	52.5	44.8	62.0	48.5	54.1	52.8	39.7	56.3	58.8	59.9	51.3	37.2
Apr 11	50.2	41.9	33.7	49.1	44.3	54.4	34.4	37.9	61.9	42.6	34.9	53.0	48.2	51.0	48.6	39.3	54.4	42.1	54.4	54.9	61.2	57.2	54.5
Apr 12	46.2	38.9	31.8	54.8	56.7	58.5	37.1	47.5	58.7	43.5	34.0	52.4	48.4	49.6	57.1	39.4	56.4	52.8	59.8	55.9	62.5	57.1	37.8
Apr 13	42.7	34.0	45.0	52.6	58.0	60.1	28.0	43.0	46.5	49.3	41.6	64.2	47.8	54.9	52.9	30.3	51.6	51.9	60.0	46.7	59.7	63.3	32.9
Apr 14	44.1	42.8	48.4	54.6	54.0	50.4	41.0	45.3	44.9	50.9	43.2	60.2	60.7	58.3	54.4	37.7	45.0	47.7	51.2	55.9	53.4	52.7	44.5
Apr 15	55.3	40.7	49.4	39.2	45.9	60.6	51.3	41.2	34.8	61.5	43.7	62.4	53.6	61.3	55.2	35.9	49.2	56.7	52.6	62.1	45.7	50.4	56.8
Apr 16	46.3	35.4	51.0	43.7	47.5	55.9	45.7	40.9	56.8	64.6	48.2	60.6	60.3	62.3	53.5	38.8	38.0	57.9	57.7	53.3	46.4	54.2	64.3
Apr 17	42.2	50.7	45.5	48.3	45.8	59.8	51.0	35.9	53.9	60.8	50.1	55.2	56.5	52.6	49.6	38.4	42.1	61.9	63.1	56.8	61.8	55.3	56.0
Apr 18	43.2	50.2	49.3	53.0	31.1	54.6	53.1	40.2	62.8	60.5	49.8	54.0	59.6	55.6	58.6	39.0	48.9	60.8	70.4	64.3	54.6	60.1	53.7
Apr 19	40.9	63.2	61.7	62.3	38.7	67.6	60.2	35.3	64.3	61.1	46.1	42.2	55.6	51.4	65.1	50.6	51.4	50.4	64.0	62.4	47.4	53.0	54.3
Apr 20	45.7	63.6	68.0	61.5	41.7	58.7	57.0	47.5	64.8	55.2	46.1	44.0	61.3	48.3	61.9	41.3	50.2	49.4	58.9	62.2	51.3	61.7	60.8
Apr 21	51.3	60.5	71.7	55.3	43.5	49.3	58.5	50.9	66.0	51.0	40.1	46.8	63.8	47.0	58.3	45.5	42.5	50.5	56.4	59.2	50.3	65.1	57.2
Apr 22	55.6	63.8	56.4	52.8	50.5	48.2	50.2	47.6	53.6	58.0	32.7	36.1	67.1	56.1	51.3	46.3	37.6	54.6	53.1	59.6	49.7	56.4	54.5
Apr 23	51.1	73.2	66.6	52.3	47.0	48.0	53.8	45.9	58.4	49.7	35.0	49.8	67.3	50.7	48.5	44.9	43.6	57.6	57.9	56.7	41.2	61.2	54.1
Apr 24	45.0	68.2	52.5	52.7	45.3	49.8	53.3	52.6	59.5	51.1	51.7	43.8	62.0	53.3	49.3	51.8	43.7	47.1	50.1	58.1	33.0	58.8	48.1
Apr 25	45.5	62.5	58.2	46.2	48.3	42.7	62.3	56.8	53.7	54.1	49.2	55.3	63.3	58.2	55.7	56.2	39.6	47.2	53.0	53.0	41.1	62.5	68.7
Apr 26	46.2	74.6	62.3	46.5	47.1	43.8	65.4	61.3	54.0	54.0	48.1	52.8	61.9	53.9	58.7	54.9	51.7	47.1	54.5	52.2	44.1	52.9	59.7
Apr 27	58.0	75.5	52.8	51.9	52.3	40.0	73.0	62.4	58.6	47.3	50.2	53.1	64.7	62.2	52.3	56.2	61.3	51.5	73.5	54.7	40.5	54.1	55.9
Apr 28	63.5	64.0	49.3	58.2	52.2	31.2	55.0	55.3	61.7	53.2	49.5	57.6	65.2	52.0	55.4	50.8	56.3	43.8	73.8	47.7	59.3	55.7	45.4
Apr 29	58.9	62.2	61.7	57.6	48.5	55.8	57.2	44.2	65.3	57.3	53.5	57.2	65.5	47.1	63.5	43.5	58.7	44.1	72.4	46.3	56.9	53.3	48.5
Apr 30	45.9	59.4	60.7	53.8	51.4	55.9	53.2	50.7	56.8	46.2	47.0	57.0	59.2	44.8	68.7	39.0	55.4	43.7	65.9	50.0	47.4	57.3	48.0
May 1	47.6	59.1	56.1	46.0	63.0	48.5	64.9	55.4	61.3	51.9	49.9	56.8	50.1	57.3	64.4	50.5	46.9	48.3	65.4	57.9	42.8	45.9	50.3
May 2	51.4	59.1	52.0	52.0	69.7	50.2	62.9	49.4	73.1	61.2	59.2	58.0	42.6	55.3	56.7	58.3	52.0	52.0	68.2	56.0	45.4	56.6	56.0
May 3	51.0	65.3	45.8	52.2	54.5	56.4	64.7	46.4	60.8	49.7	51.0	56.2	48.8	54.3	52.4	56.3	48.1	54.8	67.4	60.6	44.2	55.3	50.8
May 4	45.1	49.2	43.1	49.5	50.9	47.9	69.2	50.0	54.2	52.2	58.8	56.4	58.7	46.9	65.1	56.5	53.5	55.5	60.2	63.3	45.9	59.3	57.9
May 5	59.6	52.1	56.9	47.7	48.1	47.1	57.0	49.1	51.3	49.7	52.7	59.1	50.9	51.4	66.5	50.8	55.5	53.7	61.7	50.8	55.4	51.4	50.6
May 6	64.3	49.9	55.8	43.0	57.2	46.2	51.8	54.7	57.8	64.0	60.1	54.3	44.1	48.8	61.8	59.2	48.4	46.7	63.4	57.4	68.6	53.1	61.2
May 7	61.7	59.5	62.1	56.4	47.4	52.9	62.6	59.1	47.7	65.9	62.3	59.5	43.1	52.8	55.5	50.2	42.6	48.1	59.7	63.9	65.1	50.4	57.4
May 8	62.9	52.2	62.9	59.5	48.5	55.8	57.0	64.7	44.4	65.0	61.6	73.2	36.2	53.5	50.0	49.5	36.7	55.1	53.6	59.4	67.0	42.9	62.4
May 9	62.4	55.2	61.2	64.5	48.3	56.1	51.5	66.6	48.4	59.1	53.7	60.7	58.3	62.4	57.4	48.5	47.8	60.2	51.9	61.9	69.2	52.2	62.4
May 10	56.7	39.8	55.4	67.1	56.7	59.3	50.2	59.1	42.2	53.8	48.0	54.0	52.3	63.9	69.3	44.3	53.4	68.5	47.9	58.8	62.5	53.6	55.9
May 11	66.6	46.4	60.0	64.1	52.4	59.3	49.1	60.2	46.4	57.4	46.1	56.5	52.9	67.1	67.8	50.9	55.6	63.1	46.3	65.5	61.4	55.0	56.5
May 12	56.0	51.3	53.4	67.3	54.9	56.4	58.3	50.1	50.0	55.4	44.4	61.9	51.0	70.4	61.9	48.4	57.8	57.1	56.8	62.1	53.5	57.4	66.3
May 13	52.5	49.6	59.5	61.6	52.0	58.2	66.0	58.6	59.9	52.9	62.4	53.0	53.3	68.6	61.5	55.7	70.3	64.6	57.2	68.5	44.6	65.7	69.4
May 14	60.1	57.7	65.6	56.3	61.2	67.7	68.4	62.1	65.3	50.4	60.1	62.7	52.0	68.2	59.0	56.7	62.6	61.0	58.9	61.7	50.4	65.8	67.3
May 15	49.5	56.2	62.7	64.2	55.5	65.4	65.6	52.7	65.1	51.0	57.8	61.5	67.8	61.2	59.2	53.8	71.5	64.0	54.8	52.9	54.6	67.3	59.5
May 16	50.7	66.4	50.6	63.9	48.4	58.1	58.2	52.1	61.8	57.4	61.5	66.4	58.9	58.1	54.8	64.8	68.8	51.5	61.2	57.6	56.9	60.5	57.0
May 17	54.1	61.4	51.0	55.6	51.5	65.7	55.2	57.6	62.9	56.9	62.3	70.7	66.7	56.9	62.4	68.5	71.6	53.9	58.6	67.1	53.8	57.6	57.8
May 18	56.4	59.4	47.9	70.0	49.3	63.7	59.3	58.1	72.2	68.2	64.5	70.9	66.9	58.2	66.8	66.6	78.2	59.1	62.3	60.1	52.7	59.1	60.4
May 19	57.4	53.4	54.2	66.3	54.8	63.6	56.7	64.4	69.2	68.7	68.7	73.0	63.5	64.6	67.7	56.7	69.1	49.7	64.1	63.2	60.5	60.3	57.7
May 20	61.8	49.2	58.5	64.1	58.6	62.8	59.5	62.0	74.0	68.7	60.2	67.3	59.4	60.7	69.1	53.7	62.1	56.0	57.0	64.5	62.2	66.4	59.6
May 21	62.6	58.0	73.6	58.8	60.9	55.0	65.7	61.0	75.5	67.7	66.9	64.4	55.3	54.5	69.7	53.9	57.0	56.3	59.3	55.9	65.6	64.2	67.4
May 22	57.9	57.9	79.5	58.8	57.1	57.9	63.5	59.7	68.4	72.5	69.9	66.0	54.1	60.0	70.4	60.3	65.9	48.6	57.1	49.9	60.0	66.6	66.2
May 23	54.7	62.5	82.6	63.4	56.7	66.0	65.4	61.4	59.0	59.5	67.2	69.4	54.9	65.7	70.4	65.3	59.9	54.0	60.0	50.3	57.5	62.4	59.8
May 24	53.4	58.9	72.6	54.8	62.5	61.7	64.9	65.9	61.3	59.2	60.1	64.0	57.6	61.3	73.8	71.4	67.2	52.6	57.5	51.3	65.0	64.1	67.5
May 25	58.4	54.7	66.6	65.2	59.9	66.3	63.4	65.3	66.5	66.0	64.2	71.3	48.7	74.5	65.5	72.7	66.3	51.6	57.3	63.7	62.7	73.1	68.9
May 26	56.7	55.3	63.7	65.4	58.5	71.2	65.7	68.3	61.4	63.3	59.9	72.3	49.8	65.5	75.1	71.5	74.2	53.2	58.8	63.3	58.3	66.6	69.7
May 27	60.4	54.3	62.3	64.6	65.8	65.1	68.4	71.4	59.7	63.1	66.3	78.7	54.3	66.9	64.4	65.4	71.3	54.4	56.8	60.1	71.0	64.2	68.0
May 28	69.7	47.6	60.2	70.2	72.5	69.3	62.3	68.3	57.2	67.5	61.2	71.0	57.0	60.0	66.2	72.6	67.4	62.6	56.4	59.5	64.3	69.3	75.2
May 29	68.3	50.1	69.9	68.3	74.0	77.6	61.9	65.7	55.5	69.9	60.8	64.7	63.0	63.0	66.1	68.6	64.2	70.4	64.8	56.7	59.3	69.2	70.4

YEAR->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
May 30	70.7	58.5	70.8	57.9	65.7	63.6	69.7	66.2	72.9	60.4	66.9	52.7	62.9	68.7	64.3	67.3	75.5	75.0	63.5	69.2	63.2	59.9	64.0	71.1	56.9	71.6	72.2	70.6	78.5	63.8	63.8	61.6	73.8	64.3	69.0	66.8	60.8	64.3	70.9	54.1	68.2	63.8	66.2	54.9	66.2	76.0
May 31	72.4	63.3	76.2	60.1	61.4	73.4	70.1	62.0	73.1	66.4	69.4	53.9	67.2	58.7	73.3	61.8	74.3	69.1	64.7	57.2	67.4	56.0	65.9	75.7	57.9	72.8	67.3	70.7	73.9	65.6	62.6	63.8	64.5	65.0	66.9	71.0	72.6	66.6	65.7	55.7	71.2	68.6	72.8	56.0	67.5	68.5
Jun 1	83.2	60.0	76.3	58.2	62.8	73.5	70.4	61.7	80.7	62.1	78.2	59.9	72.5	69.5	74.7	63.9	77.5	66.4	64.2	51.0	66.1	63.3	65.3	79.6	66.3	73.4	71.8	76.8	69.7	66.1	57.2	67.6	61.9	65.7	70.1	66.2	76.2	68.6	52.9	52.7	69.3	72.1	70.4	58.6	59.2	60.6
Jun 2	73.7	56.2	76.8	61.2	67.5	69.8	68.5	69.9	77.7	69.0	78.4	62.8	70.4	70.4	74.1	65.2	70.5	69.6	60.6	57.6	65.7	67.4	66.9	81.0	71.9	73.8	69.5	66.9	62.8	66.6	60.8	63.2	59.4	71.1	69.0	71.1	77.9	67.5	57.5	49.5	72.8	68.3	66.4	61.0	59.9	58.5
Jun 3	65.7	55.5	70.8	68.4	64.7	64.3	66.0	65.5	79.6	63.9	74.2	66.6	69.7	68.4	67.9	62.4	72.4	63.6	63.6	57.4	63.4	66.6	60.6	73.4	69.0	71.0	70.7	71.0	66.2	68.5	61.5	65.1	59.0	73.4	73.7	69.5	67.1	60.8	64.3	63.7	74.0	71.7	70.3	57.1	63.3	74.9
Jun 4	68.5	63.5	79.6	70.2	61.8	63.1	62.9	69.5	75.9	68.1	72.9	69.8	68.7	71.3	70.2	61.9	77.4	64.9	64.4	59.3	70.6	66.1	67.9	70.5	75.4	75.8	68.0	62.9	69.8	70.2	57.8	69.2	64.3	73.9	75.2	68.8	64.5	64.3	60.0	67.1	65.3	68.6	68.0	69.3	59.9	77.7
Jun 5	75.0	64.8	71.8	70.8	64.4	60.5	62.8	68.6	76.5	67.5	70.2	67.8	68.9	75.3	67.8	69.7	73.8	67.0	62.7	66.8	70.4	64.6	63.5	62.9	74.8	68.0	61.7	69.7	72.2	62.7	67.8	65.4	66.1	76.5	72.6	75.5	70.2	69.1	60.0	71.0	69.8	67.8	64.5	63.9	60.9	75.2
Jun 6	74.9	66.6	67.6	68.2	64.9	66.9	66.7	72.7	81.3	70.7	58.7	67.8	69.9	76.9	65.4	72.1	71.4	68.5	59.9	72.7	69.7	72.9	62.4	64.5	70.5	69.8	67.8	59.0	76.6	69.1	72.2	73.0	71.2	76.7	70.9	71.1	60.0	61.5	68.6	70.4	70.1	72.8	66.7	69.5	67.8	72.8
Jun 7	74.3	66.9	62.9	64.8	62.6	72.7	68.8	75.2	72.0	72.5	62.7	64.8	73.4	80.6	66.9	72.3	63.9	71.4	55.7	60.2	72.0	75.5	65.0	69.3	67.5	71.7	64.9	59.9	76.1	63.6	72.5	70.7	70.1	68.2	67.7	67.6	62.5	62.3	67.3	60.8	66.2	77.1	54.1	70.5	72.3	71.6
Jun 8	73.8	77.8	58.9	66.7	69.8	71.2	70.0	76.5	69.2	74.6	59.0	61.3	75.4	70.9	71.6	76.6	60.3	74.0	58.6	63.9	63.6	70.0	60.9	73.7	66.2	73.7	71.6	64.7	67.4	65.9	73.1	69.9	66.3	63.3	64.2	65.0	61.7	65.5	65.9	65.2	61.6	71.6	70.3	66.8	72.3	78.3
Jun 9	73.7	75.9	63.7	65.2	78.8	68.7	66.4	70.3	70.3	77.9	67.1	66.4	66.2	67.3	71.3	68.4	65.0	66.6	71.1	59.4	66.6	73.6	67.2	78.0	60.8	75.7	67.5	63.6	71.6	63.6	71.6	66.0	64.7	64.3	66.0	69.3	66.0	68.2	64.9	72.5	63.5	75.4	69.5	70.2	71.6	67.6
Jun 10	71.2	68.8	59.6	63.6	77.6	68.1	74.9	68.8	62.9	74.4	74.8	66.6	64.3	64.1	72.7	72.9	54.5	69.8	72.5	62.4	71.2	76.7	63.9	80.3	63.4	74.3	71.7	65.2	76.1	64.5	71.2	70.4	63.7	64.3	71.2	76.0	71.2	58.4	68.3	60.4	65.1	74.8	71.6	73.8	72.4	69.1
Jun 11	76.8	69.0	59.3	67.5	81.4	62.7	70.2	64.8	58.3	73.5	75.6	71.7	66.2	66.2	72.0	74.8	56.0	59.8	75.8	64.6	65.0	71.6	63.4	80.0	66.3	74.1	71.0	67.0	72.6	64.1	67.9	70.9	64.6	69.5	75.8	71.2	62.7	63.2	72.7	72.8	64.8	70.6	75.8	66.4	75.7	68.5
Jun 12	67.5	64.7	58.6	68.8	73.7	60.9	69.6	68.2	60.8	75.9	68.4	71.1	69.3	66.1	73.7	72.4	49.9	53.7	75.0	67.9	65.3	69.0	64.2	80.0	64.9	80.1	74.9	68.6	72.9	70.4	75.8	77.5	65.6	63.6	71.6	70.1	63.7	70.3	74.7	77.1	70.1	65.7	79.8	69.5	72.3	68.9
Jun 13	63.8	67.7	55.8	69.9	62.0	61.1	65.3	62.2	76.3	73.5	73.6	68.4	63.2	68.1	73.0	68.7	57.8	59.9	71.8	71.6	66.5	73.5	65.7	79.3	60.5	77.7	76.5	70.2	66.6	80.7	70.3	65.7	66.5	67.0	79.1	71.4	66.0	64.6	67.9	76.8	73.4	69.0	72.2	66.3	66.1	67.2
Jun 14	64.7	64.6	60.6	72.0	64.6	69.0	67.6	62.7	75.8	78.2	73.1	66.1	72.4	68.8	79.8	69.3	61.5	66.7	70.4	69.4	69.4	75.0	63.0	75.7	68.8	79.3	76.3	63.9	69.5	76.9	67.9	65.1	65.4	73.5	78.1	79.1	69.2	68.1	71.0	76.5	69.6	65.4	75.8	64.4	63.6	68.3
Jun 15	68.4	63.4	69.8	65.5	71.0	70.8	66.6	65.9	76.2	74.9	71.1	68.0	76.3	63.0	69.5	60.8	69.3	65.0	73.1	65.2	76.0	67.6	66.2	75.9	64.0	74.0	77.0	62.0	72.4	78.7	61.6	70.8	63.2	73.8	73.2	80.2	74.6	65.4	73.7	70.4	69.9	66.6	73.8	63.0	59.1	63.3
Jun 16	76.2	61.4	67.3	71.1	68.9	71.2	65.4	74.2	69.9	78.1	71.3	67.8	65.8	57.9	68.6	69.1	71.6	63.9	71.7	68.2	66.5	68.5	70.7	74.9	71.3	77.8	69.1	61.4	69.0	77.7	66.3	71.2	70.0	65.0	77.0	73.3	71.5	67.2	73.6	71.4	64.4	66.0	72.4	63.8	65.0	63.6
Jun 17	80.8	61.2	65.4	72.9	72.7	69.4	68.9	79.5	76.9	75.3	68.0	78.0	62.6	55.5	76.9	62.6	71.7	71.1	75.6	78.1	67.8	70.4	75.8	75.1	74.0	77.2	67.2	65.2	68.3	73.3	62.9	71.9	70.1	68.8	77.8	71.1	77.3	65.4	73.7	74.5	65.1	72.8	77.4	69.8	67.1	67.9
Jun 18	70.8	67.9	67.7	66.7	67.7	69.9	73.0	80.0	77.6	78.3	74.9	78.5	65.1	57.2	72.5	70.5	76.1	68.5	72.2	79.0	65.8	72.9	74.8	74.9	69.7	73.7	66.8	78.7	77.5	73.4	61.3	63.9	68.2	66.0	71.4	75.9	84.5	62.5	65.8	77.8	66.3	74.0	74.3	74.8	68.9	69.9
Jun 19	74.4	71.1	68.8	73.8	67.7	75.9	73.1	77.1	71.0	79.9	72.3	80.8	60.6	60.3	73.1	71.1	79.2	75.4	72.3	70.6	71.4	71.5	72.9	72.1	82.2	67.6	66.0	77.6	79.9	74.5	58.2	70.2	66.0	70.4	67.9	69.8	83.0	67.2	64.2	72.5	70.3	70.9	72.4	75.1	63.0	64.8
Jun 20	75.5	73.7	68.9	67.9	66.5	65.4	72.8	74.9	66.5	78.6	76.0	80.1	61.1	56.7	71.8	68.8	81.6	74.4	77.1	78.8	67.9	63.4	73.5	71.3	77.2	66.8	71.4	77.4	76.7	66.5	60.6	65.8	61.3	71.2	62.3	70.1	80.3	67.0	64.8	70.7	75.9	68.9	73.1	73.7	70.7	66.1
Jun 21	76.5	77.7	73.5	61.0	68.0	67.2	71.6	75.9	69.0	80.8	70.0	79.4	69.8	63.8	75.5	63.8	79.5	73.4	70.4	84.6	69.2	64.4	78.9	74.4	78.2	77.5	74.7	74.5	74.3	64.4	63.9	64.4	65.5	64.4	55.5	66.7	84.1	70.6	65.0	66.0	71.0	70.7	77.7	74.5	62.3	69.3
Jun 22	74.7	74.9	73.6	72.9	71.7	64.5	73.0	69.0	68.6	81.0	73.9	79.2	63.7	57.2	73.4	67.1	76.6	77.0	67.8	80.5	73.5	61.3	76.9	70.7	73.2	73.8	74.6	81.8	73.4	63.4	64.8	69.4	67.6	71.2	58.8	73.6	84.2	66.6	69.5	72.0	67.2	69.1	76.5	73.0	71.8	76.5
Jun 23	76.1	77.0	65.1	76.5	70.8	68.6	72.3	80.7	71.3	71.6	75.3	68.5	68.2	62.1	71.9	63.2	79.0	75.1	67.4	64.6	71.3	67.1	72.3	77.0	68.9	74.2	72.5	79.5	72.6	68.7	68.5	68.0	68.5	69.1	57.1	71.9	80.9	63.5	74.4	70.6	69.4	65.5	73.5	77.3	72.9	77.0
Jun 24	76.1	73.5	63.8	72.4	67.7	67.5	74.7	78.4	63.7	70.1	75.7	74.8	66.2	61.0	72.1	66.9	70.7	76.5	70.9	71.5	71.2	66.4	71.5	80.4	72.3	72.4	70.7	79.3	80.6	64.6	70.9	70.9	72.4	69.0	56.8	74.0	82.3	71.2	71.8	67.7	63.1	69.1	69.4	79.5	66.2	75.1
Jun 25	78.4	68.6	76.5	75.1	64.2	73.7	78.8	76.2	67.8	72.2	75.2	79.4	67.6	60.2	76.0	71.1	68.2	72.3	71.9	68.5	70.0	67.7	73.2	74.6	73.6	74.4	75.0	75.2	81.0	69.1	70.4	69.8	67.0	71.5	69.6	72.2	82.3	74.3	72.3	71.8	68.6	63.9	73.6	78.8	60.3	75.6
Jun 26	74.1	65.0	75.9	76.4	67.0	74.0	74.6	75.8	73.2	78.4	74.0	77.2	73.0	69.1	74.3	71.5	70.7	69.1	66.3	71.5	77.1	62.8	70.4	77.6	71.4	73.9	79.4	74.0	79.0	69.5	75.4	71.8	71.9	71.7	70.0	70.6	78.3	77.8	70.3	67.3	70.5	63.5	73.9	79.5	66.5	77.2
Jun 27	67.5	73.0	68.1	74.6	66.5	73.4	75.6	76.3	72.0	75.9	76.2	73.3	76.6	65.4	75.0	71.4	67.6	72.2	68.7	74.7	73.0	70.6	76.4	76.1	72.8	72.7	71.8	70.4	78.9	69.8	75.7	79.8	75.9	76.4	71.6	76.5	73.0	75.6	65.3	71.9	71.7	66.3	76.0	79.3	69.5	79.4
Jun 28	75.2	77.2	67.2	73.7	68.7	77.2	80.2	71.6	70.9	73.2	76.0	75.2	75.9	67.8	72.4	66.7	71.5	72.4	66.8	76.3	68.5	74.1	78.3	71.7	73.1	75.6	76.3	71.7	76.5	67.8	75.8	78.0	71.9	72.4	71.7	76.9	72.4	77.2	70.8	66.6	67.7	65.8	74.6	79.4	75.4	71.6
Jun 29	70.1	82.0	67.8	74.8	69.8	74.4	69.2	69.5	75.2	72.9	73.3	79.4	72.3	72.0	75.2	74.0	77.2	75.8	70.9	77.5	75.5	67.7	76.2	72.5	74.8	73.2	73.3	69.1	69.7	70.8	66.1	75.8	74.9	67.4	72.8	81.2	76.4	80.3	72.3	76.6	65.3	70.7	73.9	77.3	79.3	76.2
Jun 30	71.2	79.8	71.2	73.8	72.9	78.3	75.7	72.3	80.5	74.4	77.5	81.1	79.5	77.9	83.4	72.9	84.3	75.0	76.2	78.3	77.1	82.6	85.9	73.8	73.9	85.8	79.3	78.5	79.3	77.7	73.7	76.1	78.4	76.7	77.0	73.8	75.9	86.1	82.5	78.8	69.7	70.0	78.2	77.0	87.6	80.1
Jul 1	75.9	82.9	75.5	83.7	73.9	74.7	79.6	79.9	87.0	76.0	74.1	94.0	83.6	78.8	79.6	85.2	85.8	74.9	77.9	81.2	71.3	83.4	78.7	79.3	77.6	84.6	78.0	83.9	80.1	71.2	76.5	85.1	73.8	80.0	75.4	78.4	78.7	83.3	81.9	80.0	73.6	74.9	75.1	74.6	90.3	72.9
Jul 2	75.1	80.8	66.0	83.7	74.2	73.8	78.7	78.2	89.1	77.8	75.1	89.6	83.0	75.5	81.7	83.2	83.0	79.5	75.2	82.1	78.3	88.3	75.9	80.5	76.3	83.0	80.2	84.9	84.6	72.7	77.7	83.0	71.3	76.6	74.7	79.9	73.3	77.3	76.5	83.6	84.3	72.7	77.9	73.7	90.4	76.8
Jul 3	76.0	80.7	70.9	82.7	72.7	77.3	77.6	76.9	82.7	64.8	80.3	78.9	80.0	76.6	80.7	84.1	81.1	80.9	76.3	75.8	77.1	90.1	79.0	76.1	74.8	74.8	85.0	74.3	82.5	78.9	77.1	85.8	69.5	78.3	73.7	79.1	75.5	83.8	79.8	82.7	81.1	71.7	78.1	79.5	82.0	74.2
Jul 4	80.5	83.7	74.2	78.5	76.7	81.3	77.4	79.0	85.2	79.0	75.7	80.3	75.4	76.3	78.8	79.5	76.5	76.8	83.5	79.0	77.8	83.3	78.5	72.2	82.4	76.9	80.2	77.8	83.8	73.9	77.7	84.4	75.5	76.6	65.8	83.1	79.2	85.9	80.4	84.0	83.3	73.0	75.5	81.3	79.2	76.4
Jul 5	82.8	83.2	80.2	80.9	78.9	84.7	77.2	84.8	80.9	70.6	77.4	81.1	79.4	75.1	71.5	80.5	74.6	79.4	81.5	77.5	77.5	85.7	79.0	79.6	85.1	79.6	73.2	76.2	78.5	70.6	76.5	88.9	74.5	74.6	76.4	82.0	76.7	82.2	85.0	82.1	80.0	76.8	73.5	79.2	79.7	79.8
Jul 6	81.8	79.5	78.7	73.1	81.8	83.6	77.4	80.6	81.8	72.7	76.9	81.8	76.7	76.9	80.9	77.8	73.1	85.5	80.4	80.7	82.3	82.2	79.3	86.2	87.0	84.5	75.9	75.6	80.4	71.5	79.3	77.7	79.0	78.4	79.7	80.2	75.6	75.4	82.7	75.4	78.2	79.4	73.9	75.0	75.6	79.0
Jul 7	84.3	83.5	76.7	77.1	77.6	77.7	78.9	80.9	78.5	70.2	81.5	81.7	83.0	77.2	84.6	82.8	79.0	79.1	80.4	82.2	83.1	78.8	82.5	86.9	81.2	86.7	73.1	73.6	82.6	71.8	71.7	76.3	76.0	80.1	76.3	80.2	70.4	76.4	80.4	76.1	74.2	81.1	75.2	76.2	79.4	86.2
Jul 8	79.7	85.8	84.7	76.7	77.4	82.1	77.7	80.9	81.0	73.1	82.5	74.7	77.1	76.6	84.9	80.2	76.4	78.4	79.4	78.1	80.1	77.6	82.6	80.4	80.4	85.2	74.3	69.7	80.1	73.0	71.9	71.2	78.9	82.7	71.0	79.3	76.7	75.5	81.9	77.8	74.8	85.6	81.1	79.8	73.4	81.0
Jul 9	83.3	86.6	79.2	80.7	80.6	76.7	83.6	82.5	79.5	74.7	82.0	77.6	77.6	74.7	81.1	77.9	76.0	80.4	79.9	79.4	78.0	77.9	83.0	78.6	82.0	76.3	77.8	63.4	79.5	73.6	82.2	72.5	78.0	83.2	71.8	81.3	71.7	76.6	82.4	78.4	76.0	82.5	80.1	76.4	75.0	74.6
Jul 10	81.7	90.0	71.4	81.4	74.3	77.9	83.8	82.7	75.5	74.9	85.5	78.2	82.9	77.6	77.9	74.9	74.0	71.5	84.4	79.0	72.4	73.7	79.7	77.8	76.3	80.0	78.6	69.9	77.4	70.9	81.3	79.7	79.7	79.9	80.5	79.4	69.3	81.0	85.8	79.8	81.7	82.5	77.4	79.5	81.4	74.6
Jul 11	80.7	84.4	72.8	77.8	77.0	77.7	77.7	80.0	75.1	76.4	84.9	80.8	85.1	81.1	78.3	78.5	76.7	74.4	78.1	79.4	79.7	71.4	82.5	77.5	77.7	82.3	81.5	77.6	77.3	78.1	80.3	80.9	81.1	74.8	80.8	80.7	73.9	69.4	86.5	79.2	83.0	86.1	75.0	86.2	76.3	77.8
Jul 12	86.1	86.1	75.7	77.4	77.2	77.9	85.1	79.6	77.7	77.9	82.5	78.9	85.7	84.5	75.7	78.4	72.8	77.6	77.1	72.4	74.9	73.9	84.1	76.0	78.0	79.4	89.0	77.4	86.6	79.9	76.8	78.1	79.7	84.0	84.4	78.3	73.6	73.1	83.8	81.5	81.5	77.6	79.2	83.1	80.8	81.8
Jul 13	88.2	79.2	77.6	86.5	82.9	77.9	85.9	76.3	86.1	74.3	82.7	81.6	83.8	81.6	77.2	78.1	79.1	79.1	77.3	77.9	79.6	79.3	82.1	75.2	80.6	81.6	87.1	76.1	85.9	79.3	83.9	78.4	82.7	80.7	84.8	83.4	74.9	74.3	79.5	81.8	82.9	85.3	81.3	85.2	73.6	82.3
Jul 14	89.3	79.0	81.6	85.2	82.3	79.9	82.4	76.4	83.5	75.3	72.2	81.7	80.2	80.7	79.6	79.7	75.7	79.8	79.8	80.5	80.4	82.6	80.3	76.2	79.9	76.6	79.9	78.6	78.1	70.8	82.7	85.0	81.4	76.6	86.5	87.4	77.3	74.9	83.7	81.8	83.3	87.4	84.5	82.1	76.1	75.8
Jul 15	87.0	78.3	80.6	82.8	82.8	75.2	79.5	76.6	81.5	78.1	76.9	82.6	79.7	76.2	82.8	72.4	79.7	82.1	79.5	73.3	84.9	75.1	76.0	75.7	81.2	78.1	82.3	76.3	78.1	76.5	80.1	85.0	81.9	75.4	81.1	82.3	78.0	73.6	83.9	81.2	84.5	84.9	84.0	82.8	74.9	71.4
Jul 16	84.5	72.3	83.3	83.2	82.8	74.7	75.9	74.1	73.9	75.9	78.4	80.1	80.6	80.1	80.8	77.1	80.6	77.5	80.5	81.3	76.0	74.0	72.9	76.2	77.3	82.2	75.6	72.4	76.7	70.3	82.2	82.4	83.2	77.5	82.4	79.4	79.8	72.9	81.4	79.2	84.2	80.2	83.6	78.7	73.9	70.5
Jul 17	86.0	81.1	80.1	80.3	84.7	74.6	74.8	77.0	79.1	75.7	72.8	72.6	84.6	81.8	81.7	77.1	81.2	80.1	81.2	79.5	79.2	78.1	70.4	78.2	77.2	78.5	75.4	75.0	81.5	78.9	83.2	81.3	78.3	79.2	85.9	78.8	72.5	75.8	87.1	76.4	78.3	74.9	82.9	76.6	76.3	74.9
Jul 18	84.2	79.0	84.2	83.6	87.2	72.3	79.9	80.4	74.1	75.8	77.7	81.0	82.5	81.2	88.1	84.3	83.0	77.8	79.8	81.1	80.6	77.7	71.8	77.9	76.8	79.3	80.5	77.1	79.8	78.1	80.2	82.6	74.1	80.0	88.8	77.4	74.6	76.0	87.1	75.7	79.3	76.2	81.9	76.1	79.6	78.1
Jul 19	87.0	77.1	87.4	78.1	78.4	77.6	79.1	82.6	73.2	69.7	77.4	80.7	78.0	82.1	85.9	82.5	80.7	80.4	82.2	80.3	80.9	80.0	73.4	73.8	79.0	82.5	79.7	80.0	75.6	79.4	76.4	79.5	76.2	83.9	89.1	81.1	74.2	72.7	82.7	76.9	80.2	73.5	79.7	71.5	79.0	80.7
Jul 20	86.0	78.3	86.4	79.0	79.2	83.1	74.8	80.7	76.7	75.3	73.7	75.1	77.5	82.5	84.4	84.8	81.5	81.2	76.2	80.1	78.8	76.1	70.1	81.7	78.0	82.2	83.6	82.1	75.1	79.6	77.2	79.8	79.0	83.4	78.4	83.8	78.4	81.7	79.7	79.5	75.7	75.0	86.1	74.1	79.5	76.4
Jul 21	87.4	79.5	84.7	76.0	77.5	81.8	79.1	71.8	81.8	77.1	70.0	79.2	79.4	82.3	79.5	80.0	78.6	78.2	74.5	76.4	82.5	78.0	71.2	78.0	76.9	78.4	80.0	78.4	74.5	83.2	80.4	82.4	81.8	86.5	80.5	82.3	74.3	80.3	73.7	78.1	77.7	78.5	87.9	78.2	78.7	80.7
Jul 22	86.8	83.5	84.1	77.8	80.5	80.4	79.4	75.1	81.8	79.5	73.7	79.2	79.9	82.6	84.4	76.5	77.9	76.4	79.3	75.1	78.2	76.6	80.8	77.2	80.3	77.9	82.8	74.8	74.6	80.1	78.0	82.4	84.1	82.1	78.9	83.0	74.7	82.7	76.4	75.9	77.3	75.0	86.8	74.0	74.5	69.5
Jul 23	82.0	82.0	77.6	80.7	81.9	84.1	81.6	80.3	79.2	71.9	71.3	77.2	79.4	81.9	85.8	76.1	77.8	70.2	78.3	69.9	77.4	72.4	74.3	71.5	78.6	82.4	77.0	80.2	78.0	86.2	79.4	82.4	87.1	86.9	81.2	81.7	76.6	80.8	76.6	77.5	79.7	72.6	88.1	78.1	77.0	70.1
Jul 24	80.2	79.4	79.9	79.4	77.5	82.6	78.3	74.2	81.1	69.9	69.3	76.7	80.8	78.1	82.5	80.1	77.9	75.1	75.8	70.4	72.6	77.1	79.9	78.7	76.4	75.0	79.5	79.8	77.3	81.1	76.8	77.1	85.7	87.4	80.8	76.2	81.0	84.0	71.1	83.8	81.7	70.6	86.9	71.6	78.4	78.9
Jul 25	80.3	82.8	72.6	79.6	80.5	84.3	75.8	73.6	82.0	77.3	76.9	81.0	80.9	72.7	79.9	80.3	74.1	71.2	74.8	72.5	80.1	78.9	81.1	80.4	77.5	79.1	80.4	79.9	81.6	77.3	77.7	75.2	89.9	85.2	77.3	75.3	72.6	84.5	71.7	81.5	79.8	77.0	84.3	74.1	73.6	82.5
Jul 26	77.3	82.7	77.9	77.6	79.4	85.7	72.9	77.8	76.7	77.2	76.4	79.3	76.5	68.4	75.9	77.1	75.3	68.9	72.8	73.4	84.8	72.7	73.3	79.6	80.6	84.8	81.4	80.8	88.2	80.4	80.0	73.8	81.9	84.7	76.8	74.6	78.4	81.1	74.4	81.4	75.5	80.1	85.2	77.5	73.0	81.1
Jul 27	73.2	78.0	76.3	77.3	78.6	86.8	69.9	80.6	73.4	74.5	75.1	78.7	81.3	65.1	82.1	78.2	72.2	66.4	70.1	76.0	86.2	73.1	79.7	79.0	84.2	86.2	80.5	80.6	91.3	81.4	72.1	75.6	87.1	77.3	71.1	72.8	82.2	74.2	79.2	80.4	76.7	83.4	77.9	78.3	72.1	80.5
Jul 28	67.8	82.9	78.3	81.9	79.2	81.0	75.3	80.4	75.6	80.2	72.1	78.2	78.9	65.0	78.4	82.7	72.9	66.9	77.4	67.8	82.3	77.9	78.5	81.6	83.5	85.2	76.9	81.5	87.8	82.8	71.1	73.2	82.6	78.8	81.0	75.1	78.7	81.8	78.0	76.1	77.2	83.7	72.4	75.5	67.6	78.9
Jul 29	70.3	82.1	79.7	80.9	80.2	74.8	72.1	80.9	78.8	82.7	72.9	75.9	78.7	74.9	80.0	83.3	77.5	76.6	73.1	74.5	77.7	77.4	74.4	76.3	89.5	81.4	75.0	80.7	87.4	82.5	70.7	77.0	79.5	79.1	84.3	75.9	85.1	80.7	77.4	83.0	73.8	80.8	75.3	77.1	69.0	80.2
Jul 30	72.9	79.2	80.9	77.2	80.4	81.6	82.5	82.1	82.6	77.0	74.1	78.8	78.1	77.7	83.8	77.0	78.5	82.5	75.1	70.1	79.1	79.4	70.3	79.4	85.1	76.5	76.7	85.2	84.7	81.3	74.8	78.6	83.6	80.1	90.1	77.8	87.1	70.8	77.7	83.0	72.6	80.2	76.6	73.6	74.6	77.2
Jul 31	74.9	76.8	78.0	77.2	87.2	81.8	80.8	82.0	84.7	83.2	78.6	83.2	79.1	78.9	84.6	81.4	79.9	81.7	73.1	76.6	79.4	82.1	73.6	81.6	80.6	82.4	84.8	81.7	87.7	79.3	79.8	77.9	76.9	80.7	85.7	75.4	85.8	72.5	74.1	83.9	78.1	80.8	73.8	75.5	73.7	85.0
Aug 1	75.3	78.6	77.1	79.0	88.7	84.3	80.0	81.1	83.2	85.3	79.5	87.5	79.2	81.8	82.5	73.9	78.7	80.0	74.8	75.5	75.6	81.2	77.1	86.3	83.0	86.7	80.4	89.6	80.6	77.9	78.1	70.9	80.0	78.6	81.9	82.0	88.4	78.0	69.5	84.0	76.7	79.6	71.1	81.6	73.9	86.5
Aug 2	72.3	79.8	70.2	74.8	80.6	75.9	82.2	83.6	81.7	73.9	80.8	84.5	78.1	81.2	87.7	79.9	74.5	76.5	77.8	80.9	75.6	80.7	80.2	84.6	81.0	77.7	83.3	89.8	79.6	78.5	79.5	71.9	81.5	77.1	88.3	78.2	80.8	78.1	71.6	81.1	77.9	75.2	69.9	80.6	71.7	82.1
Aug 3	70.8	81.4	75.6	80.8	78.5	86.6	77.6	80.3	77.4	75.7	83.4	84.7	78.2	82.9	89.2	79.8	84.6	84.9	82.8	82.4	79.1	80.8	73.9	79.6	81.4	72.7	76.9	83.3	84.3	73.1	76.3	71.9	82.7	78.4	83.0	81.2	79.4	75.5	74.2	80.3	74.4	78.9	73.8	81.6	72.8	84.8
Aug 4	66.4	74.8	78.9	80.9	80.4	78.1	81.0	76.7	81.0	81.8	78.5	87.5	72.9	82.8	91.7	79.5	85.3	80.8	85.8	82.4	79.3	79.4	73.1	83.6	84.9	76.6	77.9	83.7	83.9	79.3	79.5	68.5	80.6	79.4	79.4	77.0	80.1	78.9	76.3	83.7	76.1	80.4	78.5	76.8	64.7	89.5
Aug 5	70.1	72.6	79.5	79.3	76.9	79.6	76.5	73.5	76.9	75.1	83.6	83.9	75.4	84.3	90.2	75.6	84.4	86.9	82.4	78.9	76.6	83.8	67.8	81.6	85.4	78.0	72.6	82.4	80.7	74.6	72.9	71.2	77.0	78.8	79.3	79.1	77.4	78.5	81.0	85.3	84.8	85.3	78.4	74.2	64.4	83.5
Aug 6	74.1	75.2	72.0	84.0	74.4	84.2	81.5	76.2	67.3	75.2	81.2	77.6	72.4	87.8	84.9	73.3	85.4	81.6	78.8	77.7	80.7	79.8	73.5	80.2	82.6	82.3	73.1	77.5	81.7	71.3	72.7	78.9	77.3	72.9	85.5	73.6	75.0	79.6	80.1	90.8	84.2	79.9	67.3	72.3	70.6	86.3
Aug 7	76.0	74.8	79.6	83.7	80.0	84.1	82.2	77.6	71.4	74.9	79.3	81.7	81.5	80.6	81.4	71.2	78.6	88.1	74.7	76.1	83.7	81.6	76.1	77.0	79.9	80.0	70.7	79.9	84.1	75.2	68.1	75.8	79.5	78.1	85.9	72.9	71.8	84.1	76.8	86.6	83.2	79.5	70.3	71.8	70.1	87.3
Aug 8	78.0	85.0	77.6	74.0	77.7	79.5	75.2	78.1	75.5	71.5	85.8	77.3	84.7	78.9	85.1	72.9	86.1	84.9	76.1	81.6	82.6	84.2	72.8	78.7	80.9	77.3	69.8	74.6	83.0	66.4	72.7	78.8	81.4	82.1	75.2	83.2	72.8	78.7	83.1	76.5	78.1	75.9	77.0	71.0	66.1	87.3
Aug 9	87.0	80.7	72.5	72.4	77.5	76.0	77.2	74.0	74.7	74.7	82.9	77.2	81.4	78.2	82.4	73.3	84.0	81.6	79.3	80.5	75.5	84.4	75.5	76.0	75.8	83.0	75.4	80.0	76.8	74.0	78.8	79.2	78.0	77.2	83.1	80.1	78.0	78.1	74.7	78.2	78.3	76.7	77.9	69.1	70.4	85.9
Aug 10	82.3	72.9	72.8	77.2	79.5	81.1	72.4	74.2	69.0	71.6	80.2	83.0	77.4	78.6	83.6	67.5	84.0	76.8	78.4	75.9	75.6	77.6	71.2	75.6	72.9	80.4	76.3	73.9	80.1	75.5	80.9	80.3	75.3	68.8	85.9	78.1	78.1	82.8	74.3	83.6	78.8	78.8	80.1	72.6	74.0	81.6
Aug 11	84.3	75.3	72.4	76.6	77.2	70.7	77.7	73.9	75.9	74.5	86.6	83.7	82.2	80.0	79.6	69.2	84.5	78.7	78.4	75.9	74.1	86.0	74.0	78.9	74.7	79.6	78.3	76.3	77.6	73.2	73.9	79.3	73.7	72.8	73.8	74.9	72.8	84.4	77.3	77.6	76.9	77.0	75.3	70.8	81.1	81.2
Aug 12	71.1	72.6	73.9	74.8	77.9	74.7	75.4	71.2	73.1	77.2	81.4	83.2	83.7	75.0	75.2	72.2	83.2	79.7	78.7	66.9	76.2	84.0	75.1	77.4	72.2	78.5	76.2	76.7	74.5	74.4	79.3	82.0	75.7	80.4	75.0	76.9	71.0	74.6	74.7	78.7	75.5	79.2	80.5	73.1	76.8	79.4

YEAR->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
Aug 13	70.3	81.6	73.8	77.2	82.6	76.1	75.1	74.3	73.5	76.3	82.3	81.7	87.8	75.4	76.1	71.6	79.0	83.0	76.6	77.3	78.1	77.6	83.2	74.4	75.1	74.7	72.4	73.1	78.9	79.4	76.2	79.6	80.9	73.4	73.6	77.6	74.9	71.1	73.5	76.5	71.7	73.2	82.3	72.1	76.8	81.0
Aug 14	65.5	70.2	76.2	77.3	86.7	77.9	75.9	73.9	69.2	76.0	81.4	83.4	85.4	75.3	74.1	72.0	74.7	74.6	83.2	73.8	84.3	83.8	77.0	71.1	74.7	79.5	79.9	67.2	75.7	74.4	78.2	89.4	73.4	73.8	63.7	77.8	76.4	74.0	77.3	84.2	81.9	76.5	78.3	76.2	72.5	81.8
Aug 15	65.1	76.5	74.9	74.3	81.8	77.0	74.4	76.8	67.3	74.8	78.8	83.3	82.7	71.2	79.3	76.3	75.8	77.0	78.5	80.1	80.1	83.4	82.6	77.5	77.4	77.8	84.5	72.8	75.7	72.3	79.1	91.6	74.1	72.4	71.1	76.3	70.6	77.0	74.0	78.6	71.2	72.8	74.0	75.5	76.6	81.5
Aug 16	69.1	72.7	71.0	75.2	85.5	79.1	77.0	79.9	67.2	69.2	79.8	79.2	87.5	73.6	80.4	78.1	78.9	73.0	75.7	83.2	79.4	75.9	78.2	74.8	78.4	78.4	79.4	74.0	73.7	73.3	78.5	91.0	78.7	69.9	68.2	78.6	79.9	80.0	76.4	74.6	69.7	65.3	78.5	73.7	76.0	85.9
Aug 17	77.6	78.2	72.8	74.2	80.2	79.1	77.0	76.6	69.2	76.6	75.3	81.0	84.3	76.3	79.8	67.1	77.7	67.5	77.8	89.2	88.5	71.7	82.7	79.5	77.7	79.1	78.5	69.1	70.9	70.9	77.2	89.5	80.9	72.8	70.8	76.1	76.5	81.2	75.4	65.3	73.0	65.9	80.0	70.7	75.5	80.5
Aug 18	73.2	78.1	74.5	74.9	79.2	76.5	81.3	82.1	72.0	77.6	75.7	77.3	75.2	78.0	71.0	71.5	66.9	72.3	79.1	86.0	88.3	78.2	74.5	78.6	71.8	77.4	74.4	71.8	71.8	70.0	77.0	87.7	78.5	70.1	68.3	79.9	82.0	85.4	76.9	69.0	77.4	63.6	77.6	77.5	78.6	78.1
Aug 19	67.3	77.5	81.7	69.4	81.1	76.6	83.3	85.8	77.3	81.4	81.8	75.3	65.3	75.8	75.9	68.8	67.5	72.4	79.0	85.0	84.8	73.7	72.3	76.9	74.5	75.2	78.7	68.5	73.4	64.0	75.6	82.3	76.2	76.9	73.5	81.9	84.6	79.5	76.7	68.2	71.9	67.2	77.7	80.3	75.8	80.1
Aug 20	72.2	71.9	71.6	69.3	80.5	72.9	79.1	86.4	84.1	81.8	79.5	70.4	65.9	75.7	85.0	74.8	74.9	74.6	76.5	83.5	85.1	72.1	78.9	86.6	72.2	71.8	78.7	68.4	75.3	73.1	77.0	81.9	70.2	75.3	71.1	80.4	85.3	76.9	77.8	60.9	77.1	67.7	82.2	77.3	74.1	79.6
Aug 21	76.9	76.8	68.2	74.3	75.9	74.4	84.2	88.5	87.8	74.3	79.6	73.2	74.4	80.1	80.1	78.5	73.0	78.0	80.6	76.2	80.6	71.4	71.4	84.4	69.5	70.2	76.3	71.5	80.4	75.7	74.2	76.2	69.4	81.1	72.2	78.6	77.6	73.5	69.3	64.2	83.4	71.0	77.7	79.1	76.0	73.8
Aug 22	72.7	81.0	72.4	72.8	73.5	75.1	79.3	78.0	79.3	76.7	71.4	75.3	74.0	75.4	80.6	75.7	75.4	79.9	84.4	81.5	81.9	74.1	76.3	84.8	65.5	69.3	72.6	67.5	78.1	75.8	78.6	80.3	74.5	83.7	72.2	77.1	76.8	75.7	73.0	67.9	79.0	74.3	73.5	76.8	78.7	79.5
Aug 23	77.8	78.1	74.3	71.7	70.0	68.9	78.1	82.5	81.4	84.1	77.7	76.8	73.4	70.2	74.7	75.2	78.4	76.3	85.8	82.0	84.3	72.2	85.2	88.2	68.4	72.4	73.6	70.4	80.4	75.1	80.3	78.5	70.7	84.7	69.1	74.5	77.4	76.6	68.9	68.5	79.6	72.2	69.1	76.1	69.5	73.6
Aug 24	77.5	74.3	74.4	82.8	64.9	75.6	75.4	74.4	78.0	86.4	75.2	72.6	71.3	79.1	67.2	78.8	79.2	74.1	75.3	75.9	79.7	73.2	83.6	86.6	77.7	71.1	82.1	68.7	80.5	77.7	71.4	75.0	72.8	78.9	73.0	71.6	76.7	67.6	70.4	71.2	76.0	70.6	77.9	75.5	75.0	73.2
Aug 25	74.3	72.5	64.4	80.6	64.2	72.1	79.3	80.1	77.6	85.5	66.7	75.3	68.7	82.0	75.8	75.8	79.9	75.4	70.7	72.6	74.9	71.4	76.0	82.4	75.5	69.8	75.9	72.5	70.1	78.3	84.8	73.1	77.4	74.4	76.6	75.9	80.5	68.0	70.0	73.8	81.4	75.2	77.8	68.0	66.8	70.6
Aug 26	73.6	72.4	65.4	81.8	65.6	73.1	78.2	77.8	83.0	78.4	73.6	72.1	67.4	75.3	76.5	84.9	75.6	78.8	63.8	75.2	65.2	72.5	73.3	79.5	74.2	64.0	83.8	72.7	73.8	71.2	78.4	75.6	76.4	66.0	77.5	72.3	69.8	62.5	67.9	79.5	82.1	82.7	80.5	61.4	71.2	74.5
Aug 27	70.9	75.9	68.6	76.5	64.0	77.6	83.1	74.8	72.7	76.9	68.4	66.4	77.3	76.2	76.9	77.7	76.3	69.8	66.4	74.9	71.6	71.5	71.2	78.3	76.7	71.8	80.9	71.9	75.7	71.1	72.9	77.8	78.1	69.6	72.0	70.9	70.4	70.6	73.2	80.3	77.2	84.3	83.7	61.8	72.0	79.1
Aug 28	67.6	73.1	66.8	66.6	70.2	73.3	86.4	70.7	66.8	80.7	65.0	70.6	74.2	75.0	74.5	69.4	73.5	70.1	67.8	71.2	69.8	69.3	72.6	75.9	83.9	77.1	79.8	72.2	80.8	68.8	77.4	71.6	78.4	73.7	74.7	73.9	70.9	70.0	77.7	68.7	81.4	78.6	81.2	64.7	78.3	83.6
Aug 29	67.3	70.9	56.9	70.8	68.1	71.4	83.1	71.2	77.1	79.9	68.3	67.2	74.1	66.9	70.1	66.2	74.1	70.5	67.1	71.7	65.7	71.3	71.0	73.2	86.8	61.1	77.1	71.2	83.4	74.5	75.3	76.4	75.8	74.9	65.9	82.2	71.2	72.7	72.4	79.3	79.9	71.2	76.2	72.9	79.9	82.8
Aug 30	65.3	78.1	61.7	66.8	69.2	79.0	77.3	67.9	72.3	75.1	68.7	58.6	64.2	70.5	71.3	71.5	78.1	70.5	66.7	67.7	70.1	73.8	69.2	83.5	85.7	66.6	74.0	69.6	82.6	71.2	74.2	75.0	70.9	79.6	66.0	83.0	73.2	75.9	73.5	75.2	72.7	75.7	74.6	73.2	73.6	86.0
Aug 31	59.7	78.6	53.8	79.5	74.2	68.8	68.5	69.2	75.4	70.5	57.3	63.2	66.2	65.8	71.8	71.6	73.3	63.3	65.7	65.5	72.1	74.1	70.6	83.5	72.0	63.0	69.7	63.7	69.3	63.2	68.8	72.0	61.8	77.1	60.5	78.0	69.3	69.2	61.4	79.4	73.0	75.8	75.7	76.3	79.4	79.4
Sep 1	61.8	81.2	60.9	74.7	71.5	72.1	69.9	68.2	84.7	69.2	67.8	59.4	63.4	73.6	68.5	67.8	73.4	66.1	69.7	57.6	71.3	74.7	70.5	77.3	75.7	67.5	67.1	71.6	70.5	58.6	66.9	68.5	64.9	71.0	61.1	73.4	74.1	74.9	61.0	73.7	69.8	68.0	74.1	73.6	75.9	81.0
Sep 2	63.3	78.8	60.0	74.7	67.7	74.6	67.1	62.8	84.7	62.2	63.0	62.5	63.5	74.4	67.5	65.4	70.1	67.3	79.3	56.1	67.1	72.2	72.8	74.5	69.9	64.7	67.4	68.7	70.1	61.3	70.5	69.3	71.2	77.8	54.6	74.2	71.7	73.6	71.4	72.8	71.7	77.1	74.8	69.3	80.8	75.1
Sep 3	69.6	76.8	59.6	71.5	61.1	65.5	66.7	66.4	81.1	63.0	60.1	72.1	68.1	71.7	72.4	65.9	76.0	68.2	77.9	69.8	78.0	69.3	77.6	68.7	68.7	64.8	67.1	78.4	58.9	63.0	67.5	59.6	67.3	83.1	59.5	76.9	77.6	63.1	68.0	65.7	64.5	79.5	67.5	67.7	79.5	78.3
Sep 4	57.3	74.8	64.0	63.9	54.8	62.3	69.0	69.2	79.6	61.5	65.8	69.0	66.9	70.5	66.1	67.7	81.5	70.7	86.3	71.3	73.3	75.2	72.4	66.3	72.9	71.0	67.4	75.4	66.6	73.8	68.3	58.8	66.0	81.7	60.7	73.2	71.1	64.9	65.2	73.1	62.0	79.4	68.6	68.0	71.2	74.3
Sep 5	57.2	74.0	73.7	58.9	54.0	65.6	68.2	65.2	74.4	60.8	58.8	68.9	70.9	73.0	63.9	62.8	76.0	75.6	83.4	76.0	69.7	73.5	73.1	68.6	69.9	69.1	71.1	69.2	68.9	68.1	62.9	62.5	64.0	78.8	63.3	72.6	65.8	68.3	63.1	69.6	63.1	68.3	69.7	70.0	71.4	70.1
Sep 6	56.2	70.9	73.4	65.0	48.4	62.2	65.7	64.9	69.1	64.4	58.8	73.0	73.8	66.9	70.4	70.1	81.0	68.9	69.0	77.0	68.0	73.5	74.1	71.1	63.3	81.2	74.0	74.3	72.7	60.4	62.2	65.3	60.9	82.9	65.7	78.0	74.0	68.0	64.5	66.4	70.5	66.0	68.2	65.5	84.3	63.9
Sep 7	52.8	67.4	68.7	67.9	58.4	65.7	65.1	67.6	70.3	63.0	63.7	71.5	70.0	71.0	74.3	68.5	76.4	77.6	66.1	71.9	64.6	70.9	78.3	64.6	62.1	79.4	65.5	68.5	67.5	57.2	59.3	67.3	64.0	78.6	64.2	71.6	70.7	69.0	64.5	71.8	66.4	65.8	71.8	64.6	79.8	52.4
Sep 8	52.7	69.1	60.2	51.8	65.9	62.4	72.4	70.7	62.8	69.4	64.5	69.6	69.7	64.3	72.0	71.0	69.4	81.1	67.9	71.3	61.0	65.2	72.5	66.4	59.3	76.2	73.1	60.7	70.6	66.9	57.9	57.6	61.2	73.3	72.4	68.7	62.3	68.6	61.8	77.3	67.7	62.6	65.3	64.7	77.0	60.2
Sep 9	53.5	70.8	62.5	50.0	71.6	73.6	67.2	75.6	62.5	71.5	73.0	62.9	71.6	65.6	78.9	63.8	73.9	78.6	67.7	71.7	63.7	66.1	74.5	68.6	56.8	76.5	72.3	66.8	72.8	70.2	60.6	59.9	56.5	67.7	67.0	74.1	61.9	66.9	63.9	67.5	66.5	67.3	61.7	70.5	73.7	58.4
Sep 10	59.4	64.4	64.1	50.8	65.4	57.6	64.3	69.9	63.9	74.3	71.1	64.9	68.6	60.0	82.5	58.6	71.1	66.3	59.4	64.4	76.8	69.9	72.8	67.2	72.5	75.5	64.2	66.5	74.1	66.9	56.8	57.8	54.7	62.1	66.1	70.7	63.7	73.9	71.9	59.0	69.7	61.7	63.8	75.4	79.1	58.6
Sep 11	60.8	76.9	62.0	54.7	66.3	70.6	66.3	73.5	69.0	77.7	72.4	66.9	70.7	53.6	76.6	59.0	73.3	75.3	62.1	68.9	66.7	69.6	69.3	70.1	67.7	78.2	60.7	67.9	62.2	75.9	58.9	65.8	59.8	69.6	69.6	67.6	54.4	78.9	70.1	56.2	70.4	64.2	70.1	67.3	70.5	55.9
Sep 12	50.6	81.8	59.5	55.4	56.6	64.8	62.8	63.0	62.3	69.0	74.8	73.4	73.4	55.2	70.3	65.8	67.5	75.1	67.5	70.7	60.3	67.7	73.3	67.3	65.8	71.9	59.9	57.7	67.9	76.2	62.1	63.5	66.1	71.6	66.2	73.4	71.3	79.6	75.7	56.6	68.0	69.6	69.4	63.2	71.0	63.8
Sep 13	54.1	67.8	65.1	59.5	57.6	63.2	62.5	56.3	62.7	63.8	66.8	70.1	62.2	60.8	70.2	64.4	67.6	78.0	67.9	70.4	66.0	72.6	70.7	60.7	71.3	67.0	67.1	66.6	65.2	73.3	59.7	71.2	60.8	71.1	62.3	73.3	73.7	71.2	67.5	63.6	73.4	66.4	65.8	60.8	67.6	59.1
Sep 14	55.4	62.5	60.6	65.6	52.6	62.5	55.6	59.1	76.7	80.1	62.9	70.9	64.6	57.8	65.1	59.9	65.9	60.8	54.4	68.8	66.6	66.0	79.0	64.2	75.8	60.8	68.6	64.4	63.0	75.4	51.7	63.4	64.4	65.7	65.5	64.8	72.1	71.4	61.3	72.2	72.4	68.6	60.8	58.8	73.9	64.9
Sep 15	56.9	61.8	55.6	65.3	61.0	65.7	62.8	63.0	72.4	74.5	55.2	62.0	68.2	63.7	69.2	66.3	58.4	64.5	59.6	70.7	70.7	69.1	77.9	74.3	72.6	63.6	67.7	74.4	57.8	77.1	61.0	65.6	74.6	62.2	71.9	66.7	73.3	70.1	65.7	77.4	75.3	69.1	63.6	70.2	74.7	65.5
Sep 16	69.2	65.1	58.4	71.4	70.3	66.7	65.8	59.4	68.0	70.9	57.6	61.1	79.8	71.7	62.3	65.3	52.7	62.6	62.0	63.9	65.7	76.4	70.7	68.7	68.2	58.8	76.3	69.6	66.9	72.3	54.3	69.2	67.2	75.2	68.5	71.6	69.5	62.1	59.9	74.3	76.5	69.1	57.3	73.2	69.6	61.7
Sep 17	66.7	61.8	57.3	69.1	70.5	69.1	71.1	57.1	69.3	73.3	61.8	65.0	71.8	67.1	66.5	55.0	56.7	65.4	66.0	68.7	63.8	70.8	67.4	66.8	78.0	65.8	72.3	70.7	65.5	67.8	55.8	65.4	70.3	77.3	64.2	70.6	70.2	58.7	64.3	59.2	78.9	66.4	61.1	76.2	71.4	60.6
Sep 18	67.0	60.9	61.4	75.6	65.7	77.2	64.7	58.0	60.7	70.4	60.9	62.2	64.9	64.8	57.3	51.8	59.0	59.8	71.3	62.3	60.1	61.0	61.5	63.1	67.9	66.6	67.9	72.4	71.3	60.9	61.0	58.8	64.7	69.5	58.9	70.1	71.6	66.8	70.9	64.3	69.4	65.4	67.6	68.5	65.7	56.8
Sep 19	65.6	60.9	57.6	70.9	63.4	67.9	67.1	59.2	54.6	65.8	62.1	58.7	70.0	56.8	59.1	61.5	49.2	58.1	68.3	60.2	60.3	54.7	59.7	65.8	78.3	58.3	62.8	71.0	68.9	69.5	64.6	68.0	61.7	61.4	58.7	70.2	68.3	63.8	71.7	60.0	71.9	62.8	65.8	74.4	64.8	58.7
Sep 20	61.5	63.7	58.3	75.7	59.2	76.5	62.8	56.7	55.4	61.6	57.9	51.1	72.6	55.9	55.1	65.9	56.6	62.9	52.1	67.2	63.3	61.9	57.1	58.1	75.5	48.7	60.1	70.0	72.8	67.7	56.5	59.5	62.9	68.6	51.5	74.6	74.1	61.4	71.0	65.7	74.0	68.0	64.2	68.4	68.1	57.1
Sep 21	64.7	56.5	55.8	68.5	57.2	67.5	56.6	60.2	63.6	69.5	61.9	56.3	76.8	57.1	61.0	58.9	60.6	63.5	50.6	70.8	72.3	59.5	56.8	56.1	73.4	57.1	57.9	67.7	64.0	56.5	58.3	55.8	66.3	60.4	55.2	75.5	64.3	54.5	72.0	65.6	73.6	70.6	62.7	72.0	61.4	64.9
Sep 22	62.8	60.1	59.5	69.0	50.2	65.6	73.6	65.3	69.0	60.4	53.5	55.4	71.6	77.0	63.7	60.6	58.3	68.8	59.9	59.9	67.6	66.1	47.4	55.3	73.3	56.7	54.2	56.3	66.1	60.2	62.6	52.4	58.8	62.8	48.7	69.2	66.0	66.7	61.6	62.8	70.5	66.8	64.6	72.5	52.9	59.5
Sep 23	67.4	67.2	54.1	70.4	51.3	57.3	68.1	61.4	62.3	58.5	58.3	57.7	64.1	74.7	66.5	64.6	66.8	60.5	56.0	68.8	68.2	67.6	49.0	52.6	74.3	59.0	49.9	56.0	64.5	53.3	59.9	56.3	53.2	60.8	48.8	62.9	66.4	62.3	62.9	59.1	70.6	69.6	57.1	71.1	63.3	63.3
Sep 24	59.7	67.3	50.7	74.5	60.9	61.5	62.7	58.3	56.7	52.6	69.5	56.1	72.5	68.6	75.4	61.1	67.6	67.3	54.8	72.6	65.8	61.4	48.7	65.1	76.1	52.3	55.2	57.6	65.9	51.6	68.6	55.7	53.7	56.9	60.9	61.3	67.8	55.8	61.3	57.9	68.1	62.5	60.1	67.3	56.8	62.3
Sep 25	54.3	52.4	49.8	69.2	56.4	53.9	59.2	55.0	52.2	59.0	62.8	55.2	71.8	67.6	67.8	72.0	59.5	75.1	57.1	73.2	72.5	51.7	51.9	69.9	63.2	54.4	51.3	57.0	74.4	50.8	59.6	51.8	63.2	54.8	67.3	63.6	68.4	55.5	67.2	62.8	75.8	64.2	71.3	70.4	69.4	57.6
Sep 26	69.2	61.4	53.6	70.5	52.4	49.0	56.0	58.9	57.6	68.0	58.7	58.4	68.7	62.2	56.3	72.5	66.5	74.8	49.4	81.5	67.5	65.1	63.7	55.3	60.2	61.4	58.2	59.0	81.8	63.2	54.7	52.3	51.5	53.5	61.0	62.2	73.0	54.6	76.5	63.9	73.2	60.8	69.1	68.8	81.2	61.3
Sep 27	61.1	60.8	55.6	63.3	58.8	54.4	52.0	59.5	60.5	68.9	57.9	61.8	64.0	56.0	54.2	63.9	68.7	76.9	58.1	69.5	61.1	59.7	60.2	53.3	57.8	64.4	63.3	59.1	70.2	53.2	58.6	48.1	62.5	44.9	54.7	65.6	71.9	49.5	65.1	62.7	69.1	63.6	57.5	68.1	79.9	64.4
Sep 28	71.7	56.5	57.4	67.7	61.8	62.4	56.0	57.9	67.0	64.1	49.3	61.3	56.9	63.0	46.2	69.3	68.4	75.2	56.4	65.0	67.0	58.7	54.5	50.8	56.5	66.0	70.7	44.5	75.5	50.4	51.4	51.7	60.0	40.0	51.9	53.8	70.3	56.6	73.9	65.2	70.8	59.5	53.1	66.6	71.3	66.8
Sep 29	59.8	55.3	54.6	74.6	61.9	61.9	51.2	50.1	58.8	47.9	55.0	58.9	61.0	59.5	45.0	62.5	63.6	73.9	55.2	63.2	62.0	57.5	61.0	55.8	57.5	69.3	59.0	55.8	63.6	52.2	49.3	51.7	71.8	47.5	52.8	61.4	72.3	50.7	75.2	57.7	64.9	58.2	49.8	61.1	62.0	63.4
Sep 30	55.7	47.3	57.7	80.6	63.4	54.0	49.3	44.3	54.0	46.7	49.3	50.0	64.1	55.8	61.9	52.6	60.2	76.6	50.1	55.4	59.8	63.8	49.2	58.9	57.0	51.2	48.3	52.9	64.4	54.5	53.2	57.5	69.3	57.1	62.1	66.4	69.5	55.3	73.8	56.8	44.3	49.5	48.5	61.7	51.7	51.9
Oct 1	52.4	47.2	56.0	61.3	75.1	57.4	56.1	38.8	49.8	51.0	53.5	49.5	58.2	60.8	65.1	47.0	64.5	70.8	56.2	48.9	59.4	59.2	47.6	60.1	48.6	58.1	42.4	50.7	55.7	55.8	51.9	46.2	65.9	65.1	59.0	58.1	68.3	52.9	68.8	44.5	49.0	60.0	44.8	55.3	47.2	58.4
Oct 2	52.1	55.9	56.1	62.5	76.1	51.1	58.6	41.7	48.1	60.8	41.2	43.6	57.7	56.6	62.8	47.9	58.2	56.8	53.2	47.0	56.7	56.6	61.3	50.7	59.1	55.2	44.8	50.3	50.3	61.8	51.5	41.9	65.4	65.6	54.6	58.7	68.5	42.6	56.6	34.1	61.1	54.1	42.3	63.8	47.3	54.2
Oct 3	66.7	47.4	52.6	63.4	66.2	42.2	52.4	47.8	60.0	65.8	45.5	40.6	60.2	53.7	59.1	49.9	62.7	53.8	45.4	52.3	45.1	46.9	55.6	50.8	52.5	57.4	54.0	50.5	52.2	62.3	40.5	42.3	69.7	53.2	51.8	59.6	60.7	47.3	48.0	45.1	52.3	49.7	46.3	73.6	55.9	51.8
Oct 4	56.3	51.1	64.0	60.3	69.8	46.2	53.1	49.2	47.5	66.2	36.4	33.9	66.2	57.4	68.0	51.9	63.5	54.8	38.9	51.5	57.1	54.1	52.2	52.3	49.9	54.5	46.3	48.3	53.2	60.5	43.2	45.4	62.7	55.4	52.7	64.7	54.5	54.4	58.2	45.7	52.6	40.2	57.9	67.1	57.6	51.9
Oct 5	58.3	49.4	63.3	55.9	73.4	48.4	56.2	47.9	41.3	60.7	39.0	35.6	60.6	49.6	65.9	45.6	62.4	53.4	46.9	49.5	48.5	51.9	51.5	45.2	54.0	55.8	49.7	44.4	54.2	62.1	45.8	51.5	62.4	60.1	50.2	65.8	48.4	47.6	55.0	45.4	52.5	41.0	67.8	62.3	56.8	66.3
Oct 6	62.6	53.0	52.9	43.5	58.6	46.9	52.5	51.1	41.6	62.1	45.1	40.4	62.8	46.7	57.1	37.2	57.0	54.6	48.9	49.6	54.7	48.1	59.7	43.7	50.9	69.5	44.1	45.0	52.5	54.2	49.4	47.4	52.0	68.2	39.5	42.9	49.1	43.9	54.7	51.7	52.3	45.2	53.5	62.9	55.4	68.2
Oct 7	57.2	53.3	62.5	40.7	54.1	52.6	49.8	67.8	43.4	62.5	42.2	34.3	61.9	43.5	49.1	45.3	60.2	60.9	57.6	57.1	56.8	60.3	54.7	47.7	49.7	60.7	49.4	46.6	48.3	48.6	40.7	53.3	50.9	57.5	50.1	48.4	46.9	45.7	55.5	61.1	43.4	47.4	43.7	67.1	51.6	60.6
Oct 8	67.6	51.3	56.0	45.8	63.6	51.0	58.1	63.2	48.2	50.4	50.8	41.6	54.2	42.3	53.7	45.6	68.6	67.2	60.6	53.5	53.9	54.3	48.9	52.9	63.4	54.9	56.7	37.2	47.0	45.4	60.0	58.8	50.9	56.6	43.0	48.2	41.1	50.1	62.2	61.5	47.8	52.6	45.3	67.9	50.0	62.9
Oct 9	67.5	50.8	57.7	52.8	53.9	46.9	55.2	59.8	56.8	51.2	45.5	37.3	53.7	38.1	49.3	53.8	59.6	63.7	57.3	56.7	56.2	45.6	49.8	47.8	52.1	54.2	63.3	38.6	49.8	45.1	52.6	58.4	50.9	49.7	49.2	49.9	52.1	53.4	60.6	52.7	54.2	56.7	61.2	57.3	47.0	63.7
Oct 10	66.1	45.8	63.2	59.2	50.3	55.6	56.7	56.3	60.2	48.3	41.2	32.0	54.9	42.5	49.6	62.3	64.6	64.4	58.2	70.2	63.2	51.2	56.3	39.2	43.3	55.7	49.2	31.9	57.4	41.9	61.0	52.7	48.5	40.2	48.0	49.1	42.9	60.0	47.2	47.2	49.3	50.9	59.2	61.8	48.3	53.9
Oct 11	66.3	50.2	66.4	61.8	54.4	50.7	48.3	56.1	57.8	46.6	52.4	32.1	53.0	42.0	46.4	53.9	60.9	50.1	53.2	65.1	66.5	55.5	47.1	39.4	49.4	49.7	45.8	34.8	46.7	44.9	60.1	51.3	41.5	34.1	47.4	47.8	46.3	53.5	35.1	48.4	56.7	51.6	59.1	46.9	50.0	59.1
Oct 12	55.7	56.8	58.3	57.4	59.7	50.9	61.8	56.9	47.5	51.6	49.0	40.6	49.1	51.4	49.5	44.8	57.9	57.2	50.7	58.3	67.2	53.1	49.0	40.8	47.0	55.1	52.9	28.4	46.2	49.4	58.7	47.7	41.0	49.0	55.2	53.1	50.2	51.5	46.2	44.3	51.4	57.7	55.6	57.2	49.2	47.2
Oct 13	51.4	64.6	62.0	55.0	57.6	53.4	41.4	57.8	53.3	56.9	51.8	35.1	58.1	56.9	51.5	43.2	47.0	62.8	55.5	58.2	58.5	58.2	53.3	54.2	42.8	52.7	39.9	34.6	51.4	46.7	53.4	61.2	50.3	47.5	48.3	58.5	56.6	52.9	54.9	48.8	49.2	53.2	51.4	59.3	48.9	49.9
Oct 14	54.8	72.0	67.1	61.2	54.1	42.4	39.2	55.5	63.3	54.4	44.4	37.9	53.1	55.3	42.8	48.7	56.6	72.6	54.9	56.2	58.4	57.7	56.7	63.9	43.6	47.8	33.5	41.0	48.6	57.2	60.8	54.3	55.9	45.4	54.1	52.2	49.6	47.4	58.8	49.1	44.2	52.4	48.7	58.8	50.8	53.8
Oct 15	56.7	66.5	49.7	66.8	45.0	47.4	44.7	59.7	60.0	66.6	52.6	38.0	53.1	54.2	41.4	43.1	60.2	68.0	45.0	47.5	55.8	62.5	51.7	52.5	46.6	54.1	41.6	40.2	38.0	58.8	41.9	61.6	46.2	43.4	52.1	42.9	45.3	41.1	40.1	47.5	46.0	57.5	53.0	67.9	51.4	53.7
Oct 16	47.7	65.2	55.4	62.2	50.2	47.2	39.3	63.8	62.9	66.3	51.1	42.4	45.2	64.9	38.7	51.8	56.2	61.7	47.8	45.0	46.8	55.9	55.8	58.2	45.6	63.3	47.9	40.9	49.7	54.3	49.5	47.0	44.4	36.7	57.8	35.7	46.9	50.6	42.8	59.7	38.6	53.9	62.5	62.3	51.4	49.6
Oct 17	52.3	61.4	61.5	57.8	44.7	45.1	38.8	63.2	49.5	55.7	42.6	52.7	32.8	55.6	33.0	50.7	66.1	60.3	43.9	52.1	54.7	65.1	52.6	46.3	41.4	54.0	44.1	52.6	49.0	57.6	47.6	51.3	44.9	39.2	58.9	40.8	50.9	41.3	39.8	67.9	43.1	55.0	48.5	54.6	47.0	57.4
Oct 18	49.4	64.9	43.7	50.4	35.0	41.4	57.8	65.4	54.9	43.3	39.2	51.4	33.4	54.6	30.4	38.1	64.8	64.2	34.7	46.2	60.4	53.2	53.6	42.7	40.7	39.2	47.8	49.1	55.0	63.4	54.9	57.0	45.9	47.2	61.7	46.5	49.1	45.0	46.7	67.1	39.6	40.8	46.4	57.2	48.0	68.2
Oct 19	45.5	62.9	33.9	45.9	40.3	33.3	53.1	78.4	53.6	47.1	45.0	46.1	44.5	50.3	44.8	48.7	67.3	69.3	33.2	47.1	48.0	48.4	50.6	52.4	42.8	36.5	43.0	50.4	42.1	55.3	41.0	49.9	43.1	45.5	69.0	39.0	54.2	45.9	54.8	62.0	52.2	42.5	45.1	60.8	46.2	51.3
Oct 20	53.6	61.1	31.5	37.0	37.6	35.1	52.8	74.2	48.6	47.0	45.5	56.9	42.1	43.8	39.5	59.3	48.0	52.8	25.2	41.0	51.5	45.3	42.1	43.3	41.6	36.7	46.1	51.9	47.9	43.8	39.0	46.0	56.6	42.9	56.0	34.9	59.2	50.6	53.3	55.0	44.4	40.0	37.7	54.8	50.1	43.2
Oct 21	43.6	55.1	24.0	45.0	29.5	35.8	52.5	73.7	46.0	41.7	40.5	48.6	46.5	33.7	38.4	55.6	52.5	39.4	35.7	45.4	61.1	42.0	39.6	46.9	54.1	41.7	52.6	46.3	48.4	47.9	40.2	39.1	54.8	43.1	60.0	34.7	62.2	51.0	52.0	54.5	48.5	47.6	53.5	50.4	39.5	56.6
Oct 22	41.1	46.4	19.7	53.8	33.9	41.0	34.9	75.9	56.4	37.4	43.9	46.9	44.2	41.1	37.8	51.5	56.7	38.1	33.7	54.2	59.0	42.3	44.1	56.9	43.3	58.2	47.8	44.3	43.0	49.2	28.0	43.1	57.8	44.3	59.5	40.4	58.4	37.3	49.1	47.8	39.1	50.7	49.2	37.1	32.1	56.1
Oct 23	41.2	43.7	30.2	55.3	36.2	46.7	42.7	60.1	51.3	46.4	52.2	60.5	43.9	49.8	41.5	48.9	47.8	39.9	45.7	50.7	55.8	45.4	41.0	52.4	43.3	57.9	35.9	58.0	54.0	45.5	35.4	44.5	47.5	33.5	50.5	32.8	56.8	32.2	49.2	38.1	40.0	53.3	47.2	31.4	46.2	51.7
Oct 24	43.1	40.5	39.2	49.2	36.7	52.2	49.3	51.6	50.1	51.3	56.7	47.2	52.7	57.7	33.9	48.9	33.8	30.2	46.0	60.7	58.8	51.4	37.1	46.6	33.1	56.7	42.6	47.7	47.7	43.3	35.0	43.6	52.5	41.0	52.9	44.0	62.1	33.1	47.1	42.8	34.2	55.3	48.0	36.6	51.0	39.4
Oct 25	53.6	45.5	44.7	37.4	45.8	44.6	44.4	57.5	50.9	48.1	61.4	38.5	47.4	49.0	36.3	39.0	47.5	23.7	44.0	60.5	59.1	46.0	45.0	30.4	28.5	42.8	50.3	47.9	49.4	46.1	44.9	44.3	53.7	46.0	46.3	42.0	53.8	38.6	49.0	54.5	38.0	70.5	60.7	32.4	50.7	44.4
Oct 26	55.6	52.7	45.6	38.8	39.2	34.5	36.8	42.0	55.9	36.8	61.0	33.3	39.8	47.9	45.8	50.3	36.2	29.3	47.7	58.5	54.4	43.0	46.7	38.7	30.3	51.2	56.0	42.3	51.5	47.9	38.9	32.1	40.1	48.8	50.0	45.1	52.0	40.8	54.0	52.8	32.8	75.4	58.6	38.8	42.6	40.7

TABLE 5. SUMMARY AND EVALUATION OF DAILY TEMPERATUR[illegible]A IN HELP MODEL 100-YEAR SYNTHETIC WEATHER DATA SET

YEAR->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
Oct 27	45.8	48.3	48.6	45.6	44.0	33.3	29.7	37.4	45.5	30.2	49.0	34.2	55.1	47.9	48.9	56.3	31.9	41.8	48.1	66.1	57.1	42.9	61.4	38.7	27.8	38.4	56.5	47.6	53.6	49.8	51.0	32.3	34.3	45.8	47.1	35.9	49.4	49.4	48.4	54.8	33.9	55.7	62.2	48.4	41.3	36.6
Oct 28	52.2	41.5	48.9	40.3	41.4	33.7	25.5	36.5	50.8	35.8	41.3	32.6	55.0	45.5	51.8	55.7	39.6	49.9	41.5	63.6	56.2	53.0	47.7	53.0	35.9	45.1	59.2	50.4	47.5	52.5	50.3	29.5	27.5	42.8	42.9	42.9	55.6	51.7	51.5	47.3	31.8	49.6	59.0	44.8	49.0	42.4
Oct 29	49.3	39.5	39.3	47.3	40.6	42.4	28.8	28.8	53.8	42.1	36.7	39.0	51.1	36.4	62.1	53.7	47.6	45.8	43.9	63.1	48.9	46.3	50.5	46.8	46.5	43.6	58.1	52.6	44.4	52.2	52.6	37.7	37.4	39.6	44.3	44.8	57.3	41.4	46.6	42.5	36.3	51.8	51.1	38.9	56.8	47.5
Oct 30	54.9	42.1	47.3	37.6	42.5	34.3	27.8	38.9	57.4	44.6	38.4	42.1	52.6	40.4	53.2	45.2	40.2	49.6	37.3	56.7	56.3	59.4	49.1	45.7	44.0	48.8	68.4	41.0	34.4	38.5	49.8	44.9	28.3	31.3	37.4	44.8	60.3	43.3	51.3	50.3	28.1	59.9	54.9	35.9	49.4	42.1
Oct 31	54.2	36.8	50.8	34.0	44.9	40.2	29.3	40.5	56.4	44.5	42.5	37.9	45.3	42.9	38.6	38.8	42.6	46.0	43.3	63.6	48.1	42.1	50.9	42.2	48.0	52.0	60.2	35.3	27.5	32.9	47.4	46.7	29.9	29.5	41.3	40.4	39.6	40.8	43.2	60.3	25.4	54.2	37.4	38.8	47.8	39.6
Nov 1	47.6	35.9	43.8	31.1	46.0	44.5	29.1	39.6	35.0	37.6	53.0	39.9	41.6	39.1	32.0	48.4	37.5	49.2	41.3	47.5	47.2	46.4	50.1	28.9	46.8	53.3	55.8	32.2	26.9	48.5	45.3	48.6	30.5	42.7	39.5	39.2	40.1	52.1	45.0	43.3	27.7	38.6	39.8	20.6	61.5	46.1
Nov 2	48.0	38.1	43.8	37.2	52.2	42.2	31.4	31.7	41.3	33.9	45.4	44.3	43.3	36.1	37.8	39.9	37.6	43.7	42.8	33.9	53.0	36.1	46.9	35.1	43.6	49.3	49.6	32.0	29.6	49.7	37.4	53.5	24.3	44.2	38.5	37.3	36.4	50.7	41.4	43.7	26.3	28.4	39.6	26.4	59.4	53.0
Nov 3	53.2	47.4	34.9	53.1	46.7	45.3	35.0	22.0	41.0	39.3	53.1	41.8	41.4	35.9	52.7	32.8	52.5	43.2	52.9	31.5	43.3	36.5	44.2	32.7	48.4	33.7	45.3	29.6	40.6	46.0	37.3	54.7	17.0	51.8	56.1	37.3	32.6	44.5	38.5	41.5	22.7	28.7	34.3	30.6	65.6	54.4
Nov 4	49.3	46.2	45.1	45.9	48.2	47.0	31.9	39.1	31.7	47.1	55.7	43.0	45.1	30.2	45.4	27.9	52.8	41.6	42.8	27.3	39.8	35.7	38.0	38.4	42.0	38.0	44.6	39.4	37.9	40.3	33.4	53.8	12.6	55.3	48.2	37.3	37.7	38.5	39.4	44.7	37.2	38.8	37.8	38.4	62.3	39.3
Nov 5	47.4	46.4	49.7	52.6	34.1	49.8	34.4	34.5	28.9	45.6	56.8	46.9	46.3	19.8	30.8	28.8	47.7	43.8	46.4	29.2	38.1	27.9	40.1	37.4	41.4	40.1	37.6	39.9	34.4	34.1	30.8	61.5	13.0	49.5	41.8	40.1	32.7	46.3	36.8	41.5	29.9	39.2	45.8	38.0	52.4	37.7
Nov 6	49.8	43.2	61.9	46.9	33.9	49.5	28.4	40.9	36.4	47.6	34.1	58.2	40.8	36.8	47.7	22.5	41.5	50.9	45.9	35.0	41.2	28.0	39.5	34.3	41.5	45.9	43.3	33.3	29.4	32.4	38.0	56.5	25.8	41.1	45.6	38.3	41.9	49.2	37.7	55.3	30.1	39.9	41.9	38.1	48.9	36.0
Nov 7	52.9	41.8	43.7	52.4	29.2	50.7	36.2	48.8	43.5	39.0	49.2	56.0	35.4	38.3	44.9	27.4	40.8	44.0	45.8	29.2	44.8	27.3	44.3	35.0	32.1	52.9	28.1	37.2	23.5	36.6	39.5	47.2	32.7	42.9	38.6	31.3	50.6	40.4	44.0	49.6	44.4	39.6	45.4	49.3	57.1	39.3
Nov 8	54.9	25.8	31.8	56.7	31.2	45.9	33.1	40.9	42.0	30.4	45.2	64.0	36.4	30.9	44.9	27.2	31.7	40.8	37.9	26.4	40.3	32.2	44.9	37.3	36.9	51.9	24.1	19.9	18.8	39.3	40.1	54.5	27.5	46.9	36.8	30.5	50.2	44.7	41.4	46.7	34.2	43.3	57.1	47.6	53.7	29.9
Nov 9	57.8	41.9	31.2	61.0	31.9	45.5	35.2	36.5	31.5	27.2	45.8	56.2	36.9	39.3	29.0	34.4	42.4	43.7	39.7	23.3	34.0	39.0	36.0	43.2	30.4	51.2	20.9	21.4	29.9	41.6	44.4	43.8	38.0	34.0	45.2	36.2	46.2	50.0	43.2	53.6	37.7	46.0	54.8	47.3	54.4	16.8
Nov 10	58.4	43.9	35.3	51.6	34.2	44.1	29.4	48.1	35.0	31.2	42.5	49.0	38.9	33.6	32.0	33.4	30.3	46.1	29.2	25.5	33.5	49.9	35.1	46.8	29.4	40.7	23.2	33.0	31.5	35.9	51.0	38.0	30.4	37.5	42.6	38.5	34.3	50.3	48.4	39.0	28.1	40.8	48.6	43.6	58.6	30.2
Nov 11	55.9	38.0	43.5	45.0	34.7	39.2	37.1	37.5	28.9	32.0	43.5	52.2	42.9	27.5	43.2	27.0	27.2	45.8	34.9	22.8	31.6	40.9	27.9	44.8	36.1	22.6	22.9	31.9	36.6	33.9	47.3	30.3	30.9	30.6	43.2	35.6	37.6	55.7	40.6	43.1	23.1	46.2	50.9	38.2	47.4	36.6
Nov 12	45.7	25.2	46.6	55.0	38.5	37.8	48.6	37.2	34.8	27.0	42.7	54.5	48.2	31.1	47.5	36.8	29.2	44.6	35.1	28.4	34.2	45.4	26.5	42.5	46.4	29.8	28.7	27.1	41.8	32.6	55.6	36.6	33.6	46.8	42.2	24.4	35.2	40.7	33.5	35.0	33.8	41.4	53.9	35.1	40.8	31.9
Nov 13	40.7	31.4	35.1	45.3	44.4	43.4	44.8	44.7	34.2	21.3	32.7	49.3	52.6	30.4	50.7	51.0	30.1	50.0	36.8	20.2	43.4	37.0	42.6	43.9	50.8	33.8	48.4	21.4	41.8	30.6	46.1	44.0	36.0	40.9	27.4	28.7	27.0	39.5	28.8	42.1	42.3	32.7	37.2	30.9	39.2	31.1
Nov 14	56.0	41.7	40.8	35.8	44.3	47.4	48.6	50.4	37.6	29.5	38.6	45.2	28.4	36.8	36.9	54.6	31.8	46.8	38.0	23.0	40.5	41.3	41.4	31.1	55.9	24.8	38.7	32.4	32.7	41.3	46.0	42.7	24.2	50.1	23.4	30.9	33.9	26.8	21.0	35.5	47.4	40.0	35.8	42.3	43.3	33.3
Nov 15	54.6	44.6	43.4	37.1	45.1	36.5	44.9	50.0	50.0	25.4	39.6	51.6	32.4	28.4	28.9	57.0	19.4	40.9	34.7	32.6	41.6	42.3	36.7	24.9	29.7	31.5	36.3	30.1	24.8	41.5	41.5	35.5	35.8	38.8	30.2	30.3	38.6	22.1	18.2	27.8	34.1	26.1	27.6	39.4	34.0	28.2
Nov 16	48.2	39.0	52.8	27.6	47.0	47.1	36.0	40.5	41.6	43.0	36.3	34.1	27.1	22.8	18.6	65.7	27.4	26.8	29.4	48.0	42.5	46.0	36.8	17.4	28.8	40.5	36.3	30.4	30.7	34.0	27.9	35.4	26.9	33.9	31.6	36.9	36.7	28.9	26.4	27.0	33.1	34.1	23.4	38.6	50.0	36.5
Nov 17	37.4	39.2	44.4	21.8	54.6	44.7	31.6	26.0	34.4	34.2	40.3	42.5	28.2	18.0	25.5	63.2	36.4	32.0	30.9	43.1	42.9	48.5	33.9	30.0	25.8	46.2	38.8	37.9	23.5	30.2	30.0	30.9	32.8	37.2	40.5	42.4	46.8	34.7	31.3	22.5	33.6	43.5	28.6	31.0	47.8	27.7
Nov 18	44.8	37.5	40.8	31.1	47.1	43.3	36.8	30.5	37.4	28.0	43.8	37.8	26.9	27.4	25.5	46.7	24.3	37.4	34.1	38.0	38.5	44.0	34.2	31.6	28.5	34.5	45.5	34.6	36.8	24.4	20.9	36.7	27.2	33.4	35.1	44.7	56.0	33.5	32.0	20.4	35.8	34.2	32.8	35.5	45.8	28.5
Nov 19	45.3	42.0	39.5	31.8	54.2	42.0	37.2	35.9	34.0	30.4	41.1	34.0	28.2	25.0	36.3	35.7	22.9	47.0	38.4	49.3	33.9	38.5	45.1	38.8	30.8	39.1	47.3	29.8	31.0	17.8	23.0	30.5	31.0	42.0	32.8	43.5	62.4	33.5	26.0	31.4	25.6	29.1	29.1	26.0	37.9	31.3
Nov 20	33.7	39.9	38.5	34.9	51.6	38.1	37.2	34.8	41.1	28.8	43.0	46.2	34.8	15.8	42.7	29.4	26.6	53.7	27.9	44.1	37.0	34.6	36.3	43.7	39.0	35.6	40.4	32.6	29.7	35.8	32.9	35.4	27.0	39.6	33.9	42.6	50.1	32.1	26.5	39.3	24.5	37.1	38.3	27.5	37.5	38.8
Nov 21	32.5	42.0	22.9	44.7	43.6	33.4	41.0	43.0	43.1	29.8	36.6	39.8	34.3	14.3	39.7	37.5	20.9	44.7	34.0	53.0	42.2	32.8	35.3	35.3	46.1	34.5	38.4	34.6	26.6	31.9	34.8	44.7	21.6	27.3	42.3	49.2	51.2	43.0	39.6	44.4	39.9	27.7	48.8	20.6	43.6	42.0
Nov 22	23.5	28.4	32.4	37.9	44.0	27.5	38.0	47.2	38.7	33.8	43.7	44.9	34.5	23.6	37.0	25.6	12.3	39.0	23.0	50.3	43.7	42.6	47.9	40.1	47.8	41.2	33.6	36.5	36.8	36.4	45.9	35.3	33.6	42.4	28.6	38.7	46.7	34.1	32.3	32.5	39.9	18.2	38.8	15.1	28.7	35.5
Nov 23	29.6	21.6	23.3	35.2	49.3	30.9	49.9	41.3	44.3	41.4	38.5	42.2	21.5	40.6	37.1	22.7	24.5	42.7	27.1	44.9	46.4	36.5	43.6	44.0	56.0	29.0	49.3	34.2	34.3	36.6	32.6	28.7	35.6	44.8	18.0	37.2	34.6	31.2	25.9	41.6	32.4	20.6	38.7	23.0	31.4	37.5
Nov 24	37.0	37.6	36.8	23.4	49.7	22.2	43.6	35.3	55.7	40.3	42.1	32.8	18.8	37.7	42.4	26.4	38.1	40.1	31.7	44.5	44.5	36.2	40.4	34.5	45.0	35.5	45.9	42.0	34.2	26.0	50.3	21.1	38.2	39.1	27.5	38.7	25.7	35.9	19.5	32.3	30.3	11.6	47.5	23.6	22.5	48.4
Nov 25	42.4	33.1	43.5	39.4	42.6	27.9	46.4	35.4	44.8	26.8	37.3	34.5	23.1	44.8	44.1	25.8	36.1	42.0	29.0	26.0	43.1	39.1	51.4	29.4	28.9	41.3	37.2	36.6	31.9	37.1	45.3	15.3	31.8	30.5	30.3	31.4	21.4	28.8	21.9	30.2	30.6	12.6	52.9	25.3	32.1	38.6
Nov 26	27.6	41.3	41.1	42.4	49.9	26.2	39.4	37.7	35.7	28.3	45.9	33.9	15.0	40.7	34.2	22.7	33.2	41.6	24.3	23.1	43.6	30.0	43.2	35.4	30.8	38.0	39.5	46.2	22.5	35.3	32.7	15.2	26.4	31.5	29.5	29.3	40.2	27.1	24.7	35.5	33.8	25.0	53.1	33.4	23.3	17.8
Nov 27	32.6	48.0	27.5	37.4	47.1	30.5	33.7	29.6	26.4	34.2	34.1	35.2	7.1	39.6	34.5	26.2	32.8	46.1	34.5	32.7	41.7	33.5	37.0	21.5	28.7	41.2	31.5	51.3	39.7	37.2	34.7	22.6	28.0	35.1	24.4	28.2	33.6	33.6	31.0	30.1	45.7	30.8	49.1	28.6	31.9	18.1
Nov 28	44.3	49.1	14.6	27.3	51.6	33.1	37.6	27.5	21.1	37.1	25.7	25.9	14.2	49.7	28.4	28.5	24.3	39.5	48.2	34.6	33.4	32.1	30.4	31.7	20.1	36.1	30.9	44.8	38.5	38.4	33.0	24.2	35.2	30.6	20.7	20.1	27.7	33.3	40.6	30.9	42.1	27.1	44.5	26.2	26.7	19.9
Nov 29	31.9	44.5	26.9	26.2	47.1	35.4	45.5	33.5	23.4	39.2	25.2	46.9	27.3	49.0	31.4	41.7	28.0	32.8	42.8	28.1	27.3	23.1	25.6	30.3	26.0	33.4	35.4	35.1	35.5	21.5	41.1	15.7	23.1	31.7	15.1	18.4	20.7	26.4	33.1	31.2	42.4	24.5	54.1	26.5	23.4	19.6
Nov 30	40.5	47.5	27.1	33.6	36.1	28.3	51.5	33.6	37.8	29.8	29.2	43.1	43.4	51.5	32.8	37.6	28.3	24.9	45.1	26.7	22.8	24.3	30.8	30.8	23.2	45.3	47.9	31.0	36.5	24.0	35.0	20.9	20.4	38.8	20.0	28.1	28.5	26.7	30.2	29.9	47.2	30.4	43.6	27.6	25.5	21.9
Dec 1	27.8	47.8	31.5	28.3	31.4	30.0	49.1	16.5	29.7	32.6	21.3	39.3	37.0	37.2	34.5	48.5	30.1	16.1	43.7	42.0	28.9	15.4	35.4	25.8	28.9	39.5	50.6	34.1	36.7	18.7	32.4	21.9	23.4	32.1	24.4	32.8	30.2	23.9	24.9	31.9	39.3	26.7	43.5	36.0	39.1	21.4
Dec 2	31.5	54.8	32.1	31.9	30.6	34.4	49.9	15.6	22.7	32.1	14.8	28.3	32.4	33.1	27.9	42.0	32.4	19.9	36.2	35.0	30.1	31.7	35.8	31.5	28.1	30.9	52.1	29.7	33.2	35.5	38.3	28.2	16.6	37.1	23.5	37.5	34.9	23.4	30.3	14.6	40.9	23.4	30.9	38.8	42.2	23.7
Dec 3	29.3	39.5	21.9	33.7	25.4	29.6	42.8	29.0	28.6	20.1	18.6	29.5	34.1	28.8	36.0	34.5	32.5	22.7	33.7	34.7	24.5	34.0	35.9	34.2	35.7	32.5	56.4	21.7	21.8	39.2	30.0	23.7	21.1	39.5	32.3	40.6	26.5	27.0	28.8	18.0	47.2	15.0	30.3	43.5	33.8	30.6
Dec 4	30.4	26.7	21.4	20.8	37.3	31.6	26.3	21.6	25.6	22.8	21.7	27.5	42.7	32.3	39.1	45.2	30.9	21.5	27.4	32.6	28.3	33.3	22.8	43.9	30.1	38.3	52.8	10.5	23.4	41.9	36.8	28.2	21.3	27.9	33.1	44.2	38.7	33.8	24.3	19.5	29.4	17.6	29.1	37.4	24.7	34.8
Dec 5	38.6	31.2	8.3	33.0	33.9	31.5	25.3	31.1	29.6	27.9	40.5	34.6	41.6	33.6	30.1	44.4	26.2	30.9	19.8	35.5	19.5	20.4	30.2	33.5	19.9	31.4	50.9	17.7	24.5	24.5	41.0	41.7	14.5	26.1	27.1	41.9	31.8	35.6	27.7	23.1	28.4	16.1	31.7	20.6	33.1	31.0
Dec 6	32.6	32.7	9.0	27.4	41.2	31.6	21.8	35.2	23.2	27.9	36.1	28.2	35.9	37.8	32.7	51.4	26.6	34.9	13.9	34.9	26.4	21.2	31.4	26.0	38.3	36.7	45.0	27.9	21.3	30.4	42.9	26.8	18.6	20.2	18.2	27.6	25.5	27.9	34.0	25.5	27.6	14.7	29.0	27.9	38.7	34.1
Dec 7	34.5	19.9	14.4	28.4	32.0	29.4	23.0	33.4	24.8	25.4	43.3	42.3	43.1	39.3	21.4	46.2	36.4	31.1	13.7	32.5	36.2	26.2	32.4	19.9	33.4	23.5	35.4	29.1	31.3	34.4	37.6	27.7	17.1	23.0	21.7	26.3	27.1	38.4	29.5	28.6	27.8	14.5	26.2	27.4	41.5	38.1
Dec 8	33.5	15.3	13.1	23.3	36.3	21.2	25.0	31.8	23.4	24.2	35.2	46.0	45.4	38.4	17.9	44.3	33.5	27.8	26.4	33.1	37.1	31.6	39.0	18.3	31.5	20.8	23.4	31.4	33.2	22.7	36.1	28.5	27.4	36.4	34.0	34.4	23.2	27.1	20.9	24.3	34.5	16.2	35.9	26.7	36.7	43.1
Dec 9	24.1	11.9	20.2	20.5	36.9	30.8	16.8	24.8	26.8	23.8	25.8	36.0	36.0	33.4	33.2	24.7	37.0	18.1	33.0	29.8	36.0	24.7	46.3	21.8	29.0	20.8	26.8	27.0	28.3	28.5	38.3	34.0	17.2	28.5	33.1	32.8	21.7	27.9	34.6	24.5	42.8	26.2	17.3	32.9	31.9	44.6
Dec 10	20.0	18.7	30.9	15.7	35.8	30.4	19.8	19.0	23.8	30.5	27.7	27.7	28.4	30.1	25.1	20.4	33.6	23.4	24.6	34.1	21.8	26.7	39.3	16.7	26.4	18.9	25.4	19.5	36.9	24.8	34.7	41.5	14.1	34.8	26.2	29.1	23.9	29.7	27.1	33.2	48.2	25.1	21.0	41.9	33.5	29.2
Dec 11	13.8	13.3	32.6	20.5	32.6	21.0	22.2	21.2	30.4	16.9	26.9	38.4	35.4	34.8	31.6	16.8	28.1	25.4	28.7	31.9	30.9	25.9	42.4	21.0	22.3	23.1	38.7	26.2	29.3	27.7	31.9	31.4	21.5	35.6	18.8	25.9	25.2	25.9	29.1	34.1	40.2	34.4	23.8	38.7	20.9	21.8
Dec 12	10.7	14.4	24.8	26.7	43.7	27.3	25.1	29.0	40.3	26.5	29.5	32.3	34.9	28.4	25.6	19.7	34.7	20.0	33.1	38.6	26.2	23.0	37.3	15.8	18.1	29.6	38.0	25.1	20.2	32.7	33.3	41.9	20.3	33.2	11.1	18.1	21.4	22.1	29.7	37.2	30.2	35.9	30.1	39.3	27.0	14.6
Dec 13	9.0	21.2	24.6	27.1	43.0	21.5	22.3	20.1	23.8	26.2	32.9	33.0	19.4	26.9	35.0	22.5	30.7	10.3	31.3	44.4	27.6	24.9	41.2	16.4	19.8	33.3	32.5	18.3	23.3	36.2	34.9	34.1	23.5	29.4	14.4	29.6	25.4	23.8	34.3	37.6	30.7	36.2	28.1	27.4	30.4	22.8
Dec 14	24.7	16.3	21.5	33.5	37.5	23.9	29.0	24.3	22.5	35.3	28.8	37.2	22.0	27.5	36.3	30.3	34.8	18.6	31.6	32.8	18.9	30.9	36.8	28.7	24.9	35.7	37.6	20.2	13.8	33.4	45.1	39.2	25.5	30.9	15.7	24.4	20.6	31.7	33.4	48.6	39.3	35.5	27.7	36.0	29.9	19.3
Dec 15	36.5	17.1	32.2	24.2	32.6	26.4	29.6	28.8	18.9	26.3	26.4	25.0	25.4	23.8	31.3	35.3	37.8	20.6	19.5	38.8	24.8	30.5	38.4	33.6	24.9	40.7	29.6	20.1	16.7	47.3	49.2	40.7	24.6	34.9	15.2	28.3	21.5	28.1	21.2	45.0	43.7	24.0	19.0	24.0	32.0	37.5
Dec 16	41.9	31.2	23.4	18.7	29.7	25.8	28.6	16.4	27.9	31.4	29.4	26.4	21.4	26.4	27.8	28.1	40.2	23.6	20.2	28.8	27.1	30.6	30.4	24.7	19.7	36.1	26.7	19.6	26.2	44.6	36.7	43.2	18.2	29.3	23.5	18.9	34.8	29.0	9.3	46.1	33.7	24.7	21.6	30.0	41.1	30.2
Dec 17	23.9	21.4	22.6	18.4	38.0	18.9	30.8	11.4	22.8	28.9	24.1	28.6	28.6	30.3	17.6	16.6	32.0	17.1	19.2	33.6	36.4	28.8	35.7	30.1	20.8	23.2	33.1	14.4	29.8	36.8	30.5	46.7	17.9	37.7	9.7	19.5	29.2	27.7	14.6	49.6	23.5	26.8	32.5	28.3	35.7	26.1
Dec 18	22.5	14.1	21.5	19.7	25.7	26.6	37.2	13.2	24.2	24.9	15.9	22.5	24.7	20.7	27.3	22.2	27.4	21.1	20.1	25.4	27.9	21.7	34.5	25.5	13.3	14.1	30.7	17.0	21.9	39.3	30.2	39.6	28.2	44.9	23.8	30.2	23.6	28.1	22.1	48.7	28.5	37.4	26.9	36.3	44.3	25.0
Dec 19	11.1	21.9	24.3	15.3	22.1	17.3	44.0	3.7	30.2	29.3	20.7	39.4	23.1	18.4	37.1	18.5	17.2	31.3	19.5	31.9	18.8	21.6	23.5	38.3	18.9	16.1	32.2	31.3	17.6	39.8	34.0	36.2	29.5	27.4	22.7	36.8	30.2	41.2	25.9	31.3	29.8	45.2	28.8	46.3	41.9	18.5
Dec 20	14.5	19.5	28.2	14.3	27.3	31.2	33.3	8.3	39.9	24.2	31.2	45.4	24.6	20.6	32.2	24.0	30.5	28.9	16.3	36.9	21.6	23.7	25.8	24.2	21.9	18.8	47.2	37.1	31.5	41.6	34.6	30.6	30.9	19.6	33.6	40.5	22.9	41.6	33.5	33.8	30.8	41.3	33.5	29.8	38.6	29.5
Dec 21	29.1	29.3	28.7	22.3	17.4	23.6	31.9	26.7	26.2	14.2	31.4	30.2	19.3	23.4	38.5	16.8	35.6	25.2	27.7	36.9	22.5	19.3	19.5	18.1	21.1	20.8	41.0	30.6	28.8	32.9	32.4	28.7	24.3	17.4	27.0	39.4	32.7	48.6	26.0	29.0	30.5	32.8	30.6	21.3	40.2	34.4
Dec 22	37.6	33.4	30.2	43.0	20.8	18.5	31.8	14.8	30.0	21.0	26.8	27.8	22.2	22.4	30.5	18.5	29.4	39.3	34.0	37.2	33.6	25.8	29.9	20.6	15.2	28.1	35.2	29.8	18.3	33.9	29.3	24.7	28.6	28.2	33.4	36.9	33.3	37.7	28.7	36.0	29.6	31.1	30.2	27.2	38.4	31.8
Dec 23	44.0	30.6	35.5	36.0	25.4	19.0	27.2	20.4	26.6	19.3	19.6	31.0	24.2	28.7	18.9	19.9	22.6	42.2	37.7	32.3	34.2	26.0	38.4	15.8	12.7	34.4	26.5	27.0	29.4	36.0	28.3	35.7	21.6	23.6	31.3	43.2	14.9	31.8	29.5	24.7	23.7	22.1	25.8	32.6	40.8	26.8
Dec 24	42.7	27.3	37.4	41.1	23.9	21.1	36.0	21.3	17.0	13.8	21.2	24.8	19.8	30.3	24.7	27.5	30.4	39.9	32.7	22.5	31.9	27.9	28.0	26.7	6.0	33.1	38.7	25.5	26.0	26.9	26.3	29.5	12.7	28.1	26.1	35.8	23.6	27.7	19.6	32.7	23.4	15.5	29.6	23.5	39.1	27.6
Dec 25	40.5	21.3	38.7	33.1	29.0	31.2	39.2	20.4	15.3	16.2	20.2	16.3	26.2	27.3	24.2	26.4	22.2	29.5	34.1	28.2	27.1	18.4	29.9	28.5	19.5	23.7	33.2	18.7	34.9	35.6	26.5	24.4	19.2	30.3	16.4	42.8	25.7	29.0	29.0	30.6	31.1	19.7	32.2	19.6	40.2	33.1
Dec 26	39.9	14.0	15.5	31.7	23.7	31.0	37.7	27.2	5.4	14.5	20.9	19.3	34.8	27.4	19.0	31.2	22.1	35.6	28.9	22.1	28.9	20.8	31.6	38.4	30.4	35.9	31.9	29.3	26.7	30.2	29.1	20.3	23.3	25.2	20.9	30.9	29.1	30.8	23.1	31.2	26.2	20.2	41.1	13.1	39.6	33.0
Dec 27	49.0	7.2	19.6	31.6	27.8	28.9	27.2	31.7	7.1	19.8	22.7	27.3	31.9	24.5	23.7	38.9	13.2	31.5	28.6	21.0	36.1	24.9	31.2	45.3	28.5	23.2	27.5	37.5	18.3	25.3	26.9	14.8	28.5	24.6	37.5	18.3	30.0	20.4	32.4	24.2	21.6	23.8	29.7	18.8	26.9	30.5
Dec 28	44.4	19.3	14.4	25.5	31.6	26.2	23.0	33.0	7.0	20.9	20.5	15.4	36.3	18.8	27.2	38.2	22.3	29.7	27.2	17.6	38.7	21.8	28.2	42.4	26.8	31.7	22.5	24.7	26.2	20.1	24.3	23.3	26.8	30.0	36.1	13.6	20.0	30.5	31.2	18.4	22.6	26.3	21.5	26.1	28.3	28.0
Dec 29	44.9	33.3	15.5	25.3	24.3	31.2	22.4	31.4	16.4	29.2	19.7	18.3	30.8	15.1	34.7	31.3	29.1	33.1	21.8	37.7	31.5	12.7	27.0	35.5	22.3	38.3	25.9	23.4	20.6	28.0	21.7	30.9	32.0	28.7	34.7	8.0	19.5	22.7	31.3	12.8	18.0	28.5	19.4	23.6	15.6	32.4
Dec 30	29.7	34.6	19.8	23.8	36.7	25.5	27.1	33.7	27.3	35.1	24.9	18.7	26.6	14.6	34.5	24.3	28.7	23.3	12.3	36.8	27.7	21.4	30.3	29.4	29.0	46.4	30.2	17.1	27.8	25.4	28.7	32.3	31.5	28.3	37.9	16.8	15.5	26.9	23.7	10.3	27.0	35.0	18.1	24.1	17.1	25.4
Dec 31	0.0	0.0	0.0	26.7	26.7	26.7	26.7	28.7	28.7	28.7	28.7	16.2	16.2	16.2	16.2	30.1	30.1	30.1	30.1	34.6	34.6	34.6	34.6	29.8	29.8	29.8	29.8	25.0	25.0	25.0	25.0	36.6	36.6	36.6	36.6	16.9	16.9	16.9	16.9	17.0	17.0	17.0	17.0	23.3	23.3	23.3
Mean	53.2	51.6	50.7	51.6	51.7	51.5	51.7	52.7	51.8	52.1	52.1	51.0	52.3	51.0	52.8	51.7	52.7	51.9	50.8	52.5	52.9	51.8	52.1	50.9	51.1	53.0	52.9	49.2	52.0	51.5	50.3	52.2	50.6	52.1	51.8	52.5	52.3	52.1	49.9	52.2	52.8	51.7	53.8	51.4	53.3	51.9
Min	9.0	7.2	8.3	10.4	11.7	12.4	16.8	3.7	5.4	13.8	14.8	10.8	7.1	14.3	16.2	14.8	12.3	10.3	12.3	14.5	18.4	12.7	18.4	11.9	6.0	14.1	6.7	10.5	9.2	15.4	6.7	14.8	12.6	14.2	9.7	8.0	14.9	13.4	9.3	10.3	17.0	11.6	17.0	13.1	12.9	14.6
Max	89.3	90.0	87.4	86.5	88.7	86.8	86.4	88.5	89.1	86.4	86.6	94.0	87.8	87.8	91.7	85.2	86.1	88.1	86.3	89.2	88.5	90.1	85.9	88.2	89.5	86.7	89.0	89.8	91.3	86.2	84.8	91.6	89.9	87.4	90.1	87.4	88.4	86.1	87.1	90.8	84.8	87.4	88.1	86.2	90.4	89.5

YEAR->	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
Jan 1	34.0	32.5	16.8	38.5	23.1	31.8	32.0	25.8	32.5	37.2	30.0	35.9	38.4	24.5	21.4	39.6	44.4	27.6	24.9	27.0	38.5	33.6	30.8	25.1	31.7	18.9	22.1	28.3	38.5	23.1	29.8	40.0	31.4	26.7	25.2	26.9	36.3	50.3	34.7	19.9	28.2	17.9	36.7	42.5	24.1	17.6	29.8
Jan 2	34.6	27.6	22.6	35.8	37.8	30.5	28.7	27.3	27.8	31.4	27.4	28.8	40.8	31.1	18.9	32.8	47.8	26.2	30.0	35.1	42.8	27.0	27.9	17.8	33.1	28.3	31.2	29.3	33.3	16.8	27.4	42.8	21.9	31.9	29.6	39.4	33.3	49.0	34.3	20.4	25.8	34.4	27.1	43.3	34.2	18.1	20.6
Jan 3	37.9	29.3	28.8	33.2	35.2	39.1	32.3	33.5	23.9	18.1	26.9	25.3	43.5	29.5	20.1	22.2	49.1	32.8	30.2	40.3	36.6	29.1	35.2	25.6	38.2	28.2	21.7	29.6	25.7	20.3	35.1	37.7	32.7	35.5	30.2	35.5	27.4	53.4	40.8	25.3	41.1	36.6	25.1	41.8	33.5	29.6	12.9
Jan 4	37.4	42.8	16.9	31.1	32.9	29.6	37.2	39.2	35.4	22.2	23.8	26.3	35.5	26.0	29.9	35.0	36.7	36.3	21.2	34.5	39.2	29.7	39.6	33.9	33.5	30.9	18.4	31.2	41.5	27.6	45.3	40.2	29.7	41.2	32.0	20.0	31.5	41.3	34.7	20.4	34.7	35.5	35.7	27.9	38.2	28.8	22.5
Jan 5	36.3	43.4	19.7	33.1	33.3	39.8	30.1	33.1	29.9	27.3	36.7	20.4	28.4	29.4	23.7	27.2	36.6	39.8	26.2	35.9	38.8	25.1	27.9	22.8	29.2	39.2	24.1	25.5	36.2	24.2	38.6	40.3	33.6	38.5	26.1	18.8	28.6	33.5	31.3	30.1	33.2	37.4	36.8	28.9	33.4	33.9	35.5
Jan 6	39.9	45.7	9.5	36.1	35.4	42.8	36.4	32.2	26.7	35.6	32.2	21.8	22.9	27.9	26.5	27.0	26.9	42.3	25.1	27.0	40.0	30.4	28.6	20.7	26.0	36.9	23.6	22.8	43.9	22.8	28.0	44.0	39.1	31.5	20.3	16.3	17.9	26.5	33.3	23.7	38.6	33.5	42.4	30.9	30.5	28.8	29.7
Jan 7	28.1	36.4	10.2	19.8	38.7	42.5	34.0	32.5	28.3	17.4	24.6	24.9	27.8	19.5	28.4	35.4	20.3	42.9	38.0	23.3	37.4	23.9	28.7	24.6	23.4	41.1	27.0	30.1	30.5	29.9	34.0	38.3	29.1	33.5	20.9	12.9	18.1	27.8	23.9	21.4	41.5	29.2	36.1	30.7	32.7	34.1	27.3
Jan 8	35.8	27.1	18.0	17.9	35.8	33.2	34.4	32.2	27.2	27.2	33.0	25.9	36.3	22.8	22.9	29.9	17.8	40.5	32.6	23.9	35.8	24.4	30.5	20.8	31.9	30.1	26.5	31.6	24.6	30.9	30.1	30.0	32.3	35.3	22.8	15.7	20.8	36.3	18.4	28.4	32.3	34.7	31.4	27.0	17.7	26.5	35.8
Jan 9	43.0	27.3	31.9	24.7	36.5	39.2	28.7	30.3	27.9	20.8	30.5	22.4	30.1	22.7	23.0	24.5	18.3	31.2	34.7	21.9	41.8	24.7	32.1	24.1	26.3	39.4	25.1	30.8	22.0	29.6	33.0	20.9	27.0	35.1	23.2	16.1	28.8	36.4	26.4	24.8	35.3	25.0	33.0	27.4	14.9	42.8	45.9
Jan 10	29.6	22.3	25.0	23.5	40.4	36.0	32.6	26.4	29.9	30.9	34.3	24.2	27.9	35.9	18.3	27.1	20.2	30.0	37.9	32.4	30.3	24.6	27.5	35.6	25.8	43.3	17.6	29.6	21.6	23.6	24.1	27.4	24.0	36.7	25.7	9.5	16.2	33.7	36.7	30.4	41.2	30.6	31.3	34.7	20.8	41.1	32.4
Jan 11	30.2	34.6	32.1	29.6	41.6	28.6	37.6	27.8	22.6	34.9	42.3	30.8	29.4	34.7	19.3	26.3	12.2	29.9	35.7	33.9	29.0	25.5	24.4	44.5	21.4	35.0	27.6	27.4	30.6	30.7	26.0	21.8	30.1	33.8	15.1	10.1	21.1	33.0	34.7	36.2	29.6	31.6	35.8	40.7	21.1	32.5	27.1
Jan 12	40.1	31.4	37.1	21.5	41.7	41.5	44.0	28.1	25.7	41.9	38.9	39.0	28.1	34.1	25.7	28.3	25.8	23.3	39.1	39.5	32.7	23.5	35.3	37.2	15.1	32.8	27.7	31.7	27.0	21.2	27.5	18.3	27.0	25.8	26.1	21.2	27.5	34.7	31.5	25.0	39.9	36.5	32.3	39.8	29.3	38.5	29.3
Jan 13	38.3	27.4	37.5	15.7	36.2	28.5	29.5	15.3	18.7	44.4	37.8	25.8	19.2	32.7	20.9	40.9	33.8	32.3	36.2	38.8	38.6	29.5	34.2	48.1	26.4	40.4	27.7	33.6	24.9	24.3	32.8	16.5	25.8	23.8	28.7	25.5	31.4	38.0	37.3	31.6	32.6	32.6	27.9	42.1	24.9	29.0	33.0
Jan 14	32.4	21.5	31.7	22.9	26.4	34.5	43.5	21.5	28.8	39.5	30.4	33.3	33.4	37.1	17.4	28.7	32.2	40.7	39.1	30.2	41.1	42.9	27.7	41.6	17.7	44.8	21.6	25.3	27.7	25.0	29.3	20.3	24.6	32.1	33.8	29.9	32.3	46.3	39.1	21.2	28.3	26.8	25.8	46.8	28.2	34.7	26.9
Jan 15	23.4	27.5	30.0	15.8	20.2	35.7	24.6	29.9	24.2	34.8	38.6	36.1	34.4	36.9	21.6	30.6	31.7	32.9	42.7	37.4	31.8	37.8	39.9	44.3	30.1	41.1	30.0	31.1	25.7	27.7	32.8	35.0	34.9	31.7	22.2	25.6	25.1	32.8	45.8	17.3	28.4	32.8	20.1	40.7	23.8	38.8	33.3
Jan 16	22.5	29.1	27.5	21.8	21.9	37.2	33.3	34.1	15.5	38.0	35.6	40.2	24.1	37.0	26.1	42.9	23.6	37.4	28.5	31.6	27.6	31.6	40.0	43.8	26.6	36.8	37.1	24.1	35.5	28.0	36.5	41.5	31.9	35.3	23.8	21.4	19.6	35.3	44.9	12.9	25.1	20.1	29.1	28.3	22.2	30.2	28.7
Jan 17	16.2	34.2	31.5	27.1	19.1	39.2	33.3	33.9	23.2	25.0	40.6	29.8	23.3	29.7	43.9	42.0	34.4	37.1	32.2	21.0	30.9	25.8	42.2	46.4	32.3	33.8	31.0	27.3	36.5	32.5	40.2	43.7	32.5	36.0	28.6	21.3	22.2	26.0	32.7	31.1	29.5	22.2	32.9	31.9	19.3	22.8	34.8
Jan 18	10.7	35.9	29.8	27.9	27.1	40.8	34.7	34.8	23.3	24.7	48.0	33.8	22.0	28.0	36.0	35.1	32.2	30.9	30.5	22.5	33.7	36.5	29.3	33.1	28.5	40.9	42.5	23.0	29.4	30.3	36.2	45.9	34.8	34.9	37.6	14.7	33.2	31.9	25.9	32.1	29.0	16.3	23.4	31.6	25.9	22.2	35.7
Jan 19	23.5	36.1	27.6	33.2	20.3	27.5	30.0	39.6	28.1	28.5	45.9	38.0	35.6	30.8	20.4	38.3	28.1	26.3	25.0	22.7	20.5	37.1	25.3	31.2	24.4	26.9	38.7	25.8	28.8	24.8	31.6	29.5	30.0	37.7	27.1	23.7	25.0	23.5	15.3	22.9	35.6	32.9	18.7	26.1	26.2	23.7	34.3
Jan 20	17.8	25.2	31.7	38.5	21.4	20.5	26.2	42.2	33.6	27.7	44.5	42.1	36.2	31.8	27.3	34.9	30.2	11.5	33.7	29.7	19.7	34.5	25.3	30.3	24.8	28.3	36.4	24.2	26.7	33.6	35.6	29.9	36.6	30.9	38.8	28.7	29.8	30.3	20.0	28.6	34.9	26.6	23.2	23.8	30.1	27.8	39.1
Jan 21	24.3	20.0	31.5	33.2	10.2	29.8	32.8	37.2	30.9	26.8	34.9	21.4	40.7	21.8	27.5	34.7	34.9	15.1	36.8	34.5	19.2	20.6	34.3	24.3	19.7	22.6	36.8	16.9	34.4	33.4	33.3	27.0	42.0	26.6	27.7	28.8	33.9	24.1	24.7	24.2	35.0	27.4	26.1	28.0	25.9	33.6	37.1
Jan 22	19.2	22.1	40.6	37.3	11.4	33.6	24.6	36.0	29.3	27.8	34.2	34.5	32.1	25.9	28.9	36.4	37.0	27.1	36.5	34.9	17.7	23.7	30.4	29.8	31.6	30.9	39.7	28.1	36.6	36.2	21.2	24.8	43.8	31.2	29.4	18.3	35.6	17.0	21.5	20.2	30.6	22.8	34.5	34.6	29.8	36.6	46.9
Jan 23	22.6	20.1	49.2	35.6	23.0	31.2	20.6	41.7	33.5	32.7	26.3	32.5	34.1	29.1	25.2	38.2	23.3	30.7	33.9	32.1	23.2	19.8	39.6	38.2	32.2	36.3	32.2	31.3	37.0	35.2	30.9	24.2	37.3	34.1	32.1	18.6	27.1	28.0	31.1	25.5	31.1	17.5	39.5	44.8	37.2	28.9	31.6
Jan 24	24.9	21.2	43.7	25.8	26.3	34.6	31.9	35.7	28.1	25.8	20.3	26.1	23.6	22.0	23.6	28.6	27.0	30.6	42.3	39.4	12.0	27.9	38.0	46.3	34.4	36.9	21.7	30.3	33.3	32.9	32.4	27.1	32.9	46.0	31.1	20.1	18.7	21.6	34.9	25.2	30.0	16.7	32.1	36.3	37.3	29.7	29.8
Jan 25	36.8	32.1	39.6	30.5	21.9	35.4	21.9	41.0	22.7	36.6	24.0	24.8	17.4	21.4	40.8	32.1	23.0	34.0	51.2	32.6	24.9	24.5	37.2	44.5	35.1	28.1	17.7	20.9	30.1	35.4	40.7	28.8	27.1	40.7	32.7	10.9	26.9	22.3	26.6	27.4	24.2	22.7	33.9	32.0	33.2	20.4	35.4
Jan 26	36.3	42.1	33.1	36.3	18.2	25.2	20.5	32.6	14.4	42.0	29.9	27.7	21.8	15.9	46.6	36.8	29.6	27.1	45.3	30.5	27.8	18.6	22.9	38.9	29.2	41.3	13.4	16.7	30.8	34.3	42.3	30.4	23.4	26.7	31.7	25.5	30.0	31.0	31.6	34.1	22.9	19.2	38.3	30.7	42.1	17.9	43.6
Jan 27	32.6	38.6	27.3	30.3	25.3	27.3	23.8	24.7	16.8	30.5	28.7	28.5	17.6	19.7	48.1	31.8	26.1	32.2	46.3	21.6	24.1	26.3	26.8	39.4	35.2	35.1	15.7	13.8	34.1	37.0	37.0	32.4	25.8	26.6	30.6	22.4	26.9	36.9	28.3	36.6	33.3	24.9	41.6	18.6	47.9	13.4	40.3
Jan 28	27.6	42.9	28.6	27.5	30.8	34.1	21.4	35.3	18.8	23.9	35.1	29.0	15.1	27.9	33.8	33.7	16.0	27.3	31.1	26.0	19.9	14.5	23.0	41.2	30.8	35.7	15.1	18.4	43.0	28.0	38.6	32.4	33.5	26.3	31.2	20.5	28.3	25.9	24.3	36.6	25.9	21.2	38.5	29.8	33.0	19.1	44.9
Jan 29	26.4	43.0	38.1	27.7	30.0	24.1	28.3	34.7	23.8	34.4	39.9	29.0	19.8	21.1	38.0	39.0	17.5	26.5	23.9	25.4	12.9	23.1	36.3	35.4	26.1	46.8	23.0	24.6	36.4	26.1	30.4	33.4	42.2	20.3	26.0	27.2	32.1	34.5	19.9	36.4	21.7	15.4	32.6	35.7	36.0	14.8	36.2
Jan 30	25.1	34.1	30.7	35.4	36.8	18.2	21.1	22.5	26.1	35.9	37.2	26.8	22.7	21.5	29.9	31.6	20.9	18.9	21.1	25.0	10.3	37.0	32.5	38.9	26.8	46.8	20.0	29.9	34.9	18.1	33.0	31.7	35.5	15.1	15.9	29.4	24.2	23.6	26.4	29.8	26.6	23.0	39.8	26.0	35.6	19.2	32.5
Jan 31	32.6	30.6	34.5	39.5	43.2	27.7	27.3	19.9	23.3	38.8	30.7	23.7	23.7	30.3	37.5	27.9	23.6	24.8	22.3	36.0	20.1	24.6	24.2	30.8	24.5	39.4	20.5	33.4	34.3	25.4	35.2	24.8	41.9	16.9	20.7	26.5	20.4	28.4	22.3	37.6	28.0	24.3	44.9	37.3	31.0	14.9	36.0
Feb 1	25.7	38.2	41.8	28.8	38.1	26.8	31.9	18.7	23.2	30.8	30.7	24.9	24.9	23.4	23.1	32.5	29.6	26.8	27.8	29.4	35.2	25.5	31.0	25.0	20.4	21.8	20.5	33.4	31.5	21.5	33.7	21.6	36.7	13.0	27.5	28.0	17.2	22.0	26.0	43.6	32.3	17.8	43.8	28.0	28.2	19.5	32.6
Feb 2	30.9	40.7	30.1	30.5	37.0	34.7	29.1	15.9	29.5	23.1	31.4	21.7	23.7	24.5	19.9	24.8	26.4	19.6	34.4	23.3	26.1	27.0	40.0	18.5	17.7	33.9	28.8	34.0	37.6	24.0	29.2	21.9	32.5	21.5	20.7	24.7	23.0	20.1	40.8	28.8	29.4	18.9	31.3	38.2	25.7	23.4	32.0
Feb 3	28.6	38.3	22.0	29.4	47.2	35.0	30.7	24.3	26.7	20.1	31.0	25.2	20.1	33.4	14.9	28.2	28.8	30.6	28.5	29.5	35.2	29.1	38.1	22.2	22.8	33.3	37.6	35.0	42.5	23.4	36.9	36.8	26.7	22.3	24.8	22.3	29.5	20.2	40.7	34.4	31.9	23.8	25.5	28.5	31.3	17.6	29.1
Feb 4	39.4	34.4	32.3	29.6	32.4	37.4	39.5	30.9	29.8	28.5	32.1	22.6	20.6	36.1	24.8	29.1	22.7	29.1	35.8	22.9	40.4	34.5	24.4	14.8	33.0	39.7	29.3	34.3	42.7	22.3	30.8	33.5	21.1	32.8	24.4	13.4	31.2	22.4	31.0	34.8	26.7	26.8	31.7	21.5	25.4	20.6	34.8
Feb 5	38.0	38.5	24.4	26.1	33.5	35.3	36.9	28.8	34.2	28.9	31.5	27.7	27.3	33.7	25.7	32.3	20.7	30.0	33.7	12.9	32.4	31.5	43.9	28.6	31.6	37.2	23.0	24.6	36.5	24.2	37.8	22.4	21.6	35.3	24.3	11.8	32.0	24.0	39.4	23.7	28.6	31.8	35.3	25.9	30.6	18.1	28.4
Feb 6	31.0	35.6	28.6	32.6	38.9	26.7	43.7	28.1	45.9	21.5	30.0	32.4	29.9	34.4	30.7	38.4	29.6	19.4	36.7	8.6	22.5	23.9	43.9	35.2	29.7	39.5	23.6	22.4	38.3	28.1	34.3	27.3	24.2	40.1	30.2	13.6	31.2	26.5	29.7	32.1	22.5	31.7	29.6	26.2	21.1	26.5	39.6
Feb 7	39.8	36.2	40.9	28.4	39.7	25.4	37.5	36.9	34.9	20.2	33.0	32.5	34.5	45.2	22.0	36.2	31.2	20.3	53.5	12.4	26.2	24.5	49.6	35.8	26.7	27.0	39.7	18.6	46.6	42.8	35.2	31.2	23.3	25.0	30.1	21.7	31.0	33.3	39.5	37.0	24.2	25.2	28.8	20.5	25.0	21.6	30.3
Feb 8	36.9	35.5	45.4	28.1	33.5	14.6	24.8	46.6	34.1	22.0	39.7	49.5	27.6	37.1	27.1	31.0	33.2	23.5	40.3	20.4	37.7	13.9	40.5	27.4	30.7	29.4	32.8	33.7	36.7	38.7	39.1	30.8	22.0	31.5	30.9	20.9	28.1	32.1	32.4	37.4	20.7	29.6	25.0	21.8	27.1	13.2	25.5
Feb 9	30.5	40.4	47.0	27.1	28.9	24.3	26.8	42.6	19.0	22.3	21.9	34.2	22.4	26.5	32.4	24.4	35.5	27.2	25.0	21.4	32.3	26.4	43.5	22.6	38.8	36.7	37.6	32.0	33.9	49.2	37.2	27.7	16.2	30.2	42.2	18.6	24.6	31.6	42.2	41.9	21.4	33.8	25.3	29.9	23.3	19.0	18.6
Feb 10	35.2	35.8	36.5	24.7	22.6	18.0	23.1	33.4	24.6	26.5	25.6	33.1	22.1	25.0	47.2	25.7	22.4	36.5	34.1	21.4	25.9	30.4	49.4	27.9	36.6	28.0	29.0	31.7	41.7	43.4	41.4	26.4	17.5	38.4	32.6	21.3	24.1	33.9	31.8	42.5	18.4	31.6	32.5	38.7	19.3	23.4	14.5
Feb 11	34.1	34.2	32.8	29.9	11.3	25.8	21.5	47.4	27.2	20.0	28.8	36.2	18.4	30.5	36.0	30.0	39.0	31.1	39.7	29.1	26.9	28.5	51.0	34.9	34.4	31.3	42.8	28.4	34.7	39.2	48.9	28.5	29.2	39.4	50.1	29.9	22.9	29.0	40.5	47.7	16.3	44.3	26.3	33.4	17.6	25.6	14.5
Feb 12	25.6	23.0	25.9	31.9	26.0	19.1	25.5	34.9	30.4	27.7	28.3	25.9	24.2	39.0	28.0	27.4	44.2	25.4	43.8	20.3	22.3	36.4	43.8	38.8	41.7	35.1	52.0	29.1	31.1	34.7	35.9	20.6	33.8	26.0	34.4	34.0	28.2	26.6	51.1	39.9	18.0	60.6	30.0	38.8	16.4	26.4	14.7
Feb 13	27.4	24.3	26.8	38.9	27.5	18.0	27.5	41.9	26.7	24.4	28.8	30.6	28.9	44.1	29.7	22.8	44.3	26.2	45.8	33.2	26.1	22.4	40.1	32.8	40.5	29.5	40.3	35.6	26.9	35.8	35.6	30.7	34.9	28.9	31.3	32.0	24.8	25.9	44.4	25.9	21.7	45.6	24.5	41.7	13.3	40.0	16.5
Feb 14	34.8	17.6	27.1	47.2	28.1	26.7	31.8	50.5	28.4	29.1	48.6	51.6	23.6	48.3	24.8	25.2	40.6	28.9	41.7	30.9	24.4	16.4	28.6	27.3	31.9	31.3	37.5	30.3	27.0	35.8	31.3	30.1	28.6	36.2	24.1	41.6	28.8	37.1	42.9	22.4	25.1	45.8	27.0	30.4	15.6	38.1	21.2
Feb 15	38.4	30.0	22.4	43.2	27.3	27.4	37.3	45.8	34.6	23.7	40.6	54.3	30.1	44.0	17.2	23.8	40.4	27.2	29.5	39.9	29.5	11.1	18.3	22.5	23.7	24.3	43.8	26.5	30.9	36.4	33.9	35.7	29.1	34.2	34.9	29.1	24.7	32.2	41.3	24.2	16.9	47.8	21.9	39.9	25.8	36.9	24.8
Feb 16	33.9	19.4	26.4	46.2	32.5	29.7	34.6	39.1	32.9	28.7	45.7	48.1	33.9	38.2	23.5	21.6	38.5	17.9	42.3	32.2	31.6	12.1	23.3	21.7	27.4	33.7	42.9	24.5	31.6	41.0	38.3	22.8	27.1	38.1	39.0	27.7	26.5	39.5	36.8	27.2	8.6	47.5	29.5	32.2	38.9	44.5	31.1
Feb 17	36.4	17.9	28.3	49.3	34.2	25.7	37.5	36.3	25.8	21.3	25.7	46.3	31.1	46.7	22.7	24.3	40.6	24.8	45.1	29.9	25.8	22.6	25.5	32.8	28.1	30.1	47.3	29.9	35.2	31.7	39.1	34.3	22.9	39.4	36.8	37.3	22.3	51.1	36.5	34.4	21.4	48.8	39.7	42.8	46.1	36.3	27.5
Feb 18	32.7	21.0	37.2	41.5	33.6	24.3	38.2	31.0	33.3	29.6	39.1	34.6	33.4	47.9	25.7	29.9	43.3	27.8	48.1	32.0	27.8	25.5	33.2	37.6	24.0	29.9	40.3	33.5	45.2	39.5	47.4	32.7	21.9	38.2	39.0	30.4	23.6	50.4	30.1	37.4	25.0	53.5	39.3	31.5	31.1	40.7	32.9
Feb 19	39.2	39.8	22.8	42.2	41.2	24.5	29.3	37.0	34.0	23.1	37.0	28.1	33.8	55.0	30.0	31.9	36.2	34.1	44.8	27.4	29.4	22.7	36.4	33.5	39.3	28.8	39.6	27.5	41.1	47.1	40.8	28.9	19.0	24.7	32.7	30.0	25.5	46.1	29.2	39.2	30.3	42.3	39.2	35.9	26.7	38.6	31.7
Feb 20	36.2	32.4	19.8	36.2	37.8	21.1	46.6	41.6	29.0	28.6	37.4	25.2	30.9	43.2	41.3	23.2	39.0	27.8	39.6	25.5	21.8	26.7	32.8	36.9	42.8	24.5	35.6	32.6	40.5	39.4	32.8	41.7	23.6	29.1	40.3	32.3	33.2	29.0	30.6	43.7	37.7	46.8	44.4	25.8	33.7	32.8	36.8
Feb 21	23.2	25.3	25.8	43.5	25.6	20.2	43.4	40.6	33.1	36.8	40.9	29.5	29.1	42.3	41.5	27.8	36.6	33.1	31.3	25.5	21.6	33.6	20.2	41.6	36.1	25.7	36.7	32.9	38.0	37.1	35.7	26.5	26.8	35.3	40.9	26.9	34.4	29.7	31.2	41.2	23.5	40.5	40.7	22.2	38.1	35.2	36.5
Feb 22	27.7	47.9	26.1	35.6	23.1	25.7	52.5	36.7	32.8	39.0	44.0	34.0	35.8	48.6	37.5	30.3	28.4	30.4	31.5	30.2	29.8	39.3	16.6	44.0	43.7	25.3	25.5	34.7	37.4	27.6	29.1	36.5	31.1	36.6	36.1	32.1	29.9	31.3	22.8	29.7	33.0	45.1	29.6	33.0	31.5	43.0	36.3
Feb 23	23.3	45.9	35.3	32.7	30.5	32.4	43.3	40.5	42.1	36.4	40.2	40.4	33.1	53.4	40.2	30.3	21.2	21.1	26.8	33.8	27.0	33.1	27.3	40.0	35.7	17.5	24.6	29.0	43.9	25.3	41.5	33.0	27.1	29.0	18.7	31.5	29.1	30.3	24.9	37.0	26.7	38.4	40.2	36.6	29.4	51.2	33.6
Feb 24	33.8	37.1	21.3	37.5	32.0	22.7	43.1	40.4	34.2	43.4	44.3	25.5	39.9	36.9	38.1	38.9	22.0	21.7	30.2	35.7	18.3	36.4	39.2	35.1	37.6	14.1	24.0	26.8	40.5	47.3	38.6	30.7	34.4	42.2	21.0	26.8	25.2	27.9	36.5	33.5	24.0	32.7	41.3	36.1	19.6	48.5	22.6
Feb 25	32.7	40.7	20.9	37.5	36.2	29.8	37.8	37.4	30.2	49.2	30.3	26.4	33.7	28.3	37.1	33.8	24.5	31.1	32.2	30.0	25.9	37.3	41.7	34.8	29.5	11.8	19.2	33.6	31.1	41.1	30.8	35.9	33.6	44.8	24.8	38.1	28.2	31.0	31.1	24.9	29.7	32.4	38.6	32.0	21.3	49.1	34.6
Feb 26	16.9	33.4	22.8	34.6	40.1	37.9	33.3	40.6	32.5	41.7	31.3	32.5	49.4	22.2	48.0	42.2	20.7	35.3	37.1	38.1	29.0	29.6	43.5	36.0	36.1	22.1	23.3	37.6	35.7	52.6	40.2	25.4	35.2	43.9	32.0	36.6	24.4	39.3	45.8	39.0	43.0	37.1	39.8	33.6	33.1	41.8	41.8
Feb 27	19.6	39.2	24.0	29.5	45.2	46.2	34.2	41.9	34.0	40.8	41.4	32.5	35.8	25.9	51.1	40.6	25.3	30.7	34.4	25.2	35.9	39.6	38.3	27.1	35.4	27.1	28.9	30.9	31.5	52.1	39.9	26.2	25.2	39.0	33.5	43.5	28.1	30.6	39.1	29.0	46.5	33.9	46.4	27.3	24.1	40.8	34.6
Feb 28	19.6	38.7	19.7	21.4	42.3	47.8	28.3	43.7	21.8	36.7	39.3	38.0	28.7	31.9	49.4	35.9	30.4	32.4	31.8	35.0	28.7	42.3	46.8	28.9	41.2	25.3	21.7	35.2	26.6	42.4	46.3	20.8	37.6	33.1	38.2	41.9	30.2	35.2	35.3	40.8	44.1	44.0	35.1	40.5	40.1	47.9	32.9
Feb 29	25.1	35.2	31.9	25.6	40.9	47.4	29.5	39.1	27.4	54.2	42.4	47.0	35.2	27.3	47.9	31.3	33.0	38.2	37.0	38.9	30.1	37.2	46.7	29.2	35.3	34.4	38.4	34.3	36.3	39.3	48.3	30.9	53.0	33.4	34.7	36.0	29.8	44.1	47.1	42.6	51.7	48.3	44.7	47.7	53.5	43.1	39.1
Mar 1	20.1	34.2	25.7	28.3	35.6	48.9	31.4	37.6	28.4	45.3	44.3	49.8	37.3	38.9	41.0	28.9	33.0	50.9	30.1	28.0	34.9	36.2	33.3	34.6	30.4	35.8	35.0	36.2	48.4	36.7	31.1	32.0	50.9	44.7	40.3	39.1	37.6	39.5	34.9	48.4	47.2	33.6	48.6	39.5	47.8	42.6	36.6
Mar 2	33.6	27.0	35.0	37.8	32.0	59.4	41.3	40.8	42.6	39.3	28.2	42.8	47.1	31.1	48.6	29.2	36.0	55.0	33.2	40.5	47.6	39.1	21.1	31.3	41.2	35.6	43.8	31.7	34.3	48.6	24.3	42.4	54.2	36.3	31.0	36.0	30.7	35.7	33.4	46.9	43.6	34.3	37.8	36.7	47.4	53.7	35.3
Mar 3	40.6	38.5	31.8	41.7	40.5	54.4	33.0	36.4	38.7	47.0	30.0	36.4	56.7	16.5	52.2	34.1	43.3	41.3	35.0	51.1	51.4	36.2	26.1	34.3	41.2	35.0	41.3	38.6	32.6	51.0	18.9	36.5	56.0	34.0	27.8	37.1	33.6	31.8	32.1	40.8	53.2	34.5	42.5	43.1	43.9	46.7	40.1
Mar 4	24.8	38.9	42.4	41.0	30.8	52.4	32.7	28.0	37.7	42.6	36.5	37.1	48.0	23.6	56.5	25.8	39.2	35.7	40.3	46.9	57.5	38.4	31.0	28.5	47.0	34.9	45.1	44.4	24.6	40.2	25.2	48.1	56.3	42.9	35.2	33.9	25.2	36.6	31.7	42.1	46.0	28.5	46.1	43.8	34.2	42.9	43.6
Mar 5	28.3	37.2	52.6	38.4	45.7	42.3	33.7	38.1	39.5	30.7	32.7	35.8	46.0	29.9	49.7	29.0	40.5	53.2	33.5	57.9	46.6	38.6	29.6	28.8	57.3	34.1	47.6	39.5	37.3	34.8	39.2	56.4	38.8	43.9	30.5	32.2	25.5	27.6	37.6	37.3	39.5	38.8	46.8	40.2	29.9	33.2	38.7
Mar 6	33.3	39.9	42.2	44.2	50.3	31.5	40.4	47.1	44.5	23.1	36.4	39.1	37.6	33.7	58.7	22.4	35.8	35.1	42.1	57.3	33.1	44.1	33.1	33.3	51.4	37.5	47.7	40.5	40.4	40.7	39.4	52.9	40.9	32.0	35.4	37.1	24.5	34.8	24.6	39.7	48.0	37.1	45.6	50.6	36.8	33.5	32.1
Mar 7	38.9	32.2	49.9	42.6	43.9	38.5	34.2	45.0	55.3	30.3	33.4	40.0	27.2	42.0	56.3	19.2	27.1	39.6	47.6	51.2	37.2	53.0	32.5	27.0	47.6	40.9	43.0	37.4	44.3	41.9	36.4	59.3	44.8	37.7	41.4	39.0	34.5	33.8	15.1	36.5	43.4	32.1	45.8	44.8	38.6	41.0	35.3
Mar 8	31.1	36.2	55.0	38.7	42.5	34.0	29.8	48.4	40.9	37.4	43.6	33.3	29.5	44.7	56.2	22.7	15.6	47.7	33.8	47.1	50.8	51.4	26.5	28.8	38.3	41.4	38.9	34.3	44.3	52.0	42.6	59.5	44.8	41.5	43.2	48.1	33.3	37.3	15.2	31.6	48.0	35.0	39.1	37.0	28.0	44.4	35.9
Mar 9	30.8	37.3	40.4	43.9	40.7	38.2	44.6	39.4	45.0	40.2	38.8	36.5	29.0	52.4	45.7	29.1	27.5	56.7	35.9	43.6	39.8	46.2	19.0	34.9	38.9	50.6	31.2	32.7	30.3	41.6	39.5	61.2	39.5	43.8	50.5	54.2	18.5	35.2	19.5	30.0	37.9	43.0	32.0	45.3	38.9	34.5	47.8
Mar 10	20.8	47.0	48.9	34.7	27.8	47.0	46.9	38.8	35.5	42.3	37.0	50.1	38.1	50.2	37.9	24.8	34.3	59.1	28.7	31.5	42.8	36.3	24.3	32.6	30.4	52.8	34.3	54.2	31.5	34.5	43.1	55.4	46.8	35.2	44.2	46.4	30.9	43.0	28.7	24.2	22.8	45.0	39.4	51.8	29.8	39.6	42.2
Mar 11	22.6	49.6	47.6	49.0	28.6	27.5	58.0	42.1	44.2	39.3	33.1	38.1	45.3	46.9	43.3	32.2	40.0	56.8	37.9	29.7	31.6	34.2	39.1	36.5	33.5	43.1	29.6	44.4	34.7	49.1	46.9	46.4	49.4	36.2	39.8	35.6	27.1	46.3	24.9	18.8	36.9	45.5	32.1	45.5	34.1	41.7	39.4
Mar 12	21.4	53.3	42.6	43.1	35.5	16.1	50.5	47.3	41.4	34.2	42.6	26.7	46.6	43.6	45.3	39.6	35.4	55.0	39.0	31.3	38.5	35.5	42.3	27.1	49.6	47.0	37.2	42.6	33.0	46.8	47.6	39.9	43.7	35.7	50.3	40.0	32.0	32.5	28.3	19.2	44.7	51.1	34.2	42.6	40.6	43.1	39.1
Mar 13	21.3	56.5	32.1	43.7	37.3	24.3	47.1	56.0	41.3	44.2	37.0	26.4	40.9	42.2	44.6	40.3	35.5	49.2	41.2	32.7	35.0	42.2	40.6	31.5	46.2	54.1	27.9	45.2	36.5	50.2	61.3	44.1	51.9	28.5	40.9	39.1	35.1	43.0	26.1	18.3	53.8	36.9	37.1	42.2	41.2	39.6	34.1
Mar 14	27.9	44.0	45.5	47.3	30.9	29.7	46.5	44.4	52.8	43.5	37.8	29.7	44.0	43.8	44.4	34.3	42.5	53.1	46.3	31.9	37.9	45.9	39.9	38.3	45.7	47.3	26.2	46.7	38.2	40.6	41.5	48.6	48.2	29.3	39.9	40.3	40.3	36.6	38.2	20.8	47.8	35.9	34.7	43.1	40.0	39.6	19.5
Mar 15	23.3	40.3	32.9	46.8	42.8	40.6	38.6	38.8	39.7	39.3	36.3	33.4	49.9	35.2	49.0	37.5	55.7	43.8	36.5	33.9	45.0	41.9	41.5	35.3	47.0	51.2	18.6	48.6	39.4	38.0	39.7	48.5	61.8	32.7	29.3	46.5	34.6	36.9	35.3	33.9	43.4	41.8	37.4	50.9	31.3	39.8	21.5

YEAR->	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
Mar 16	37.0	35.6	35.2	46.1	37.7	48.7	35.2	43.1	37.3	44.8	32.5	35.1	62.4	35.3	50.3	36.9	58.2	38.4	23.8	33.2	46.3	38.8	38.3	36.7	44.8	55.8	26.9	39.4	39.1	38.9	39.3	42.8	51.7	36.0	37.2	49.9	39.9	36.5	43.7	37.5	45.0	25.8	56.0	40.5	41.5	31.0	31.4
Mar 17	39.0	24.1	52.2	37.3	37.9	52.1	28.5	48.5	43.9	53.3	34.3	39.4	59.3	27.0	48.1	44.4	56.8	24.4	43.3	36.1	36.1	40.8	42.9	32.3	50.0	42.0	32.7	48.7	37.8	30.6	38.8	52.0	52.4	39.2	56.8	51.7	39.3	33.6	46.4	39.5	34.5	33.6	53.5	42.9	50.6	44.1	33.2
Mar 18	41.8	31.1	47.2	35.2	44.8	52.9	26.4	39.6	48.6	44.4	34.2	43.4	55.4	33.6	46.6	46.4	49.3	31.6	40.8	42.6	36.4	41.0	36.9	32.1	41.2	46.5	33.5	42.6	32.1	27.5	48.1	54.2	57.4	36.0	63.2	55.5	37.8	38.1	38.7	32.6	40.3	45.2	55.2	46.3	43.4	37.8	41.9
Mar 19	43.5	37.2	50.2	38.4	34.1	54.0	32.8	53.9	55.4	52.1	40.9	34.7	55.1	42.3	52.2	52.9	38.8	24.2	41.1	43.0	28.1	41.9	42.0	45.6	44.8	44.9	49.8	43.8	32.0	30.3	56.1	53.9	51.1	42.8	57.4	45.6	38.6	42.7	36.9	25.0	29.8	45.6	66.0	40.5	47.7	36.5	53.0
Mar 20	42.7	51.6	41.5	34.1	38.5	60.0	27.5	52.3	36.5	38.6	38.8	30.0	40.1	29.9	50.1	57.9	45.6	35.0	42.3	51.2	32.5	39.3	55.8	47.7	37.7	44.0	60.2	55.3	28.1	34.8	53.0	44.9	42.8	38.0	46.1	39.0	45.0	31.2	38.1	37.0	38.9	39.9	64.6	39.9	38.0	38.0	49.3
Mar 21	43.4	43.3	28.0	37.4	37.3	50.8	40.1	56.9	51.8	31.9	45.6	27.4	45.7	42.6	47.9	37.5	47.3	39.6	41.0	57.8	32.1	35.5	59.2	43.2	37.2	54.6	57.7	39.1	25.7	41.9	44.1	44.8	53.4	39.8	48.4	40.9	35.1	33.1	27.3	32.5	39.4	33.5	64.0	47.9	40.2	30.0	51.7
Mar 22	43.7	35.2	31.1	44.9	45.4	59.5	37.9	50.1	55.7	45.4	47.5	29.1	52.0	49.4	34.5	44.9	33.2	36.5	49.7	40.3	48.0	39.5	54.0	44.2	41.8	48.3	51.8	41.6	37.9	38.7	46.7	49.3	47.2	36.7	54.1	48.0	38.6	52.7	32.7	36.5	41.2	48.3	66.0	48.8	32.1	32.5	50.2
Mar 23	44.3	36.7	33.2	44.9	43.6	56.1	34.5	58.2	37.8	41.4	31.7	33.6	54.2	49.8	38.9	44.8	35.0	44.0	47.1	53.7	51.5	42.9	47.4	49.9	35.1	47.5	51.7	44.8	34.2	28.9	54.3	53.7	43.8	43.5	49.2	42.9	44.1	59.2	33.7	45.9	42.2	58.4	53.3	55.1	42.8	37.3	44.9
Mar 24	50.1	45.5	26.7	48.8	30.8	47.8	32.9	52.1	33.4	42.9	38.7	30.1	54.1	50.1	43.8	45.9	41.8	53.7	47.7	38.0	61.7	27.7	52.4	41.6	41.1	50.7	50.7	42.4	45.8	30.3	62.4	45.3	35.7	54.7	47.4	47.2	38.5	48.8	36.8	42.3	45.6	56.6	44.8	43.7	53.7	36.0	51.9
Mar 25	49.0	33.7	29.1	39.8	35.4	52.5	47.1	56.8	23.2	48.3	38.1	39.8	61.3	32.0	42.8	36.0	44.9	49.3	37.2	50.3	60.8	31.5	38.0	46.9	50.9	63.7	48.1	50.1	43.8	30.6	59.0	51.1	31.9	51.8	43.5	51.2	44.0	59.2	40.8	39.1	39.5	54.4	46.5	50.9	51.4	35.1	48.1
Mar 26	53.2	31.5	39.9	29.8	41.1	47.3	40.9	47.7	22.1	48.4	33.8	42.5	55.2	33.9	44.3	39.0	40.1	50.8	48.3	55.0	55.2	36.7	40.9	47.8	57.3	53.9	43.5	47.3	44.9	30.5	54.5	39.6	35.4	56.5	61.2	44.9	47.3	57.5	40.1	44.5	36.9	56.5	56.4	50.9	52.8	43.2	51.7
Mar 27	59.1	39.0	39.5	37.3	52.0	57.6	49.1	45.0	35.9	33.1	32.3	44.0	53.8	37.9	43.8	41.8	37.3	37.6	50.1	61.1	48.1	41.0	37.6	51.8	41.0	50.7	40.5	36.4	34.3	32.0	58.8	40.3	48.6	54.0	63.4	57.3	57.7	55.2	42.7	41.3	39.1	40.3	44.5	61.5	63.3	40.1	39.8
Mar 28	42.3	53.4	43.8	43.4	47.4	45.3	44.0	50.4	46.9	38.6	34.5	40.2	47.9	35.1	52.4	43.0	43.0	38.0	51.1	61.8	51.1	38.2	44.5	55.8	56.2	42.2	31.7	50.8	43.7	27.4	48.7	43.7	43.4	55.1	61.9	60.5	52.7	47.8	38.3	54.1	36.9	51.7	43.9	47.2	61.5	42.2	54.7
Mar 29	43.6	51.8	46.9	56.4	42.6	60.3	49.0	39.4	45.3	37.0	50.5	49.2	40.0	42.6	55.5	51.0	41.9	47.2	52.8	57.1	55.1	40.2	51.5	42.5	54.3	34.7	31.3	59.0	35.9	29.8	45.3	59.0	44.7	58.7	59.8	60.4	52.0	44.0	35.0	47.8	50.6	50.1	43.5	53.1	52.0	48.0	54.7
Mar 30	45.5	35.6	52.7	56.8	41.5	60.5	46.3	36.4	48.0	39.2	56.7	51.7	54.0	38.8	55.1	57.4	39.9	46.5	41.8	53.8	47.5	44.8	56.6	40.6	59.0	39.1	40.3	57.6	27.6	35.4	60.0	49.7	38.3	53.9	63.6	54.3	41.2	43.1	31.7	55.6	61.8	39.9	43.2	38.7	40.9	50.1	54.9
Mar 31	54.8	37.3	43.1	52.9	43.8	52.6	34.6	41.0	41.2	46.5	41.0	37.5	47.2	40.2	43.9	50.3	26.7	36.6	34.6	48.0	34.6	53.5	55.8	44.2	50.3	45.6	51.4	51.2	33.6	37.1	57.4	53.7	29.8	59.4	56.9	56.4	52.4	49.5	39.0	46.4	54.3	50.8	46.7	43.3	30.9	48.3	50.7
Apr 1	59.2	38.6	50.6	51.0	40.7	51.5	39.6	33.6	42.6	46.5	42.3	26.1	45.1	38.9	54.4	48.2	40.5	39.4	43.0	52.7	31.2	41.9	57.9	45.2	55.1	40.1	49.0	43.4	43.1	44.6	33.3	48.4	38.4	47.9	55.0	45.9	46.2	29.6	35.5	47.2	59.1	60.6	54.1	43.2	38.0	41.7	50.8
Apr 2	57.2	40.3	47.1	51.7	38.8	60.5	33.5	28.0	45.7	47.2	49.0	27.4	34.9	50.9	67.3	43.8	31.3	43.2	37.5	42.8	33.3	42.2	59.8	39.4	50.0	48.1	67.1	56.5	45.5	49.9	49.6	37.1	41.6	34.5	58.8	55.5	49.2	36.8	27.1	50.3	62.1	47.7	60.3	48.0	45.9	52.8	59.0
Apr 3	50.0	48.4	48.4	44.5	43.6	51.6	55.3	32.5	46.9	52.5	43.5	34.9	34.4	55.9	65.9	38.3	30.3	46.9	32.1	50.2	58.9	36.7	49.1	38.4	42.7	41.2	67.8	44.1	35.2	42.0	49.8	35.0	41.0	49.3	59.3	52.0	60.6	31.1	25.5	42.1	55.3	48.7	58.6	37.3	50.6	53.6	49.2
Apr 4	50.2	49.7	47.6	48.9	45.0	54.7	53.6	33.2	30.3	53.0	38.4	43.4	30.9	58.4	60.7	44.1	38.0	45.7	48.1	48.5	62.5	51.0	47.0	39.3	49.7	49.4	56.2	45.2	37.6	53.0	40.0	38.3	51.3	52.8	59.1	56.2	56.1	25.9	26.1	46.9	48.6	65.0	62.0	44.3	43.2	53.8	40.5
Apr 5	52.3	43.9	38.0	44.8	49.8	46.0	48.3	40.5	29.5	46.6	37.5	39.4	39.6	63.5	61.5	46.1	32.3	37.6	56.4	52.7	70.8	44.5	42.8	40.8	41.1	49.3	55.2	55.2	46.0	61.9	40.7	38.0	52.9	45.6	47.9	52.7	55.0	34.3	31.0	46.8	45.6	42.0	42.1	49.3	56.4	65.7	42.9
Apr 6	45.6	40.7	35.9	46.4	53.3	46.7	47.7	46.2	34.7	47.6	35.6	43.3	45.6	54.0	51.9	33.3	34.3	42.0	39.8	50.0	63.1	41.1	53.7	55.1	44.2	55.8	50.4	46.6	47.0	63.3	28.4	40.3	56.0	38.4	44.6	45.4	50.0	47.9	33.7	56.6	50.7	41.8	47.8	57.7	48.9	68.7	34.1
Apr 7	32.7	27.3	34.6	42.5	42.2	58.3	36.0	44.3	51.3	52.7	42.9	46.7	50.8	48.6	60.1	37.6	33.8	34.6	35.4	54.3	61.3	44.9	43.9	42.4	48.0	40.1	39.5	48.0	48.8	51.0	40.2	48.0	51.0	42.3	43.6	46.1	45.4	53.5	31.2	54.8	59.4	43.8	54.6	48.4	47.0	63.2	36.7
Apr 8	38.6	36.1	39.0	41.4	35.2	46.1	41.1	44.4	38.4	40.3	35.0	53.5	52.1	35.6	60.4	36.7	36.4	45.5	43.7	58.2	60.2	41.3	38.6	51.8	42.7	54.2	44.3	53.0	41.2	56.2	38.8	57.2	53.1	30.8	32.1	48.9	56.7	39.6	36.5	62.5	56.6	47.7	54.5	51.0	48.8	64.6	39.6
Apr 9	33.9	37.8	46.5	42.7	41.9	42.6	54.3	43.6	52.0	43.6	44.4	46.4	56.1	36.0	57.6	44.9	51.3	48.8	45.2	54.6	64.9	44.6	38.3	58.3	29.4	60.3	61.8	57.7	47.8	58.5	44.9	61.1	40.3	24.9	37.1	40.0	61.2	50.8	42.5	61.8	65.4	44.8	39.1	49.9	44.2	55.6	44.1
Apr 10	40.7	46.1	48.8	57.4	42.9	39.1	49.0	44.2	47.5	44.7	52.8	46.6	57.3	36.6	57.2	50.5	57.7	43.7	42.2	57.4	51.8	40.9	43.8	56.0	36.0	61.5	55.4	61.8	53.7	61.4	51.9	62.2	48.6	36.1	51.7	41.7	58.8	52.0	46.4	50.8	50.8	46.0	43.8	53.2	56.0	47.9	40.1
Apr 11	44.9	51.0	42.4	60.5	43.3	46.8	43.1	36.6	46.5	42.5	60.0	45.2	53.1	34.4	62.1	53.4	51.2	53.5	36.2	60.1	56.5	44.3	46.8	45.0	44.3	55.3	36.5	46.4	53.1	57.3	50.4	64.5	50.8	28.1	45.7	56.9	58.3	61.4	47.2	37.7	51.8	45.4	40.5	55.8	45.9	41.8	34.9
Apr 12	45.3	49.7	35.0	59.0	53.7	47.1	36.0	37.0	39.6	39.3	59.1	36.4	57.4	31.8	56.3	45.5	48.7	54.5	38.0	52.2	60.3	40.0	57.9	39.2	52.0	49.5	30.0	45.6	59.0	59.2	59.0	58.8	41.8	33.3	47.1	50.4	57.2	58.6	48.7	39.2	45.0	44.2	47.9	64.0	52.2	39.0	38.8
Apr 13	40.8	52.9	33.6	58.1	50.9	45.9	43.5	42.4	37.0	44.8	57.2	38.3	45.0	37.4	52.4	44.8	43.8	62.6	42.2	45.9	46.0	43.4	66.8	48.7	39.6	60.0	42.7	49.8	60.9	59.4	44.7	66.7	39.8	41.0	47.0	42.4	51.0	56.5	55.0	41.8	39.1	54.1	42.5	66.9	55.1	31.9	39.9
Apr 14	51.4	54.3	42.1	47.2	57.0	55.1	39.4	52.1	40.9	33.7	56.3	45.3	41.0	37.6	46.5	44.1	52.0	65.4	52.6	49.1	43.2	40.9	69.8	47.8	44.2	57.9	46.4	49.8	52.2	61.7	52.6	59.4	50.4	50.2	53.4	57.3	50.2	55.0	41.7	54.2	54.3	53.5	37.0	56.5	57.8	42.5	48.0
Apr 15	50.8	45.7	43.1	49.9	54.5	56.2	48.7	43.2	37.9	47.2	53.9	48.4	48.7	49.0	54.7	55.2	56.3	63.0	57.2	56.4	37.8	45.8	74.3	48.4	39.3	56.0	58.7	47.9	59.8	50.9	52.9	62.1	53.2	50.9	58.5	59.4	52.9	58.5	52.5	52.5	51.4	57.7	34.8	68.2	47.2	41.9	52.8
Apr 16	48.1	43.8	37.3	54.1	57.7	51.7	41.4	48.4	50.6	48.9	44.3	54.3	62.2	43.9	49.0	50.0	60.1	53.4	53.5	59.4	35.8	57.6	80.4	54.1	50.7	52.0	51.2	44.3	71.3	52.0	42.2	60.3	60.0	42.7	48.9	62.4	45.1	42.7	55.2	49.5	47.8	67.9	42.1	57.6	40.7	36.7	48.7
Apr 17	55.1	63.2	41.5	56.5	51.2	47.1	37.8	52.9	45.7	44.2	49.5	52.9	50.7	50.5	62.8	47.2	53.6	43.9	56.2	44.4	50.0	54.9	79.8	53.5	51.8	62.4	50.3	48.0	64.4	49.1	38.3	53.7	62.6	45.1	44.3	53.8	56.3	38.6	50.1	48.9	46.0	73.7	42.4	57.1	45.7	39.5	46.3
Apr 18	62.2	58.0	39.6	59.9	53.2	44.5	41.3	52.3	38.8	49.4	51.1	46.6	47.5	53.6	62.0	52.2	54.2	54.5	58.4	45.7	53.5	49.9	79.9	47.2	39.1	59.3	49.1	34.3	58.0	62.1	42.7	52.6	59.3	52.0	43.4	50.2	63.5	45.3	48.7	42.4	55.1	65.3	52.9	69.0	36.6	50.5	48.6
Apr 19	53.1	52.1	44.3	66.1	56.0	43.7	32.2	55.1	35.8	48.7	46.3	49.9	42.2	53.6	55.5	60.1	54.7	58.0	42.5	39.9	52.0	53.1	72.1	45.4	44.2	52.9	49.5	44.7	63.7	53.2	46.8	43.0	60.1	64.1	37.1	48.1	61.8	47.9	58.7	48.8	49.1	58.7	45.7	70.1	37.7	52.9	49.7
Apr 20	47.2	52.6	46.9	59.4	59.0	46.9	42.1	49.6	44.2	60.4	58.2	49.0	32.6	54.8	51.9	55.2	57.0	48.2	44.7	45.5	56.6	52.9	65.4	45.0	40.1	53.9	56.7	44.9	57.9	55.2	56.2	43.7	60.0	63.0	44.5	52.3	67.5	60.5	56.2	54.0	46.0	57.0	39.1	69.1	43.8	49.5	53.0
Apr 21	54.8	55.5	40.4	62.2	64.1	41.0	47.9	49.2	45.0	51.6	48.1	48.2	38.3	51.7	51.0	55.6	66.1	44.4	40.7	51.6	59.1	48.2	61.1	61.8	45.1	52.0	63.2	44.8	56.1	57.1	56.0	48.9	57.3	55.1	40.3	54.7	69.1	57.1	63.7	56.7	58.9	57.0	39.4	67.2	41.0	47.2	56.0
Apr 22	53.7	64.7	49.8	58.8	61.9	40.3	44.6	54.1	47.4	55.4	54.9	48.4	36.6	43.8	51.4	56.4	68.4	57.3	63.7	52.3	50.4	51.4	56.2	53.9	35.5	60.4	55.5	45.9	54.0	56.1	44.4	47.4	56.3	39.5	45.3	55.0	60.1	64.4	56.0	54.8	47.3	53.0	46.8	59.7	40.1	37.2	45.6
Apr 23	52.9	64.9	52.7	52.7	67.5	37.0	51.8	52.5	53.9	66.7	51.0	50.4	51.9	48.1	52.8	58.5	52.8	53.9	63.8	54.1	50.9	57.6	49.4	52.6	43.3	52.0	67.2	46.7	48.4	51.4	52.4	45.3	45.0	50.5	56.1	66.8	67.7	70.4	52.6	49.8	52.0	50.0	45.5	60.7	44.9	47.3	48.4
Apr 24	57.8	68.6	50.1	58.7	64.8	40.0	47.6	50.3	44.6	51.5	58.2	52.4	49.2	41.6	51.1	51.5	57.4	48.0	60.9	47.8	49.5	57.3	50.3	53.9	44.9	55.5	57.7	57.0	39.6	53.6	46.1	52.7	53.8	61.3	59.6	63.8	61.3	68.5	53.7	49.5	50.6	55.0	41.8	63.4	51.4	53.5	45.8
Apr 25	57.9	60.5	47.2	69.8	48.6	47.1	50.0	59.9	57.9	55.6	55.9	47.4	41.2	48.8	51.4	50.2	58.0	49.7	52.6	52.7	55.4	52.3	56.7	43.4	33.7	54.7	65.9	51.8	38.4	49.9	50.2	56.0	58.8	56.5	59.5	58.8	60.1	55.7	46.2	48.4	54.6	54.4	47.5	73.1	47.9	55.4	52.3
Apr 26	54.8	47.5	58.7	81.4	55.3	48.7	51.6	47.5	63.1	58.7	60.0	48.0	49.5	47.3	48.3	45.2	46.7	46.3	53.9	41.7	55.7	58.9	53.8	49.1	44.9	62.1	60.8	52.6	35.5	49.0	46.0	50.9	64.2	60.7	60.9	50.4	57.0	63.1	49.5	60.4	49.8	49.0	49.5	70.0	58.6	44.7	52.1
Apr 27	51.1	51.0	59.4	64.2	55.9	41.6	43.2	45.0	61.9	53.9	57.5	44.8	64.1	46.6	43.8	51.3	44.6	63.0	62.9	37.7	62.7	52.5	49.0	54.5	50.8	62.5	58.5	49.1	47.8	44.3	49.9	57.2	51.5	57.1	55.3	55.1	54.4	63.7	59.8	65.4	55.0	49.6	52.4	63.3	62.6	47.4	52.0
Apr 28	51.2	53.3	52.9	50.4	56.3	49.4	45.5	43.4	55.7	57.4	50.2	50.3	59.7	46.4	54.1	52.2	49.9	66.4	58.1	48.0	57.9	44.8	37.5	46.8	54.1	59.7	66.4	56.3	46.0	37.3	48.6	51.0	50.9	50.3	59.0	50.6	55.7	59.6	58.8	60.5	52.7	49.3	48.1	63.6	58.0	52.4	59.4
Apr 29	53.9	58.5	56.3	61.0	51.7	51.5	53.1	52.4	61.1	59.9	44.6	48.6	57.9	47.0	42.7	57.0	56.6	66.8	52.8	49.5	62.7	47.5	44.9	59.0	60.8	56.6	65.1	54.7	49.1	43.0	53.9	60.6	51.6	50.9	58.7	51.3	59.1	61.8	55.8	57.7	57.5	53.6	61.1	57.8	49.5	52.2	55.1
Apr 30	53.8	47.8	62.5	57.2	55.3	59.5	63.7	49.0	51.9	61.2	49.5	51.6	56.9	52.2	42.9	61.0	47.7	60.6	49.9	48.9	50.9	52.2	43.3	53.1	60.2	55.2	59.7	56.4	47.8	50.4	63.1	53.2	53.8	54.4	60.9	44.7	48.8	56.6	55.7	47.8	52.0	52.9	62.0	55.4	54.8	58.7	47.6
May 1	50.9	52.9	58.0	68.8	52.8	58.9	66.6	36.5	62.3	55.3	56.3	68.4	50.7	54.9	46.3	53.5	52.1	54.9	53.2	43.7	58.9	51.3	39.5	57.0	63.7	60.9	44.5	51.3	56.2	61.9	55.6	60.0	47.3	48.3	52.8	49.6	60.9	58.3	49.6	43.9	51.7	51.8	64.6	55.4	57.7	60.7	39.8
May 2	60.8	56.0	61.8	65.6	63.6	57.6	62.8	43.7	57.5	54.2	64.0	55.8	50.5	54.8	42.6	64.4	44.1	53.4	54.1	43.6	50.2	65.3	39.8	54.2	55.2	59.2	33.7	48.2	60.2	59.5	54.4	58.1	54.0	51.4	53.6	57.3	47.9	56.7	49.9	41.3	53.1	52.8	66.3	50.4	62.4	62.5	27.0
May 3	67.9	43.3	48.6	56.9	52.6	57.9	64.9	56.5	65.3	50.8	50.5	44.3	58.0	65.0	45.0	59.8	43.1	44.8	61.4	43.5	60.4	64.4	48.6	61.7	54.8	70.6	39.3	44.5	53.2	54.8	49.1	56.8	62.1	49.3	57.0	62.8	38.8	68.3	38.9	45.9	46.1	51.5	64.7	56.1	58.6	67.1	45.6
May 4	73.8	36.7	47.9	63.8	51.6	58.5	65.6	57.5	67.7	49.4	49.0	49.9	60.7	57.7	46.9	59.1	49.1	49.1	50.0	49.5	57.6	61.7	60.4	54.0	62.4	64.5	47.2	41.5	49.4	49.3	52.9	53.4	70.5	64.9	58.5	55.2	45.5	67.9	50.7	55.7	45.2	55.3	62.6	52.2	64.3	65.7	47.2
May 5	71.8	37.5	62.6	63.3	56.4	58.7	57.9	66.3	55.5	68.8	45.2	50.8	57.0	60.0	54.9	64.0	39.9	52.5	48.1	53.6	64.2	60.5	63.1	45.0	48.5	63.6	48.6	51.9	49.9	58.8	63.0	48.8	58.2	59.8	65.2	55.4	46.3	67.2	61.3	49.2	39.8	55.7	70.7	61.9	58.2	61.7	48.8
May 6	81.7	47.3	67.8	57.9	55.2	64.0	57.6	66.5	57.1	74.2	49.5	48.7	59.8	53.8	55.6	61.1	51.4	52.7	53.4	55.4	59.5	60.1	61.5	49.2	53.1	68.4	53.1	62.9	54.4	59.1	59.5	58.0	69.4	57.0	64.6	62.6	50.6	65.6	54.1	51.9	47.0	48.3	61.5	62.0	58.8	69.1	49.2
May 7	80.4	54.0	74.7	50.5	51.6	66.9	53.3	64.5	56.2	67.1	43.2	51.3	59.4	54.6	60.8	60.7	57.2	50.1	50.1	57.5	56.1	59.3	62.6	56.9	52.2	61.4	62.6	57.6	66.5	60.1	70.1	47.0	54.7	63.1	71.0	54.9	41.9	69.0	56.0	53.1	39.0	55.8	64.7	57.6	70.6	66.6	55.4
May 8	79.4	50.4	75.5	48.8	51.3	74.4	57.8	50.4	54.3	59.5	51.9	56.4	51.6	56.4	59.4	52.2	63.3	60.2	54.0	49.6	59.9	58.8	62.7	51.3	50.6	54.2	53.8	49.7	68.1	57.0	67.2	48.9	62.8	59.0	71.1	64.7	49.2	66.7	55.7	50.0	41.6	54.2	71.5	62.6	59.8	67.0	47.4
May 9	77.8	52.4	64.7	49.9	58.3	68.7	56.3	51.9	56.8	74.6	48.1	48.9	49.5	70.1	64.0	49.0	65.8	56.6	60.1	58.1	56.9	64.4	56.2	56.2	60.8	41.4	51.7	55.2	78.6	64.0	63.2	54.1	55.0	64.8	64.0	61.2	58.8	66.9	50.8	56.3	53.9	60.0	60.5	58.4	70.7	75.4	46.7
May 10	65.3	58.8	59.0	57.0	54.2	60.0	55.5	48.6	51.4	77.8	45.0	42.3	47.8	66.4	66.4	48.7	63.9	53.3	64.9	65.2	65.1	66.3	54.5	58.6	63.7	58.4	44.9	65.1	70.5	54.2	61.3	54.1	55.6	57.0	57.6	54.0	59.5	66.0	50.5	52.4	48.8	53.1	55.4	63.2	67.3	79.8	49.7
May 11	62.5	58.0	59.9	58.7	57.9	59.0	59.8	55.3	57.0	73.4	50.4	39.8	42.0	80.2	61.0	63.9	64.6	63.5	63.4	62.5	57.4	72.8	59.7	46.3	60.9	51.7	46.2	55.9	62.1	55.6	60.6	60.2	58.7	63.9	58.1	56.6	58.5	70.4	63.7	56.9	54.8	56.8	60.4	62.5	62.9	67.3	34.6
May 12	57.6	57.4	59.6	58.0	58.4	63.8	58.7	59.0	57.0	66.8	53.8	60.0	48.8	77.2	73.9	55.1	69.5	61.1	54.7	60.4	50.3	69.7	57.4	48.5	62.3	52.7	43.9	55.4	59.1	64.0	65.2	54.4	63.7	59.6	56.8	43.6	66.6	74.3	60.6	59.3	62.0	51.4	61.5	57.8	61.1	61.4	41.5
May 13	54.0	59.9	48.2	64.9	58.3	56.3	64.7	56.8	60.8	57.0	56.7	65.9	38.6	78.9	64.2	62.7	62.5	63.5	59.8	62.2	52.5	64.8	58.8	44.8	58.2	51.7	41.9	53.1	54.8	58.6	70.3	55.5	61.1	58.0	57.9	54.9	66.2	80.0	65.6	76.7	66.6	58.8	67.7	58.6	63.5	67.5	51.0
May 14	57.6	60.9	53.2	66.9	52.7	62.2	62.5	63.5	54.4	54.2	59.1	57.2	38.3	70.4	59.9	62.4	58.9	56.3	56.5	64.8	58.1	71.6	60.6	41.2	60.4	56.4	45.7	49.3	54.5	55.2	62.4	49.3	66.2	55.8	66.9	67.5	54.3	70.8	68.3	72.6	63.9	57.6	63.4	57.2	59.6	59.5	55.5
May 15	48.5	58.1	55.7	67.5	58.4	62.7	61.8	52.6	54.8	59.5	52.5	62.5	46.6	72.9	61.8	67.5	68.0	64.0	54.8	63.8	59.7	74.1	66.0	57.3	61.6	61.3	54.7	56.4	60.8	57.5	67.7	50.5	64.8	57.0	69.8	62.6	48.4	81.5	60.9	69.1	55.0	58.0	58.2	62.9	59.5	64.1	51.3
May 16	56.5	58.5	56.6	67.6	64.2	53.2	57.8	53.0	55.5	53.3	47.4	62.2	51.2	64.7	63.3	66.5	72.0	64.6	68.5	62.7	60.3	76.1	64.9	55.6	49.1	61.1	48.3	61.8	65.5	50.6	66.2	48.1	65.7	52.8	64.1	59.0	51.9	75.6	52.0	66.7	59.7	58.3	60.1	59.7	53.7	77.7	58.0
May 17	61.3	60.8	59.8	57.0	59.3	57.0	53.1	60.9	55.9	49.9	55.7	50.2	49.7	65.1	63.2	54.3	59.3	63.8	66.5	62.0	52.3	71.9	65.8	58.8	56.6	56.5	49.3	66.2	66.2	56.6	58.7	49.2	57.1	60.7	58.4	61.4	60.0	68.0	53.5	65.5	58.5	52.3	62.1	60.7	59.3	73.0	60.6
May 18	62.0	69.3	67.1	52.5	64.0	48.5	49.3	56.0	57.6	55.0	67.0	60.1	53.0	66.3	72.0	49.1	58.2	58.6	57.2	56.3	59.3	67.3	69.9	51.3	57.0	63.6	50.3	62.9	56.6	57.8	58.7	52.2	65.0	62.5	60.2	54.4	65.2	72.5	66.1	62.6	62.4	61.9	69.6	54.3	63.2	74.2	63.3
May 19	65.8	65.7	61.0	53.8	64.7	57.8	49.0	57.7	60.5	59.8	68.9	58.0	52.7	55.5	58.4	63.2	70.9	67.7	65.8	63.7	57.5	65.0	66.0	46.4	60.0	73.3	50.8	66.3	65.1	62.7	61.3	52.3	56.0	53.8	68.7	55.4	61.8	65.9	65.3	68.2	64.7	53.4	61.3	62.9	61.5	60.4	59.1
May 20	62.3	65.7	58.8	63.2	67.3	59.3	56.7	60.8	65.2	66.4	71.6	57.8	55.8	57.3	47.0	62.4	75.9	63.0	61.3	64.5	62.4	68.2	64.0	52.0	57.5	69.4	46.6	65.3	69.5	61.7	57.4	49.8	56.4	50.3	67.3	64.6	70.3	74.2	62.4	69.7	57.5	53.9	57.0	53.9	67.8	59.7	67.1
May 21	57.7	65.8	57.5	53.8	61.0	52.9	53.0	62.2	68.8	72.5	72.7	53.8	63.5	58.1	50.8	66.7	76.5	63.6	64.7	69.6	63.6	62.6	63.7	57.9	73.0	65.6	59.3	67.1	66.1	73.0	63.1	60.3	48.2	60.5	67.0	68.0	65.5	59.6	65.4	67.8	67.9	54.7	59.8	60.8	70.6	54.9	71.4
May 22	59.8	58.1	64.2	66.7	70.3	45.6	57.5	68.3	62.9	80.4	61.2	61.3	70.2	50.9	53.8	66.3	78.8	62.7	69.3	71.4	59.4	65.4	61.7	62.5	66.3	71.0	56.4	72.2	72.8	68.7	65.2	62.0	60.5	60.1	60.4	68.9	66.1	67.9	59.3	71.8	74.6	49.5	56.0	59.0	69.4	60.9	68.4
May 23	57.7	63.7	59.5	54.1	63.3	51.3	59.2	69.5	57.8	82.2	67.4	55.2	53.9	57.4	57.3	56.3	67.2	61.9	63.3	68.8	64.4	57.3	65.3	66.1	61.4	67.1	53.8	74.2	75.2	68.4	60.6	69.1	60.7	58.7	69.1	66.6	64.0	67.3	59.1	70.7	73.6	52.6	62.2	65.8	66.0	56.9	63.0
May 24	70.1	68.9	61.5	55.0	65.0	60.5	67.7	63.4	65.7	77.0	62.1	58.9	55.4	55.4	62.8	69.6	66.8	64.8	60.1	66.0	64.2	53.4	65.9	72.4	62.6	65.1	62.4	73.2	70.6	69.1	60.9	69.8	57.7	63.4	64.1	68.2	69.7	64.3	60.1	67.2	79.2	61.6	58.8	64.3	49.1	62.1	74.2
May 25	57.5	70.4	56.5	53.0	67.3	58.1	72.0	65.2	70.1	80.6	70.5	59.6	58.9	62.6	57.3	64.9	59.9	61.1	65.4	60.1	62.9	58.9	60.0	65.1	63.0	61.6	69.4	63.9	62.7	71.0	59.2	70.7	61.8	66.6	67.1	61.2	77.0	65.7	67.2	68.7	75.7	60.7	58.0	75.1	55.0	68.6	72.2
May 26	61.3	67.3	57.1	56.0	69.6	59.8	69.3	58.1	78.6	78.1	64.2	65.3	60.7	54.6	65.1	61.2	62.8	57.5	66.8	72.5	70.3	54.5	63.8	69.6	65.3	64.5	67.5	66.1	69.3	70.7	56.7	60.1	53.4	68.8	67.0	52.1	75.8	51.6	64.6	68.0	71.6	65.3	67.3	70.2	62.2	64.4	70.2
May 27	66.6	56.5	60.0	59.7	64.1	60.9	79.0	59.3	78.4	81.2	69.5	69.5	63.9	63.2	59.7	56.8	67.3	58.1	69.6	73.4	77.3	64.6	60.7	72.4	71.1	68.9	70.1	68.9	67.7	66.5	61.4	67.5	60.9	72.0	71.2	47.5	77.0	49.7	68.4	66.4	74.8	65.1	71.3	67.0	61.8	67.1	64.4
May 28	72.4	61.9	65.6	59.5	64.3	55.6	76.5	57.2	67.6	77.2	66.0	69.4	69.7	63.9	64.3	61.0	70.5	65.1	64.2	55.3	70.5	61.5	65.7	76.9	71.2	70.9	71.3	62.4	68.0	68.7	57.3	66.0	62.0	65.6	57.0	61.2	71.6	57.3	68.6	68.0	68.9	63.3	60.5	67.5	61.7	61.3	51.1
May 29	77.2	65.6	62.3	64.9	62.1	52.8	75.3	64.1	62.4	76.9	73.3	75.1	71.3	70.5	67.1	66.6	79.3	66.5	67.6	62.9	71.2	57.4	61.1	76.3	69.2	74.2	61.8	60.4	64.9	66.6	66.5	62.8	62.1	64.9	58.8	58.6	69.9	55.6	62.8	69.3	61.8	64.2	66.4	68.3	64.6	56.4	57.7

TABLE 5. SUMMARY AND EVALUATION OF DAILY TEMPERATURE IN HELP MODEL 100-YEAR SYNTHETIC WEATHER DATA SET

YEAR->	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
May 30	77.8	59.0	67.1	71.4	58.9	65.5	66.7	64.2	65.5	76.2	67.6	75.4	65.7	73.0	66.9	67.5	74.9	69.3	68.4	63.9	71.5	65.5	60.3	82.3	69.2	66.7	54.2	59.4	66.2	56.7	65.6	72.9	62.5	67.5	67.3	63.4	62.4	61.1	58.9	65.8	71.2	67.6	57.9	73.2	69.4	63.9	60.2
May 31	73.2	58.9	64.4	71.4	66.3	58.5	71.7	66.4	58.8	68.9	64.7	72.0	66.7	66.1	61.4	64.1	63.2	59.7	66.3	56.4	73.7	67.8	56.4	74.5	67.4	57.9	52.1	63.4	71.0	62.8	57.6	68.9	60.8	64.6	58.7	66.2	70.6	64.7	53.7	69.8	64.1	64.8	64.5	74.3	69.5	65.0	59.6
Jun 1	75.2	55.5	54.8	80.6	66.9	67.6	67.8	70.4	58.5	77.9	71.8	65.4	63.2	60.2	70.4	65.7	69.5	64.1	66.9	62.0	73.1	55.2	54.5	67.9	75.9	61.6	61.0	63.8	62.7	63.2	62.7	75.1	63.1	65.0	62.2	67.2	67.3	60.1	60.9	75.5	63.8	64.2	66.1	75.4	62.6	66.6	61.0
Jun 2	72.4	58.1	59.5	77.2	67.0	70.7	65.8	70.1	61.8	72.4	67.4	58.1	67.3	58.6	73.4	73.7	72.1	69.3	64.7	64.2	70.2	58.9	63.3	64.2	71.1	70.9	62.5	70.3	57.8	57.8	65.6	70.3	68.5	55.8	59.7	65.9	73.5	62.2	61.5	67.2	63.1	64.0	68.1	72.3	58.9	57.4	71.6
Jun 3	72.6	64.2	58.2	74.9	73.6	61.6	71.9	77.3	64.2	76.7	62.2	53.8	69.0	65.8	76.1	76.0	70.2	69.8	64.8	70.4	68.2	60.4	72.5	67.2	62.9	73.1	62.1	67.3	49.6	68.6	62.8	71.7	68.5	58.5	58.2	72.6	66.8	60.1	66.3	67.5	65.3	64.6	67.9	78.7	60.9	52.6	76.4
Jun 4	72.8	61.1	64.0	73.2	73.2	67.7	66.8	77.4	64.9	72.6	69.8	62.6	70.5	62.3	72.0	70.2	61.5	67.8	61.4	64.7	66.7	64.9	64.6	75.7	66.3	69.6	66.4	69.7	52.3	68.9	60.9	68.4	62.0	58.0	58.3	73.6	74.9	60.6	71.6	66.8	58.8	64.1	68.0	69.0	62.5	64.1	74.3
Jun 5	71.0	59.5	57.0	71.7	68.9	61.6	68.7	69.8	64.2	67.1	64.8	62.9	59.4	67.8	71.8	67.9	61.0	68.3	62.1	69.1	61.1	62.5	57.0	72.2	71.4	68.1	62.6	63.3	52.5	61.1	60.9	65.4	67.1	54.8	58.4	65.0	65.1	61.3	73.8	71.2	56.0	71.6	74.7	77.1	60.5	67.0	74.8
Jun 6	70.1	65.9	65.2	76.6	66.2	54.2	69.3	73.6	67.3	69.7	70.3	69.5	67.1	68.3	61.1	59.1	65.5	62.7	57.7	68.9	63.9	72.7	68.6	68.6	64.6	64.3	61.7	72.0	55.3	62.8	64.1	70.4	64.5	60.6	54.9	64.7	57.9	65.4	74.1	72.8	55.7	76.7	72.5	71.3	62.0	66.7	75.4
Jun 7	79.4	72.6	70.0	78.1	63.7	58.9	55.8	70.2	67.5	66.5	69.5	72.1	66.3	64.5	67.1	64.9	59.0	68.1	68.9	64.9	65.4	77.7	68.6	70.8	68.2	69.5	59.6	71.7	68.6	61.1	61.8	68.8	63.3	63.1	64.6	67.3	55.1	64.4	71.1	66.7	67.3	70.4	75.4	67.1	64.0	73.8	62.6
Jun 8	78.0	66.5	68.1	81.8	70.8	70.2	56.1	63.5	64.2	58.5	66.8	75.2	60.8	70.6	67.6	70.6	62.2	66.6	73.1	62.8	66.1	78.0	72.0	64.4	68.3	62.8	60.7	68.9	63.5	67.7	60.4	67.1	69.9	68.7	72.7	73.5	60.3	68.6	67.8	74.7	69.0	73.7	73.0	68.9	68.6	74.7	70.7
Jun 9	70.4	67.3	69.4	80.0	76.5	69.5	61.5	71.0	63.4	63.0	66.9	75.0	66.6	75.6	69.2	68.1	59.9	64.8	73.5	59.9	60.7	77.8	82.4	62.7	61.5	63.7	58.1	67.6	67.2	76.2	60.1	69.4	72.2	70.3	75.8	71.1	59.9	64.9	62.1	68.5	70.4	70.2	70.7	68.1	68.1	79.6	68.6
Jun 10	65.1	67.4	74.0	82.6	72.2	73.3	62.0	69.2	64.1	67.9	69.0	63.8	67.7	73.8	74.3	63.9	67.6	65.1	67.0	67.5	54.5	74.9	78.5	64.9	62.4	71.2	62.7	68.5	74.0	77.5	57.6	73.0	63.5	72.1	68.0	75.4	68.8	63.5	71.1	73.1	65.9	72.7	68.0	59.8	70.7	71.6	68.6
Jun 11	68.8	66.9	70.3	73.5	68.4	69.5	62.9	71.7	62.1	64.1	71.4	65.0	55.5	78.4	74.1	71.4	67.6	62.1	67.7	72.5	60.0	69.6	73.3	73.3	60.2	68.5	63.4	70.3	64.1	70.2	51.3	73.0	64.7	74.2	64.6	71.5	67.3	68.8	69.2	68.6	68.6	69.4	66.2	57.4	69.7	66.5	69.8
Jun 12	72.2	74.1	72.0	67.5	61.3	70.0	68.9	66.6	67.3	57.6	69.5	66.5	57.7	80.6	68.9	71.3	69.0	65.9	74.0	67.4	54.0	71.5	75.2	65.9	63.6	69.3	66.0	66.3	60.6	74.1	55.6	76.1	67.0	78.5	63.6	71.4	62.7	67.9	62.1	65.6	63.7	68.2	68.7	61.7	67.6	72.6	70.1
Jun 13	69.9	69.2	71.1	69.2	70.8	66.8	68.6	72.6	61.3	59.1	68.4	71.0	63.3	80.9	80.2	64.7	65.2	65.7	72.8	68.5	53.2	67.8	75.0	73.2	66.2	77.4	62.3	67.9	59.1	78.5	66.3	75.2	62.3	74.7	66.3	65.9	66.3	70.9	64.9	69.0	72.7	68.4	58.7	66.9	73.6	68.4	70.6
Jun 14	72.7	70.6	70.3	70.0	70.1	60.0	63.2	73.1	75.1	58.8	69.0	75.4	64.3	83.1	74.8	73.3	75.2	73.6	72.9	71.4	63.2	72.9	80.4	68.3	68.7	75.4	67.8	63.1	58.2	78.4	68.7	71.6	64.5	71.1	64.9	60.3	69.0	70.3	67.5	65.8	66.3	66.5	66.4	66.1	82.4	69.6	66.4
Jun 15	78.3	67.8	68.4	61.6	70.2	66.6	61.2	70.2	72.1	72.1	70.0	79.7	65.7	81.4	68.7	71.8	74.5	71.8	76.1	69.5	68.4	68.1	72.4	74.9	62.9	67.0	72.7	64.5	54.3	75.9	75.3	74.9	64.5	75.1	71.6	65.1	66.9	68.1	65.0	71.7	63.5	68.5	67.1	66.2	78.2	76.0	73.6
Jun 16	79.9	66.6	66.1	57.5	73.5	68.0	66.5	73.9	77.1	66.9	68.7	78.6	66.4	78.9	67.7	69.4	79.4	79.2	68.6	74.3	72.9	64.8	69.9	77.8	71.4	66.2	72.2	65.9	66.8	79.5	72.0	74.1	63.7	75.8	74.8	68.8	69.9	72.1	62.7	68.6	59.6	66.0	76.0	63.8	79.8	79.6	76.2
Jun 17	79.5	67.0	64.1	61.4	73.9	70.1	66.3	76.6	78.3	62.7	71.9	75.7	69.8	77.8	62.3	68.8	77.5	73.7	70.9	78.7	73.1	66.6	65.9	70.1	66.8	63.6	69.9	75.2	69.8	69.2	72.7	74.8	66.6	72.3	72.4	74.4	69.4	64.5	72.0	61.0	62.3	65.9	74.6	63.9	69.2	79.9	79.8
Jun 18	76.4	63.7	73.7	67.4	71.5	76.2	77.3	64.7	79.8	57.8	73.0	81.8	71.2	78.2	68.1	66.5	75.6	72.9	74.4	78.0	70.5	67.5	72.6	77.5	64.8	67.1	65.1	70.3	69.1	74.4	75.2	75.9	64.9	66.3	70.5	70.0	68.2	68.1	72.8	60.8	61.6	67.9	69.3	64.6	73.9	72.0	79.3
Jun 19	78.2	65.5	79.7	65.1	74.8	69.5	73.3	64.7	80.3	64.1	76.8	81.7	71.6	78.9	67.8	66.9	76.8	72.1	70.6	76.1	68.4	65.7	67.2	73.6	66.4	64.1	71.0	72.5	68.8	67.0	75.5	75.5	63.0	62.2	67.1	70.8	60.1	70.3	70.8	66.1	66.5	66.0	70.4	74.2	79.9	66.9	72.3
Jun 20	76.7	58.5	78.7	64.0	76.3	72.7	76.6	60.6	79.3	72.2	77.2	81.0	76.9	72.3	66.1	68.8	70.7	81.5	67.0	69.1	64.9	65.6	69.2	68.0	68.3	73.7	66.3	74.9	68.0	67.4	71.8	73.4	60.3	64.7	63.3	72.5	58.2	78.0	74.0	71.6	68.1	59.6	71.7	75.9	73.4	74.1	68.4
Jun 21	75.3	61.9	75.0	69.1	77.6	72.2	75.8	61.6	70.7	72.7	74.5	81.7	74.0	63.4	67.5	73.9	69.7	72.3	70.0	66.7	69.2	65.9	67.2	70.5	74.6	65.2	72.3	74.1	71.8	67.1	73.2	75.5	71.8	65.7	62.8	75.0	64.2	77.2	69.6	69.8	61.6	59.5	70.9	70.2	79.6	74.9	63.9
Jun 22	82.5	69.1	73.7	73.9	68.8	73.9	76.0	68.3	72.8	65.7	72.8	76.9	77.6	73.3	61.0	78.3	68.5	73.8	72.4	70.1	70.5	62.9	67.9	71.2	76.2	70.5	63.1	75.9	65.3	72.9	76.2	79.9	69.8	67.1	65.9	73.9	68.6	71.4	68.7	69.4	74.0	60.2	66.8	70.5	70.1	73.6	64.6
Jun 23	77.3	76.1	77.7	69.0	66.7	69.0	75.4	73.6	74.3	67.3	72.6	76.9	72.7	72.2	61.9	78.6	69.7	69.0	70.8	71.4	69.4	65.5	58.5	63.4	72.6	76.1	77.7	71.4	67.9	76.6	73.5	80.8	69.3	72.7	66.6	70.9	62.3	62.0	68.8	70.5	72.6	70.0	66.3	63.5	72.7	73.0	68.7
Jun 24	69.2	69.2	79.3	74.4	64.7	66.5	67.9	74.5	64.3	72.8	75.6	69.6	75.8	72.6	60.4	80.9	72.9	68.2	71.8	71.1	68.4	70.1	68.2	72.9	69.0	70.8	75.5	75.2	69.3	80.7	74.3	79.8	70.5	78.8	70.3	69.9	65.4	66.2	64.7	70.4	71.5	71.1	63.4	75.6	73.2	74.5	78.0
Jun 25	68.2	69.6	74.7	73.6	74.3	64.4	63.8	74.6	64.7	72.1	75.0	71.1	70.7	73.7	61.3	78.9	74.8	68.6	63.8	69.8	71.0	66.9	66.6	71.5	76.6	68.9	71.0	72.2	67.0	79.5	83.2	70.9	67.4	76.0	75.2	73.0	66.9	73.1	68.6	68.5	79.1	70.1	64.5	72.5	76.2	73.5	74.2
Jun 26	65.7	79.1	70.3	67.4	70.8	66.8	72.8	70.8	70.8	70.4	78.0	76.2	71.4	71.0	59.8	73.4	71.5	66.1	71.6	63.2	66.1	71.7	70.8	73.8	74.7	76.1	66.6	72.5	68.1	75.7	84.6	77.9	66.1	73.5	71.4	69.2	69.8	75.7	67.2	74.3	72.2	68.0	68.2	70.8	68.8	69.7	69.2
Jun 27	61.5	67.9	74.1	67.0	69.5	63.5	71.4	77.1	65.2	78.9	76.1	72.7	73.4	68.4	67.1	67.9	77.1	63.3	70.1	66.6	59.6	73.8	68.6	77.8	70.9	80.7	67.5	74.1	76.9	75.1	78.8	77.4	71.7	79.5	68.2	67.8	66.6	74.3	72.1	68.5	75.1	72.6	73.0	71.2	73.8	72.6	68.0
Jun 28	64.3	76.9	67.2	77.9	70.2	70.7	63.8	72.6	67.7	69.5	75.7	71.5	71.2	73.6	73.1	70.7	79.2	74.0	67.1	65.3	56.7	71.6	69.6	74.9	68.5	76.3	67.9	74.9	75.8	78.1	76.2	77.0	65.8	79.4	70.0	73.5	62.1	80.1	72.4	76.5	73.3	72.3	69.4	78.5	65.2	70.4	71.2
Jun 29	59.9	72.5	69.3	80.3	73.3	77.4	68.4	70.2	76.7	75.6	78.7	71.1	69.4	73.1	71.1	69.3	78.3	68.1	73.6	64.8	61.2	72.9	69.8	78.9	66.5	74.4	68.8	63.0	67.1	84.0	81.5	73.8	67.8	78.0	74.9	72.5	65.1	78.3	69.1	77.2	75.9	72.7	75.4	76.3	64.4	74.3	70.6
Jun 30	68.1	66.2	76.8	81.4	75.4	69.8	76.5	69.5	81.6	74.5	73.8	73.8	81.9	71.3	80.1	78.8	75.7	70.1	78.7	75.1	73.5	66.9	68.7	84.2	75.3	68.7	78.0	74.8	74.0	75.5	78.6	76.3	75.0	76.3	74.3	71.1	68.4	79.0	74.3	68.8	80.5	75.9	87.4	77.0	72.2	70.2	65.0
Jul 1	71.6	72.8	83.1	79.0	78.1	74.5	80.4	72.5	75.7	81.1	81.6	74.1	83.1	75.1	80.5	72.4	77.9	83.6	82.1	79.2	72.5	74.9	70.6	89.2	73.5	77.5	73.3	78.4	76.6	79.2	77.8	79.5	80.3	79.7	83.7	78.9	77.1	71.9	73.7	74.8	82.4	77.8	80.3	70.5	77.6	73.5	67.4
Jul 2	73.5	78.4	80.6	79.6	79.3	75.2	79.8	76.0	76.6	77.5	80.2	75.8	80.5	78.5	78.3	78.5	80.6	83.1	77.0	79.2	68.5	76.1	71.0	91.5	72.9	77.7	74.0	79.4	80.1	75.6	80.3	81.9	79.1	77.7	85.9	75.8	76.3	80.4	74.7	74.9	86.5	71.7	84.7	70.6	78.2	76.0	71.2
Jul 3	76.6	79.5	81.1	80.2	75.0	74.5	82.3	80.7	79.7	76.2	81.4	76.8	82.9	81.2	83.3	78.5	84.0	78.8	77.9	87.7	69.2	80.1	74.1	93.1	76.5	76.2	79.8	75.1	78.3	75.5	69.7	79.9	78.1	78.1	81.2	77.6	73.3	78.1	80.1	74.4	88.5	79.8	74.8	69.3	81.4	80.0	79.7
Jul 4	83.1	79.3	83.4	80.3	77.8	72.1	84.1	84.1	81.4	74.9	82.5	80.3	74.8	77.7	83.1	80.4	80.5	75.2	77.3	83.6	72.5	79.6	75.0	84.4	77.0	77.1	82.3	77.0	80.4	74.3	72.2	81.5	76.4	74.2	79.8	78.8	76.4	78.9	80.5	83.5	85.7	76.0	77.9	79.5	85.4	83.7	77.6
Jul 5	76.9	75.2	79.9	71.2	70.1	75.7	78.8	79.0	80.5	75.7	87.6	78.1	78.8	81.9	84.1	86.0	86.2	74.6	77.3	78.8	73.4	77.9	76.4	87.4	78.7	78.0	79.4	81.1	76.5	71.2	76.2	79.7	75.8	75.9	78.8	80.6	76.1	80.8	82.7	83.0	87.5	78.4	77.5	74.5	76.8	81.8	81.5
Jul 6	76.2	75.9	80.0	74.3	71.1	77.0	78.8	77.4	83.1	83.7	86.5	81.1	76.4	76.4	78.9	79.0	82.2	73.6	74.6	70.1	73.6	80.8	78.3	85.9	81.1	73.2	78.3	79.9	76.5	77.9	73.2	79.7	77.6	74.3	79.0	77.5	78.1	78.9	85.7	83.9	90.0	82.7	74.9	83.6	71.1	84.2	82.3
Jul 7	76.6	77.5	82.2	74.3	75.4	76.5	72.4	75.9	79.4	77.8	90.5	80.4	74.6	74.6	75.7	83.4	80.5	74.7	66.9	81.4	74.3	77.9	76.3	86.5	82.5	75.8	83.6	79.0	78.6	81.9	83.3	76.3	76.7	75.6	79.7	70.0	82.7	79.1	79.8	82.9	85.3	81.3	74.7	79.0	74.0	83.8	85.4
Jul 8	76.0	73.2	81.3	76.5	80.1	75.8	71.5	74.4	82.2	78.1	86.8	86.0	74.0	73.9	84.0	84.3	79.6	78.2	67.3	82.8	73.3	81.0	79.8	78.8	81.3	79.6	83.0	82.2	76.3	82.5	83.7	73.1	81.5	75.5	75.9	67.9	79.7	80.4	88.1	87.4	83.1	83.3	82.1	77.9	72.8	81.5	80.1
Jul 9	77.0	70.7	82.0	78.6	82.6	71.7	73.5	74.4	84.0	81.2	89.1	81.8	72.4	77.9	86.3	83.7	73.4	78.1	76.6	77.6	75.2	84.3	78.7	76.3	82.9	79.3	82.1	75.8	73.1	71.4	82.8	81.4	78.9	75.7	77.1	66.4	83.6	82.9	79.2	85.4	81.7	78.1	77.4	79.7	77.1	81.5	73.9
Jul 10	70.6	73.9	75.9	79.1	73.8	83.6	77.5	74.3	83.6	83.1	88.4	83.9	74.8	77.0	79.0	79.2	79.4	80.1	74.4	74.8	75.6	81.9	81.2	73.4	79.1	76.0	83.6	75.0	84.5	82.1	79.6	79.4	83.1	71.8	81.5	73.1	76.9	77.0	84.6	85.5	73.4	81.0	75.7	82.6	75.9	74.4	77.4
Jul 11	70.1	76.7	81.6	77.8	74.1	82.2	76.0	75.2	81.0	84.9	86.8	77.9	72.8	81.7	82.0	78.9	78.9	80.0	69.1	80.4	78.5	80.5	77.3	76.1	74.9	79.0	86.3	77.5	80.8	82.8	85.4	78.4	84.6	80.2	81.7	77.1	81.3	73.5	84.7	76.5	73.7	69.9	79.1	83.5	72.6	71.9	77.5
Jul 12	79.9	76.7	78.9	80.8	81.3	81.0	76.2	77.3	83.1	81.2	88.0	82.6	77.3	81.9	84.6	79.1	76.1	74.4	71.8	83.1	79.8	84.8	76.9	75.9	71.0	81.1	82.2	77.8	82.4	84.7	80.6	74.2	81.9	77.4	84.3	73.8	79.2	75.6	86.8	82.6	76.1	73.5	87.3	78.7	77.0	71.4	78.6
Jul 13	76.8	78.0	77.9	81.9	76.6	76.7	79.3	77.4	82.3	80.8	83.9	81.2	71.3	79.4	79.5	76.3	74.9	75.8	72.7	83.0	78.6	76.9	76.7	76.4	73.6	78.5	77.7	79.1	82.7	78.6	80.9	83.0	80.3	78.5	81.0	74.4	76.1	73.8	78.0	80.5	75.4	74.7	84.5	77.9	75.8	76.0	84.3
Jul 14	82.4	75.6	76.3	71.1	73.1	83.8	78.6	76.8	80.1	75.2	79.6	86.8	81.1	77.5	84.4	86.0	82.0	75.3	76.5	77.7	75.7	80.7	79.7	72.3	68.8	79.5	79.2	80.9	80.5	80.1	72.8	79.2	77.8	72.8	77.1	74.3	77.9	73.2	78.3	86.0	78.1	78.5	83.2	80.5	76.3	76.1	83.9
Jul 15	77.6	76.6	81.6	78.2	77.6	82.9	81.8	81.7	75.8	71.1	81.1	85.1	82.6	75.0	82.9	84.5	84.1	71.4	82.8	77.3	76.4	79.5	77.9	73.4	80.9	75.1	81.6	80.3	77.6	78.6	78.9	79.0	72.6	74.7	79.3	76.7	82.5	73.0	71.7	82.4	78.4	80.5	83.5	76.1	78.8	70.5	78.7
Jul 16	82.3	74.8	79.4	74.1	75.4	79.5	80.0	84.2	75.1	72.4	77.0	83.9	77.4	72.4	81.2	87.1	83.5	70.7	85.3	75.7	74.1	79.0	81.6	74.6	78.4	77.4	84.3	82.7	83.9	79.3	79.4	77.4	70.3	73.3	76.9	73.9	84.2	76.7	73.0	81.3	74.1	78.4	86.4	77.4	74.4	75.8	78.1
Jul 17	81.2	76.5	77.5	78.0	79.8	75.0	80.5	81.9	70.3	83.1	77.2	78.9	79.2	73.0	82.5	84.7	76.6	72.3	85.4	73.7	76.7	83.8	82.4	78.4	82.1	74.2	83.1	77.8	85.6	84.7	77.6	80.0	73.0	74.8	70.0	77.6	79.2	77.0	79.1	83.6	74.9	79.2	83.9	78.4	72.6	78.9	81.3
Jul 18	85.1	79.8	81.5	76.2	81.3	71.2	78.7	84.7	74.6	84.2	85.5	85.0	82.2	73.8	79.9	78.9	77.1	73.5	84.3	69.7	76.2	81.9	78.4	85.2	83.8	73.1	87.7	75.6	84.6	84.2	80.0	80.0	72.7	76.6	71.5	76.5	73.9	79.0	72.6	83.0	75.5	80.1	87.0	77.8	76.4	81.3	80.9
Jul 19	85.5	78.0	82.4	71.0	80.7	79.9	73.6	87.9	71.0	84.7	87.2	91.6	77.5	77.8	80.6	74.5	78.4	74.9	87.5	75.2	78.1	81.1	80.6	79.7	82.5	79.6	83.5	80.3	81.8	81.7	78.9	83.2	74.2	76.3	75.9	78.1	81.7	80.9	72.0	86.1	74.0	79.8	78.1	74.1	78.9	82.5	78.0
Jul 20	81.3	82.6	79.7	75.9	80.2	80.0	81.4	86.2	69.9	80.9	85.7	88.5	84.6	78.0	82.0	78.1	79.2	81.3	82.3	78.2	85.1	73.3	71.0	83.6	80.2	76.9	76.6	75.6	78.5	77.8	79.7	87.0	76.7	75.7	81.7	74.4	86.1	85.6	79.4	82.5	70.9	82.5	72.4	71.3	77.0	85.5	82.4
Jul 21	81.5	76.5	83.3	75.2	81.2	81.7	80.9	79.3	66.8	77.9	85.0	84.1	85.1	81.0	80.9	79.1	82.9	79.5	82.6	79.5	88.1	77.5	76.1	84.6	83.6	79.7	79.7	75.3	85.1	77.2	79.6	79.4	77.5	78.7	82.4	84.5	83.9	85.5	78.4	80.4	69.4	87.0	82.1	73.3	79.4	85.4	85.6
Jul 22	81.8	82.4	81.5	77.5	82.0	76.9	82.8	79.0	69.6	74.7	79.4	83.0	82.7	79.1	84.6	81.4	78.1	79.0	82.9	78.7	83.7	77.3	77.3	81.2	84.4	74.4	83.8	81.6	74.3	72.5	75.8	82.4	83.5	78.2	78.0	78.5	81.7	80.5	82.3	74.2	75.5	85.1	83.5	78.5	80.9	81.6	86.5
Jul 23	80.7	81.9	79.3	80.9	78.3	83.8	82.0	75.7	76.9	71.9	80.8	84.1	80.7	82.1	84.4	82.0	79.1	75.4	83.4	75.9	82.9	74.4	77.1	84.9	81.4	77.1	82.2	78.3	76.6	82.3	81.6	82.2	76.0	80.6	83.5	76.2	80.3	80.6	79.4	74.8	80.3	83.2	82.1	84.1	83.0	77.8	83.0
Jul 24	81.1	84.4	76.5	79.1	75.2	87.1	80.0	78.8	80.9	80.5	81.3	80.7	72.6	83.4	76.5	82.3	78.4	77.6	81.2	78.6	79.4	74.2	75.5	85.1	83.4	81.4	79.5	78.0	83.5	85.5	79.3	83.1	79.4	79.0	82.5	77.0	84.4	79.4	79.7	79.5	80.9	79.3	84.1	85.3	78.5	78.3	80.0
Jul 25	84.3	84.8	82.1	88.2	67.8	86.2	80.3	76.4	74.1	79.6	77.9	84.2	76.7	87.1	81.5	76.0	77.9	75.5	76.6	78.0	78.9	77.2	75.6	83.7	80.4	80.1	86.4	82.7	82.5	83.4	79.1	82.6	83.3	75.7	84.3	74.8	80.8	79.8	78.1	80.0	84.2	78.2	84.1	82.3	78.8	76.3	77.9
Jul 26	80.3	85.2	79.0	85.3	71.1	81.5	78.2	77.0	65.4	78.7	75.1	73.6	84.5	87.1	77.6	72.5	76.6	77.6	78.1	70.7	72.5	77.8	79.8	79.8	82.3	74.2	86.2	83.9	83.5	75.9	80.4	85.8	81.9	74.7	84.6	74.5	76.6	78.9	75.6	82.4	87.0	74.8	84.2	75.6	78.5	78.7	83.1
Jul 27	79.6	79.4	82.1	82.1	76.9	85.3	84.1	77.9	67.1	78.4	75.4	75.8	78.6	86.2	74.4	69.8	74.8	75.7	78.6	78.0	76.7	80.2	75.7	73.4	84.0	78.0	81.6	80.9	77.9	79.4	73.7	89.2	82.3	73.9	80.0	72.7	76.0	79.4	77.1	79.1	87.3	73.2	80.2	71.1	76.5	78.3	84.0
Jul 28	75.0	77.5	77.1	78.8	72.5	85.2	80.1	76.0	71.4	73.5	79.7	83.5	78.1	86.5	74.4	73.6	76.2	76.6	73.7	79.6	79.2	82.9	75.9	66.8	71.9	75.2	82.8	84.4	82.2	76.1	77.8	88.9	73.6	73.0	74.5	78.9	74.3	83.3	79.6	79.7	79.6	66.5	81.3	79.3	74.4	80.2	80.8
Jul 29	76.2	77.9	75.3	81.9	69.4	79.3	77.1	76.3	75.5	70.4	83.2	79.5	84.9	84.4	77.1	74.6	80.0	72.0	76.2	77.2	75.9	81.9	83.2	70.6	76.5	79.1	78.6	81.9	77.9	78.0	72.4	84.4	75.5	71.4	69.8	74.3	80.0	76.3	82.3	80.9	76.6	74.4	75.0	78.4	77.5	85.5	81.0
Jul 30	81.7	78.5	72.3	78.4	78.3	76.3	79.3	79.0	74.5	69.5	80.7	73.6	80.4	85.2	77.2	75.7	78.4	75.2	77.9	80.5	79.1	79.8	85.5	76.2	78.8	82.0	84.8	76.1	79.2	76.3	75.2	84.2	77.0	64.9	78.2	75.9	83.2	82.9	84.1	73.1	72.0	75.6	78.0	71.7	75.5	81.3	81.8
Jul 31	78.3	79.1	75.4	79.6	81.2	80.4	81.2	80.3	75.4	77.7	78.8	75.3	72.2	75.5	70.2	73.6	79.6	75.2	79.5	75.2	77.7	80.3	82.8	83.6	79.1	78.8	86.9	82.4	82.0	81.8	82.1	90.1	71.5	74.7	78.4	79.5	82.2	81.8	80.1	84.7	76.7	77.3	87.6	70.6	77.3	80.2	76.6
Aug 1	77.2	83.2	73.5	72.7	79.5	79.8	82.4	81.5	76.8	82.3	78.8	72.0	73.9	82.9	71.1	82.0	81.0	74.8	77.9	82.6	76.0	77.6	70.5	82.1	84.6	85.2	84.5	81.3	83.0	86.8	85.1	89.8	77.1	79.4	75.6	81.1	79.3	77.4	83.7	82.0	71.0	85.2	90.0	73.5	76.3	83.2	83.6
Aug 2	78.7	81.1	72.4	74.6	83.6	85.9	80.4	77.6	79.4	82.7	76.4	72.6	76.4	78.6	75.0	75.3	75.5	77.6	76.3	80.9	85.3	77.8	70.7	86.5	77.9	86.1	77.3	85.7	85.2	79.7	82.2	89.1	79.5	73.9	77.6	79.6	84.1	78.6	83.4	84.9	76.9	86.9	90.1	76.1	79.5	80.1	75.8
Aug 3	76.2	81.0	71.7	79.9	86.5	78.7	85.1	78.2	83.4	84.7	79.2	80.7	78.2	80.0	79.5	75.0	71.4	78.3	73.2	81.9	81.1	79.1	74.0	82.2	72.9	75.7	86.3	79.1	84.2	76.7	83.5	85.8	83.3	76.3	80.6	77.4	82.7	77.4	73.0	74.6	74.6	86.0	88.7	84.7	82.7	75.1	76.1
Aug 4	76.1	83.5	72.2	74.9	81.7	76.1	79.0	79.5	89.6	85.8	77.7	81.5	76.1	75.4	76.1	83.2	74.8	78.7	78.9	80.7	74.5	80.1	76.3	83.0	79.8	81.0	84.8	78.2	83.9	85.1	83.4	83.9	85.5	76.1	78.7	80.9	79.6	83.4	77.9	71.7	76.8	85.2	84.9	75.8	84.2	71.7	77.0
Aug 5	72.6	80.6	72.1	76.6	86.7	75.1	82.3	83.8	80.1	78.6	74.4	77.3	80.0	78.0	74.3	82.7	77.4	72.8	70.5	78.2	72.2	84.1	80.6	82.5	80.1	86.5	83.3	79.9	79.5	79.2	80.8	79.6	80.0	82.1	78.6	86.5	79.6	83.6	83.0	81.6	79.6	84.4	87.9	76.0	84.5	70.3	80.5
Aug 6	72.5	71.6	79.0	76.7	85.5	74.8	79.5	83.5	84.7	84.0	84.0	70.6	78.1	77.8	80.9	81.6	76.3	68.9	67.6	75.6	85.0	77.3	79.1	80.1	76.3	89.4	80.0	77.2	76.2	80.2	80.8	77.4	75.7	84.7	78.7	83.4	81.0	76.6	83.7	82.6	79.0	83.4	83.9	80.9	78.9	72.5	79.0
Aug 7	74.8	76.2	83.6	73.9	86.3	73.2	73.3	85.2	78.6	87.5	74.1	74.6	74.8	67.7	80.7	79.5	72.0	63.6	70.9	72.5	84.4	84.1	81.8	85.0	77.0	88.5	78.8	79.2	85.5	80.4	80.4	74.8	78.6	85.6	79.3	81.6	74.3	73.8	86.0	86.4	81.3	79.2	75.4	81.3	78.7	74.9	76.9
Aug 8	79.0	71.6	82.9	73.3	90.3	72.1	70.0	85.0	76.2	86.9	78.2	71.0	79.6	66.6	75.8	83.4	76.4	68.4	73.9	71.2	83.8	86.6	82.3	83.3	78.0	87.1	81.1	76.7	82.9	82.5	79.2	80.6	75.9	83.7	78.0	81.2	71.4	72.0	89.1	78.9	79.9	80.8	82.8	73.8	76.7	72.7	76.8
Aug 9	78.6	75.4	86.2	70.3	85.6	77.4	73.4	84.2	84.9	87.9	79.5	70.0	82.7	66.4	81.3	75.6	80.8	72.7	73.2	70.3	86.3	80.4	82.9	86.1	80.2	79.2	75.8	77.4	84.4	81.6	77.9	78.8	84.5	84.2	81.4	85.9	64.4	75.4	84.5	75.3	79.0	71.7	79.5	81.1	82.1	78.3	78.0
Aug 10	80.4	76.3	75.6	68.8	80.1	80.0	74.8	80.9	79.7	90.1	81.1	74.7	88.6	73.7	83.9	71.7	79.4	71.7	72.1	73.8	77.9	76.7	86.7	89.0	76.6	81.9	75.9	78.0	82.4	80.2	79.1	83.9	83.9	81.9	83.4	82.8	67.4	80.1	77.3	76.8	76.0	73.7	76.5	77.1	79.4	75.3	79.0
Aug 11	80.5	75.8	78.1	70.5	76.6	81.7	79.3	73.5	81.5	85.1	77.9	70.8	91.2	70.5	85.1	67.1	81.9	76.4	78.0	73.0	76.7	87.0	75.8	88.4	74.0	74.6	76.0	75.4	84.8	75.8	75.5	88.5	82.1	83.7	82.5	86.5	76.4	75.0	76.6	74.1	76.7	72.1	64.3	68.0	82.2	73.0	75.6
Aug 12	79.2	74.1	72.9	74.1	81.8	75.2	82.0	82.4	73.6	85.1	75.9	71.3	82.3	74.0	86.8	70.7	86.6	75.5	75.7	69.6	78.7	87.2	69.7	92.5	74.8	69.4	81.3	73.7	79.9	82.2	80.8	85.3	76.1	78.4	82.6	90.8	73.0	72.2	76.2	73.6	71.9	73.8	69.9	63.9	79.2	69.0	76.9

TABLE 5. SUMMARY AND EVALUATION OF DAILY TEMPERATURE IN HELP MODEL 100-YEAR SYNTHETIC WEATHER DATA SET

YEAR->	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
Aug 13	77.0	80.2	73.2	78.8	77.3	77.8	83.9	79.6	74.6	77.7	76.7	73.6	71.9	74.6	78.9	74.0	82.3	76.0	76.2	66.8	73.5	79.4	78.2	76.3	72.5	72.3	79.7	72.7	81.7	79.5	85.0	84.5	79.2	88.2	73.6	79.5	74.7	69.0	75.9	79.0	80.3	73.9	67.7	69.9	69.8	67.8	78.7
Aug 14	83.7	80.0	76.8	74.4	76.2	74.8	83.1	71.4	67.8	74.7	77.4	75.0	75.2	77.4	77.9	72.9	85.5	66.8	69.9	68.9	73.6	80.6	77.7	78.9	72.3	70.1	79.9	68.2	74.1	79.0	92.1	84.8	76.8	87.3	78.9	80.3	72.3	73.9	80.4	77.2	74.7	75.4	67.9	69.0	72.1	69.1	82.0
Aug 15	76.6	77.0	75.0	76.9	71.2	70.0	82.3	75.4	73.4	77.2	73.5	75.1	78.3	76.1	83.2	78.3	76.9	73.2	75.3	74.9	76.3	72.7	76.1	79.7	75.8	69.9	78.4	75.2	78.8	81.4	86.0	86.6	83.3	82.8	75.3	76.5	81.4	82.9	74.8	75.0	74.2	76.1	67.2	70.3	71.4	72.0	83.3
Aug 16	76.6	82.5	73.7	82.5	80.5	66.9	84.1	77.8	69.2	77.4	73.2	78.6	80.1	73.1	85.8	77.0	80.7	73.8	82.4	68.0	72.6	76.5	73.1	74.9	71.6	69.3	73.4	74.7	77.1	76.7	82.2	77.3	79.7	75.6	74.4	78.7	79.0	79.6	73.2	72.2	75.6	76.2	72.9	69.9	70.7	76.3	81.2
Aug 17	82.9	77.7	73.9	81.7	83.9	70.1	81.9	77.8	69.8	79.6	68.9	78.3	82.5	73.4	75.4	78.7	78.1	68.6	78.7	73.1	70.0	73.4	73.4	71.8	75.0	70.7	75.9	80.6	74.5	76.8	81.5	82.2	77.7	77.3	74.6	83.0	78.5	81.4	73.8	74.2	69.0	69.3	70.2	77.3	74.0	73.4	73.7
Aug 18	79.5	76.9	75.3	78.1	80.9	67.9	81.7	80.9	75.2	77.6	72.5	71.7	79.5	71.0	77.6	78.8	80.1	70.2	66.2	75.8	78.3	75.2	73.9	76.5	77.3	73.7	75.5	74.5	75.1	79.6	84.4	75.9	83.5	79.5	77.0	79.5	84.8	80.6	74.5	75.8	61.4	72.9	70.9	76.3	75.0	69.6	79.3
Aug 19	79.1	78.8	82.0	78.6	84.9	71.0	85.1	80.7	75.7	74.9	74.4	77.5	76.3	81.3	66.6	80.7	82.9	71.2	67.2	76.8	74.4	82.3	78.2	77.0	77.2	81.6	77.1	73.6	71.7	75.8	82.3	72.5	83.9	83.2	72.0	77.5	73.9	82.7	76.5	81.7	68.8	72.0	73.7	74.9	79.3	76.2	72.4
Aug 20	77.8	77.3	80.3	76.6	78.4	78.9	84.8	83.6	69.6	76.3	76.6	82.4	80.7	75.5	68.7	80.5	77.7	72.5	74.5	74.2	77.6	75.7	74.7	72.4	83.2	81.4	79.6	79.5	71.2	80.8	78.5	70.8	82.0	83.0	70.6	76.9	73.7	85.1	78.4	81.3	72.2	72.2	73.8	77.6	78.6	76.6	79.3
Aug 21	76.7	79.3	78.8	70.0	76.3	81.0	81.3	76.2	69.5	78.3	75.9	80.1	81.7	87.1	70.0	79.0	75.6	71.3	82.6	67.9	78.2	74.5	77.1	77.0	86.9	74.8	77.5	72.1	71.2	79.1	76.9	70.4	70.7	84.6	72.9	67.6	76.2	86.0	76.5	81.8	73.0	73.9	73.3	73.3	87.1	71.3	79.7
Aug 22	81.1	77.2	73.0	73.9	81.2	72.6	79.5	81.1	73.0	84.7	72.0	74.5	82.4	81.9	72.4	78.3	79.6	78.9	76.8	75.8	71.1	75.6	80.6	80.2	80.2	78.0	80.6	74.5	66.8	81.6	74.5	63.7	72.5	80.9	69.0	67.1	82.0	81.0	70.9	82.2	79.4	75.3	75.4	79.6	82.7	74.5	81.1
Aug 23	81.0	76.4	74.5	74.0	73.9	77.5	81.6	77.4	75.6	76.1	76.9	66.9	81.6	74.8	72.7	77.7	79.8	81.6	74.1	72.5	71.7	77.6	77.8	80.1	75.4	76.8	69.9	67.3	80.7	75.8	68.9	63.2	77.7	78.6	73.7	64.2	81.2	79.8	66.1	75.1	75.9	71.8	69.6	75.9	80.7	76.4	85.9
Aug 24	75.0	73.3	74.2	76.6	72.0	78.3	73.2	79.3	75.2	77.7	76.5	68.7	82.9	78.2	70.8	69.6	79.8	81.7	70.8	74.6	78.4	80.7	75.2	74.3	79.1	74.1	71.9	67.8	79.4	83.3	70.9	69.2	67.6	74.4	76.2	68.2	85.2	83.5	75.2	81.2	78.5	74.2	72.1	77.1	82.2	74.6	84.4
Aug 25	74.0	73.0	78.2	81.1	71.1	75.1	78.5	72.5	76.7	75.8	70.2	60.7	76.9	77.6	67.6	76.6	83.0	88.3	73.6	77.3	66.2	82.5	71.9	76.3	83.5	78.4	77.0	68.0	82.0	81.0	64.8	70.1	74.5	73.7	79.8	66.7	81.1	80.4	70.6	83.6	78.9	68.8	73.8	73.0	86.3	71.6	71.8
Aug 26	75.6	68.2	73.3	85.6	71.3	73.0	65.6	80.1	83.5	82.0	70.0	69.6	77.5	76.2	76.0	81.2	78.4	84.9	71.9	68.1	72.8	79.1	75.1	75.8	75.5	75.6	69.7	61.2	79.9	73.6	68.2	81.6	74.0	74.1	77.1	72.4	84.8	77.0	74.6	84.3	74.9	73.5	72.1	76.4	84.0	71.8	77.0
Aug 27	74.6	69.7	75.0	84.4	76.5	68.1	76.5	72.0	79.9	71.4	80.4	61.9	78.9	69.2	79.2	79.7	77.6	75.7	71.8	75.7	76.4	77.1	70.2	76.9	72.8	75.8	75.4	64.9	75.6	70.9	66.8	76.8	80.5	79.1	75.6	74.2	82.5	75.3	79.4	77.8	84.8	65.2	68.3	71.1	85.0	63.6	74.1
Aug 28	76.5	68.4	82.1	87.7	66.9	66.6	81.1	69.6	73.2	70.6	80.8	62.5	71.3	70.8	76.7	68.0	70.5	65.8	65.8	64.0	71.0	70.1	66.9	78.6	72.6	74.0	71.2	56.1	75.9	71.6	73.1	75.4	83.6	79.5	74.1	70.2	85.4	76.4	74.0	82.3	80.4	65.7	65.4	70.7	89.1	72.1	72.9
Aug 29	74.2	73.5	81.8	79.6	66.5	63.0	80.8	68.7	70.5	64.0	78.2	66.2	75.5	69.8	77.5	63.5	70.3	71.0	68.1	63.7	73.2	75.4	74.6	68.7	71.8	83.9	63.8	71.0	76.2	64.8	68.2	77.6	79.7	85.2	74.7	75.3	85.0	74.6	72.6	82.8	78.4	74.1	71.1	73.8	80.1	71.9	72.6
Aug 30	69.1	74.7	80.5	77.6	67.2	75.5	75.1	70.9	79.2	71.4	81.1	66.7	76.0	66.0	82.0	63.9	63.9	69.1	68.0	67.4	70.2	74.1	78.8	66.4	69.8	78.6	64.6	72.6	68.2	68.3	71.8	85.3	81.7	77.0	64.6	79.1	78.5	81.3	72.1	82.1	71.5	79.1	71.7	73.9	73.6	80.5	68.1
Aug 31	61.9	78.6	73.0	69.9	63.4	73.6	70.6	56.5	75.6	63.4	73.8	67.5	70.8	68.6	82.7	62.5	65.4	69.0	65.9	65.6	72.7	74.3	73.8	64.6	61.3	79.5	56.1	65.7	65.6	72.6	70.5	80.1	65.1	69.4	65.8	73.4	72.4	79.4	64.6	77.6	70.4	74.4	74.0	66.3	72.6	73.5	59.1
Sep 1	60.3	73.8	66.5	70.7	66.5	71.0	73.4	60.8	72.5	59.7	77.8	64.1	64.2	59.8	74.7	60.0	59.9	66.6	72.8	57.8	68.1	76.5	66.6	67.2	62.2	64.2	59.2	72.3	68.9	63.3	66.7	76.0	69.4	59.4	64.0	75.4	77.6	63.5	58.4	79.5	67.7	68.4	76.1	69.3	77.0	73.2	58.2
Sep 2	66.4	74.4	52.0	66.5	63.3	68.6	68.7	56.5	69.9	60.3	78.5	68.7	67.8	63.0	69.3	61.5	73.6	70.7	66.6	61.1	60.6	71.2	67.3	70.2	57.7	71.6	63.2	75.1	73.3	70.7	65.8	73.5	60.9	67.6	72.9	77.7	70.3	69.9	59.2	83.0	72.8	62.5	73.0	74.7	69.0	76.4	61.9
Sep 3	68.7	73.7	61.8	69.7	72.9	64.7	61.2	55.4	67.5	52.4	66.1	64.1	65.7	61.0	70.4	60.4	67.6	76.8	68.3	63.9	68.6	70.4	59.9	74.5	63.6	67.8	67.5	72.9	74.5	77.5	70.0	70.5	65.5	68.9	69.7	78.0	70.5	59.6	59.8	74.0	65.2	56.6	72.4	71.4	73.1	65.4	72.2
Sep 4	62.7	74.7	64.3	64.7	68.5	69.2	63.9	55.8	58.3	62.1	64.3	66.9	68.9	62.0	69.0	60.3	68.9	74.6	62.3	61.8	66.3	75.6	69.8	77.3	68.6	65.6	66.9	75.4	72.2	68.3	65.6	73.8	70.7	69.0	65.4	71.5	73.9	63.7	56.6	67.6	63.6	61.4	73.3	60.5	75.9	71.7	70.6
Sep 5	66.5	85.5	68.4	78.9	70.6	76.1	66.4	52.1	55.7	54.4	61.0	61.4	78.1	65.7	69.3	61.5	67.6	75.1	65.0	70.9	68.8	69.4	60.7	67.8	67.5	63.7	69.8	72.7	76.2	61.5	67.0	80.5	72.0	66.9	68.3	69.9	67.5	65.1	65.0	68.3	67.4	54.3	76.9	68.6	79.0	75.2	72.8
Sep 6	66.2	77.7	62.5	75.7	69.9	77.0	64.1	58.5	53.9	61.1	69.2	62.5	81.4	65.5	69.2	57.6	71.8	69.1	70.5	59.5	73.6	72.4	57.4	64.5	64.0	64.6	66.9	75.4	73.9	63.2	71.5	81.4	63.7	66.8	72.0	67.7	71.1	62.0	65.7	67.4	67.9	49.2	74.3	66.9	73.8	78.5	65.2
Sep 7	66.6	76.6	63.5	67.6	67.7	79.2	68.7	62.0	56.6	70.3	67.4	50.7	77.4	73.4	64.2	61.5	68.4	66.1	63.4	64.2	65.0	69.8	62.3	60.6	59.2	60.8	78.9	58.5	68.6	71.3	75.2	83.0	73.7	66.5	69.1	71.9	70.2	62.0	66.9	52.2	67.7	59.6	75.3	60.8	69.7	76.1	66.0
Sep 8	64.4	74.6	59.8	69.0	62.7	70.0	68.8	58.1	56.0	71.7	77.6	62.0	69.3	73.8	74.2	72.4	71.0	64.5	62.9	62.9	67.5	67.1	63.8	52.7	50.0	62.5	74.1	62.4	70.2	74.5	75.3	85.9	66.9	74.8	67.5	65.7	64.7	70.9	63.3	59.1	70.7	66.5	80.9	57.3	68.7	77.6	70.9
Sep 9	54.9	66.4	57.0	63.3	60.5	74.6	61.5	56.3	57.2	80.8	68.5	65.0	58.4	84.0	71.3	65.0	72.3	62.9	64.7	70.9	61.0	65.2	61.6	55.3	55.1	66.4	69.6	64.4	62.0	64.5	73.4	80.3	68.0	79.6	65.3	68.2	65.3	71.8	65.2	62.7	67.5	72.7	79.4	56.4	66.0	69.9	67.0
Sep 10	53.7	68.2	62.7	65.7	68.2	76.4	56.4	64.7	64.2	70.4	77.0	69.2	59.4	78.4	69.3	64.4	62.6	66.4	58.8	69.0	67.6	64.3	67.3	55.6	51.9	64.8	66.3	59.3	67.0	72.7	73.2	82.0	68.5	83.4	60.4	71.6	72.5	58.0	60.8	66.3	77.3	69.7	73.3	60.8	65.1	64.4	69.0
Sep 11	59.0	65.3	65.2	76.3	77.5	80.6	54.2	64.2	66.8	71.8	69.0	67.1	64.5	67.7	68.8	63.7	69.9	65.8	62.1	71.5	65.1	66.3	68.1	48.6	61.4	61.4	56.3	66.5	63.8	65.4	68.4	76.2	67.0	70.7	63.7	66.6	70.1	63.0	60.4	57.3	68.8	61.1	72.4	67.1	70.5	75.1	66.7
Sep 12	68.0	66.1	65.2	75.2	70.5	69.6	59.7	67.8	74.4	73.1	52.3	76.0	71.6	72.7	75.5	65.0	61.1	60.0	63.7	68.1	59.6	64.9	67.0	53.4	68.7	61.8	70.3	73.6	61.1	66.9	62.1	71.1	65.5	68.4	57.4	65.8	61.2	65.9	62.1	60.3	69.6	69.8	66.5	66.6	78.0	71.9	66.6
Sep 13	75.0	72.9	59.9	71.3	63.4	64.7	59.2	71.1	67.4	68.4	56.7	65.1	69.9	75.2	84.3	59.3	64.0	65.8	58.5	68.2	60.9	60.6	71.3	53.8	62.8	54.3	63.5	68.3	65.7	57.8	62.7	73.4	62.5	65.7	57.5	69.4	60.9	62.1	66.7	60.5	75.2	68.7	73.3	65.8	74.8	69.1	73.2
Sep 14	63.9	70.1	65.0	67.9	64.1	73.0	61.7	65.1	58.3	62.9	63.3	70.9	77.3	70.5	73.0	56.8	58.8	66.6	64.0	68.7	63.1	64.5	69.0	60.0	61.8	57.9	67.6	71.2	62.9	66.1	62.3	65.0	62.6	71.5	60.5	75.6	66.0	53.9	66.1	65.2	75.0	73.7	68.5	63.3	81.7	68.5	77.6
Sep 15	59.4	73.0	57.4	74.4	53.1	80.5	55.0	60.5	61.3	57.8	61.2	71.4	82.0	73.4	77.1	54.4	59.3	67.5	69.2	74.3	57.8	74.0	65.5	58.1	62.0	67.6	64.3	66.2	64.7	72.7	68.0	63.1	56.8	73.2	66.8	74.8	74.1	56.6	61.2	58.3	73.0	69.2	67.8	55.7	73.2	68.3	64.0
Sep 16	62.6	80.1	60.5	74.8	52.3	75.9	53.1	56.7	55.4	65.8	70.1	67.4	80.4	69.7	76.4	60.1	57.8	66.4	64.7	74.3	64.2	68.3	62.3	56.1	52.8	67.4	58.5	74.9	61.9	70.5	64.0	56.5	61.9	66.2	65.6	74.0	78.1	61.3	60.9	54.5	73.0	62.1	71.1	56.2	75.7	64.1	68.4
Sep 17	54.7	68.1	74.7	76.6	56.0	77.2	68.3	59.1	57.5	62.5	63.6	75.7	73.7	71.5	82.7	64.5	60.9	65.6	66.6	69.9	74.3	63.2	60.7	54.4	63.6	69.1	53.5	75.0	58.2	60.6	64.3	60.7	63.4	72.6	64.6	63.6	75.8	53.3	59.1	67.3	74.4	70.2	75.5	48.0	65.2	72.0	63.3
Sep 18	49.1	68.5	77.9	67.6	67.6	71.2	66.1	62.1	54.4	59.2	57.0	68.9	63.7	73.7	85.8	64.9	62.7	61.5	62.7	77.2	76.6	56.4	58.8	44.1	56.4	69.5	49.5	67.1	66.9	69.6	54.9	50.8	64.1	70.3	64.0	60.4	75.2	69.9	59.4	66.7	74.2	68.5	70.3	48.9	58.3	73.3	57.1
Sep 19	54.4	64.7	72.2	76.5	71.6	68.3	69.9	60.5	55.0	60.3	51.0	65.1	63.6	70.4	72.3	66.9	58.3	67.7	60.4	75.7	81.5	65.1	57.9	51.6	61.5	69.9	51.1	64.2	71.7	70.8	56.3	54.2	65.1	68.0	59.1	64.6	75.6	63.9	61.5	60.2	74.0	62.4	74.7	58.2	58.5	64.5	54.8
Sep 20	54.2	57.9	75.4	71.6	73.8	68.0	63.5	49.1	51.4	64.5	57.5	62.2	63.9	73.7	68.6	75.7	62.9	70.6	59.8	73.7	74.5	63.6	55.0	63.8	68.1	72.5	55.2	62.6	60.2	56.2	57.8	58.6	59.8	68.9	56.6	66.2	65.6	55.4	71.8	57.2	70.4	71.8	68.6	60.9	67.0	59.6	55.3
Sep 21	58.7	60.4	71.9	75.1	71.0	77.1	65.6	47.9	53.3	66.4	60.6	58.8	56.7	78.5	74.1	63.5	67.9	73.9	62.1	68.1	57.1	58.8	65.1	58.0	67.0	66.4	61.7	65.4	63.4	55.2	63.0	59.4	55.8	67.2	61.9	71.5	69.5	58.6	58.9	61.0	76.7	62.1	63.8	63.7	71.1	64.4	51.6
Sep 22	64.1	64.3	70.6	72.2	64.2	75.4	61.3	54.4	51.8	57.7	64.7	49.4	60.5	69.9	75.2	63.4	63.5	69.9	59.6	71.1	60.0	64.5	62.7	64.4	55.2	62.3	68.8	62.2	65.4	65.0	67.8	68.3	52.7	72.3	56.0	79.4	69.2	72.8	59.4	62.8	78.8	58.5	58.9	71.2	63.0	59.0	59.8
Sep 23	70.1	62.6	62.4	64.3	68.9	70.3	49.1	61.4	56.4	69.4	61.8	51.5	66.1	56.1	66.1	61.9	65.9	63.3	55.8	79.5	66.0	70.9	63.8	52.1	58.4	62.5	64.6	62.9	58.9	67.5	65.7	66.5	49.4	77.3	62.2	71.2	62.0	66.2	63.0	57.1	76.7	63.6	62.8	69.1	61.9	51.0	64.9
Sep 24	63.0	71.8	67.7	69.5	71.0	68.8	61.1	61.5	47.2	64.0	61.4	53.7	77.5	63.7	54.5	64.9	67.3	53.8	65.7	71.1	68.8	73.7	64.0	61.7	62.1	61.9	68.3	57.0	69.8	59.8	68.5	62.2	46.5	72.9	57.5	69.5	56.1	72.2	51.7	61.0	64.6	61.1	67.6	70.5	55.4	50.5	62.6
Sep 25	62.1	67.3	67.3	71.1	59.3	71.7	71.8	61.8	55.5	68.6	60.6	59.9	67.0	68.7	56.4	59.0	69.0	56.6	58.7	71.5	63.6	74.9	57.3	61.2	62.0	54.7	75.3	58.2	69.5	57.3	79.1	58.6	57.2	69.1	61.3	72.6	60.9	61.3	58.3	61.3	57.8	55.1	68.1	70.2	56.5	59.9	68.6
Sep 26	62.2	65.0	67.8	70.4	65.9	70.0	67.2	51.8	52.6	53.4	55.1	67.2	67.6	63.7	60.9	74.4	77.2	57.4	56.2	69.4	67.7	74.5	46.6	57.1	66.5	62.4	60.9	50.4	60.2	64.6	73.4	60.0	67.2	68.3	63.8	72.6	58.1	62.2	54.3	55.6	54.4	58.4	73.5	67.0	58.8	65.7	58.1
Sep 27	64.6	57.2	69.0	60.4	57.1	64.8	61.4	53.5	41.7	55.6	61.6	69.8	65.1	58.7	59.7	57.4	77.6	62.6	65.0	60.7	61.3	70.3	47.1	75.1	73.5	56.5	57.5	53.1	61.0	58.1	86.5	62.9	64.6	76.6	64.4	60.4	56.5	66.5	62.0	56.5	61.4	65.5	65.6	66.5	60.3	64.9	50.3
Sep 28	58.1	64.8	56.6	56.6	62.4	73.6	63.8	55.3	47.3	62.4	63.7	62.3	52.6	59.8	58.7	55.8	76.2	64.5	60.8	58.9	69.0	66.3	44.0	75.9	80.1	61.2	63.1	54.1	56.7	54.8	73.7	62.5	70.5	68.8	59.4	56.7	65.5	60.4	60.4	57.9	59.7	75.4	65.1	58.4	51.8	74.4	53.0
Sep 29	53.7	66.1	58.7	61.5	55.8	65.7	73.5	51.6	53.2	67.3	62.3	72.7	46.9	55.4	55.6	64.5	76.2	57.9	71.6	66.2	63.7	61.0	49.3	68.2	65.3	55.1	68.0	56.6	57.6	59.1	72.9	52.2	64.6	62.8	67.4	50.7	66.9	66.1	55.5	56.5	55.7	73.4	54.5	62.4	59.9	70.1	61.5
Sep 30	57.9	66.3	55.1	51.5	49.2	67.9	62.0	57.1	53.4	71.8	65.1	68.7	40.8	58.0	43.8	59.5	71.1	56.3	58.3	62.6	57.2	67.7	58.2	63.8	51.1	55.0	57.1	63.0	49.4	62.6	60.8	51.5	64.6	70.4	55.9	53.4	64.2	68.3	57.3	65.5	53.6	72.7	51.6	55.7	57.5	73.8	51.2
Oct 1	42.4	55.8	51.2	46.3	55.1	49.9	68.9	68.4	54.0	63.4	55.9	67.3	37.7	59.9	54.7	54.9	76.6	54.4	57.3	57.9	61.3	52.6	50.6	56.2	61.9	63.7	55.6	55.7	40.6	53.1	64.7	67.2	70.1	60.2	62.7	56.2	61.8	56.9	49.4	67.2	54.1	61.7	57.4	53.1	62.3	59.2	45.4
Oct 2	45.4	57.2	57.8	62.2	63.0	66.3	66.5	63.5	46.6	57.6	55.4	65.6	39.3	62.1	53.5	57.6	68.5	50.8	51.1	61.9	63.4	47.2	45.4	57.0	58.2	62.7	53.6	49.0	51.5	38.3	60.3	62.4	63.3	59.8	57.4	52.2	56.3	55.3	57.9	60.6	50.1	55.1	55.4	54.0	67.6	49.7	44.7
Oct 3	45.3	63.4	58.2	51.4	56.7	67.7	68.8	62.3	48.7	59.5	63.5	64.3	45.6	65.0	57.3	55.1	60.6	59.6	55.7	61.3	56.7	42.0	55.3	50.9	53.7	56.7	50.3	55.8	51.2	54.8	55.8	57.8	59.0	64.9	55.9	56.2	54.4	60.7	58.7	59.4	58.3	51.8	59.7	61.5	68.5	52.7	57.1
Oct 4	53.1	67.3	56.2	50.7	52.0	66.4	66.8	61.4	49.9	70.8	58.9	70.3	45.5	57.7	57.6	49.2	57.1	47.1	58.3	62.2	56.0	39.5	51.4	57.5	60.9	61.7	51.8	56.2	58.9	60.6	67.7	62.3	63.8	68.9	54.7	52.8	61.3	57.8	61.4	53.1	60.0	42.6	63.7	69.4	59.1	53.7	66.6
Oct 5	52.2	72.0	55.7	57.2	52.4	59.5	68.7	65.4	35.8	70.0	60.8	63.1	46.9	54.9	61.8	45.1	54.2	57.5	54.7	65.0	61.9	44.2	60.4	53.9	60.0	69.0	56.1	59.0	54.5	48.7	60.4	59.1	75.8	54.7	60.2	59.3	65.2	54.5	60.1	51.4	61.1	51.3	58.8	69.8	56.2	50.9	56.1
Oct 6	61.3	76.2	56.3	42.7	48.5	55.2	72.2	56.7	35.1	67.6	61.0	54.1	33.1	53.5	58.2	58.3	50.3	50.8	48.5	52.2	63.3	56.0	62.3	62.6	63.3	57.7	57.0	47.9	59.2	47.4	53.8	59.5	73.5	52.7	55.4	54.0	67.8	59.6	48.9	47.9	61.1	48.8	58.9	64.0	55.7	48.7	52.3
Oct 7	57.6	64.8	52.5	44.9	56.3	48.1	75.3	64.0	42.2	65.0	58.9	50.9	39.0	58.1	64.2	59.9	54.7	48.4	41.5	61.8	64.2	66.7	59.6	56.5	58.1	68.5	56.6	53.5	53.4	57.4	56.6	46.6	64.4	57.1	42.3	48.9	65.5	51.9	56.1	53.2	57.8	52.7	53.9	60.8	67.1	54.0	56.6
Oct 8	62.5	61.5	46.6	48.7	54.3	47.9	73.5	51.9	42.7	54.4	57.3	46.2	43.4	58.8	58.3	57.6	57.9	48.0	37.7	64.2	67.2	53.2	64.1	38.4	55.5	64.7	44.0	46.5	57.2	48.1	52.1	39.4	67.4	67.8	49.1	52.4	66.2	47.8	53.5	57.8	49.8	51.0	50.0	62.2	59.5	60.1	49.5
Oct 9	50.6	61.8	58.9	54.3	55.7	45.9	69.3	46.1	49.2	60.0	60.5	53.2	44.9	47.4	43.6	63.4	60.5	48.8	50.3	56.4	59.6	53.4	52.7	42.6	54.2	55.4	53.0	47.1	54.5	52.1	62.2	35.7	67.0	72.0	53.1	68.0	73.3	50.3	55.3	49.0	46.1	55.9	52.5	62.3	55.1	54.7	51.7
Oct 10	63.2	56.6	62.5	50.8	59.6	55.1	73.2	44.1	46.4	65.1	65.0	46.1	51.0	50.3	33.1	60.7	58.6	44.9	52.6	48.0	54.7	53.7	44.1	38.7	53.8	43.7	63.8	49.8	57.2	49.9	66.7	33.7	53.6	57.4	50.0	64.5	59.7	51.5	59.9	48.2	55.5	54.1	58.7	47.6	54.6	47.9	59.5
Oct 11	52.8	49.3	65.1	55.7	62.3	49.4	57.6	49.9	53.3	68.6	68.8	44.3	48.6	58.6	36.1	55.3	61.8	53.2	52.3	49.9	52.5	53.7	41.0	43.5	46.0	46.7	61.6	48.8	54.5	62.5	61.5	40.7	56.6	58.9	44.5	70.3	52.0	54.5	59.9	49.5	65.0	53.8	48.2	48.8	49.1	54.1	65.1
Oct 12	49.4	45.0	56.2	58.0	59.2	43.2	67.6	51.3	52.5	78.3	72.2	46.2	55.3	45.6	36.2	55.9	54.6	52.9	58.7	56.3	40.4	49.7	40.3	51.4	34.5	49.3	53.3	57.6	55.6	66.1	65.9	48.7	48.8	50.7	43.1	68.8	60.7	58.1	65.8	48.3	57.0	62.9	46.8	53.7	51.5	52.8	54.4
Oct 13	43.8	41.9	58.2	49.7	53.9	48.2	57.8	58.5	44.5	78.3	64.2	50.1	52.5	54.8	41.2	54.3	46.6	50.0	56.5	56.2	41.6	61.1	45.6	52.8	39.3	48.8	59.2	56.9	65.6	54.3	71.0	47.0	47.8	51.8	56.3	59.1	67.5	48.7	65.2	56.1	48.9	59.6	44.0	49.6	46.1	49.5	60.4
Oct 14	45.0	38.3	48.5	54.7	57.6	47.5	51.5	49.1	50.4	71.2	58.3	42.6	62.8	55.1	44.6	43.7	61.7	51.0	50.2	40.0	34.3	61.4	50.1	51.9	44.5	52.3	56.3	52.9	67.2	62.5	64.0	43.5	48.1	43.1	51.0	61.2	73.5	53.7	54.7	64.3	44.6	60.4	44.9	50.5	46.4	51.0	60.1
Oct 15	53.5	34.6	45.1	56.2	58.4	54.7	56.3	42.4	41.9	58.4	66.6	32.1	59.5	58.7	43.2	35.3	59.4	43.4	43.5	34.6	42.1	63.3	64.9	44.3	49.6	49.2	55.8	51.2	49.1	62.6	58.8	40.7	47.7	48.0	47.4	46.5	67.0	57.0	48.5	66.0	43.5	58.6	44.7	48.7	59.5	44.1	57.7
Oct 16	53.2	43.0	48.9	53.5	59.0	62.8	47.4	33.2	41.8	53.3	63.6	40.7	60.1	52.2	36.2	46.1	59.1	45.1	42.6	38.0	55.0	66.2	54.8	44.0	48.1	46.1	53.4	51.5	54.9	61.1	53.3	45.3	56.5	53.9	52.6	34.4	62.8	50.3	48.2	66.5	48.6	50.1	56.3	45.5	61.0	49.3	49.0
Oct 17	48.7	38.0	58.2	53.2	45.8	65.5	55.6	32.8	44.5	52.4	60.8	38.8	47.0	42.1	45.7	52.5	61.3	52.4	43.4	32.5	55.2	54.0	62.4	48.9	57.7	43.7	54.5	63.0	41.2	57.4	54.3	55.8	58.9	53.8	42.6	24.7	56.2	45.9	45.8	65.6	59.5	49.3	54.5	48.1	64.8	47.2	45.9
Oct 18	51.3	51.4	55.2	52.9	38.6	68.5	53.8	37.5	47.5	55.9	70.3	38.6	48.3	41.5	52.9	40.1	65.4	50.8	54.8	40.1	46.7	44.1	53.8	54.7	53.5	53.1	50.2	57.6	39.1	52.1	50.5	55.4	44.8	48.7	51.4	25.0	50.7	54.2	40.3	60.4	56.1	48.0	53.1	46.1	69.0	53.6	57.5
Oct 19	61.6	60.7	47.1	48.1	48.2	54.7	43.4	41.0	54.2	46.4	66.2	49.9	40.7	40.5	54.8	41.0	56.1	58.0	55.1	36.9	48.0	52.4	42.2	44.8	55.4	61.6	41.4	43.9	50.6	60.2	49.8	52.7	44.3	43.8	56.0	22.5	40.0	60.4	37.9	64.5	52.0	45.3	56.2	49.7	62.2	48.0	65.1
Oct 20	56.8	53.0	43.3	55.8	48.0	54.4	44.9	42.7	56.2	38.6	64.0	45.4	43.6	49.8	53.3	33.4	54.9	60.2	56.0	42.7	42.2	61.3	52.1	40.3	53.9	57.9	45.0	48.2	55.1	58.8	47.2	44.2	43.4	45.6	52.4	28.6	40.0	52.8	36.7	53.8	62.2	43.6	58.9	42.1	56.6	51.9	57.0
Oct 21	58.1	49.7	40.4	57.9	49.1	56.8	49.3	47.3	65.2	37.1	56.3	42.9	35.6	62.0	51.3	42.7	46.9	59.3	49.8	41.7	55.6	45.4	47.6	42.2	53.3	57.4	53.3	47.4	44.4	63.1	57.3	35.2	37.8	50.0	55.4	30.9	29.9	41.8	43.6	47.4	65.9	41.7	54.9	46.3	61.3	69.1	47.5
Oct 22	55.5	49.7	35.5	51.9	51.4	59.8	43.7	38.5	58.6	44.2	54.9	34.4	42.9	56.3	53.1	34.9	46.0	51.2	57.7	40.4	56.4	46.3	41.8	49.0	55.0	59.8	60.6	47.6	48.7	60.2	58.1	37.0	39.9	46.4	56.6	31.8	31.5	43.6	51.5	52.6	64.3	34.8	54.4	42.6	51.7	64.6	46.9
Oct 23	46.9	37.7	34.9	46.7	46.5	54.8	47.5	37.5	58.9	37.7	51.0	30.6	37.7	58.7	42.9	41.2	49.6	49.3	59.3	50.3	48.8	60.9	37.5	42.2	49.4	46.8	52.4	34.1	48.4	58.6	58.5	29.8	39.3	52.3	52.8	39.8	21.5	46.2	50.8	46.9	62.4	43.7	41.8	31.7	48.1	61.5	50.8
Oct 24	61.4	43.9	44.6	50.8	44.8	53.8	51.2	46.7	55.9	35.7	52.1	32.8	41.0	62.4	46.2	34.8	58.4	43.4	60.3	49.1	57.5	54.1	40.2	39.1	44.5	46.0	47.9	44.2	40.3	53.7	50.1	32.5	41.3	58.6	50.2	45.4	30.0	52.1	55.8	41.9	52.6	35.5	36.7	40.8	50.4	67.7	43.2
Oct 25	53.9	50.2	52.3	46.3	44.4	37.2	42.0	51.9	51.8	38.2	50.6	30.7	43.7	47.2	48.7	42.1	42.5	38.8	58.2	58.8	49.6	58.2	35.9	31.4	40.8	46.0	40.4	46.6	44.5	53.0	52.0	44.5	43.1	67.3	46.8	42.9	37.0	57.8	61.0	53.1	52.4	44.2	43.2	40.4	51.9	65.6	43.0
Oct 26	47.3	41.8	48.6	60.3	25.9	40.2	40.3	41.6	54.5	32.7	47.4	37.7	47.1	44.7	46.6	42.1	47.8	49.0	49.0	52.2	32.2	53.1	33.2	32.4	39.6	43.9	33.0	49.8	38.0	43.8	46.2	42.4	40.1	63.5	35.4	40.4	42.6	67.2	64.0	62.1	50.5	44.9	42.4	51.8	38.3	70.2	44.0

YEAR->	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
Oct 27	54.8	40.0	40.8	51.8	28.9	42.8	44.7	39.6	55.8	42.5	37.2	32.7	46.3	44.9	47.4	49.1	44.2	45.8	45.1	54.7	44.2	47.7	36.9	32.9	37.0	57.5	40.0	38.0	44.1	44.0	54.5	47.0	33.1	44.3	39.7	46.7	35.4	53.7	54.1	67.3	43.7	53.0	40.5	55.0	46.3	65.9	54.5
Oct 28	45.1	49.0	37.2	53.7	38.3	36.8	43.1	35.4	55.3	36.5	39.9	37.9	49.4	54.1	43.4	44.6	40.5	53.5	42.3	46.5	43.7	45.5	38.1	40.8	32.2	59.0	32.6	36.2	43.0	58.9	54.3	55.6	42.7	47.6	37.2	39.4	26.1	46.2	48.7	57.7	39.1	47.3	54.4	45.1	35.3	52.7	58.9
Oct 29	38.1	48.6	46.3	55.5	34.3	41.6	37.7	51.4	47.4	33.4	31.7	44.6	36.7	54.7	51.5	43.8	30.3	55.8	33.8	35.1	41.0	41.5	40.1	50.9	44.2	58.0	38.2	28.9	40.4	48.9	45.5	45.2	45.9	39.1	37.3	50.8	33.9	54.2	62.7	53.8	45.6	43.8	48.9	43.7	40.1	52.2	62.3
Oct 30	30.0	52.8	38.2	52.5	31.4	40.4	41.5	52.3	51.0	46.4	28.0	55.2	45.0	52.6	56.1	44.1	41.2	53.4	37.8	43.7	41.7	39.7	45.2	54.3	48.6	63.5	39.0	27.8	50.8	52.2	44.3	34.3	43.9	53.4	39.3	58.5	39.2	51.3	56.4	51.4	43.8	57.2	42.8	41.7	49.9	62.6	68.2
Oct 31	36.7	64.8	38.0	52.5	28.8	48.0	42.8	54.1	39.9	50.5	38.9	35.2	35.3	47.3	36.7	39.0	48.8	58.2	46.3	54.2	40.6	47.1	37.5	40.4	58.6	53.7	38.8	28.9	39.2	54.6	54.8	29.8	40.0	56.2	41.8	58.2	31.7	35.2	60.5	48.7	27.7	49.6	46.8	38.0	50.7	54.3	56.6
Nov 1	46.1	62.7	45.7	52.9	36.9	32.2	47.5	49.8	49.6	52.6	39.0	33.2	37.4	54.6	32.2	46.5	40.6	45.8	48.5	36.8	36.7	46.0	31.6	36.4	47.4	57.3	40.2	39.9	35.2	58.2	60.2	41.9	37.5	50.3	48.2	65.3	39.5	41.4	51.2	44.3	23.2	42.9	37.0	42.7	44.8	53.1	56.0
Nov 2	46.4	50.7	35.9	52.7	34.5	35.5	42.7	47.4	48.2	52.1	26.7	29.5	29.1	46.2	35.3	42.3	42.2	53.9	45.7	42.2	34.2	50.4	40.6	30.9	41.5	52.7	43.8	31.5	24.7	54.2	55.6	39.4	32.7	38.3	43.3	44.1	34.9	31.7	50.2	28.8	35.3	48.2	26.5	47.3	54.6	45.9	61.8
Nov 3	40.9	40.9	37.6	43.2	36.5	36.8	49.0	46.8	42.0	48.0	23.7	34.1	37.1	49.2	30.2	48.4	40.8	46.8	51.3	44.4	34.7	56.9	40.8	29.1	49.3	37.6	45.2	24.3	27.7	37.7	55.8	36.3	41.2	38.9	38.9	47.5	39.6	33.0	45.5	28.6	27.4	49.0	41.5	43.6	54.2	34.4	54.6
Nov 4	45.4	45.9	45.6	41.0	49.8	34.3	47.3	50.4	56.5	41.4	23.0	24.9	37.6	40.9	38.4	47.1	48.1	37.7	51.8	40.6	31.1	57.4	46.2	33.6	51.5	37.3	42.0	25.6	27.9	45.0	54.6	28.8	41.3	38.3	36.8	47.1	19.3	42.8	32.9	26.6	38.6	40.3	44.8	41.2	42.7	41.2	47.9
Nov 5	34.2	46.8	56.0	34.7	26.9	28.0	53.9	48.5	51.1	41.3	26.5	30.1	36.6	38.8	37.0	48.9	41.3	39.5	54.2	31.1	26.5	48.5	46.4	38.5	45.3	42.5	40.5	36.6	27.3	56.9	44.3	37.6	31.6	30.9	34.4	45.8	26.8	42.6	43.6	28.5	42.9	33.5	39.6	29.6	35.8	46.8	32.3
Nov 6	40.1	40.9	37.3	24.7	29.8	37.6	55.3	45.1	59.3	38.2	23.3	26.6	39.0	25.2	33.7	38.7	45.0	47.3	46.0	28.2	24.2	36.8	46.5	41.1	44.0	54.8	54.4	42.5	38.2	56.1	41.2	31.9	33.2	29.9	37.9	41.9	30.4	41.1	43.3	19.2	38.7	32.1	41.7	36.9	38.4	44.0	27.8
Nov 7	50.5	42.3	48.2	28.7	28.1	30.2	49.1	55.0	57.3	36.9	23.3	33.8	39.6	23.1	36.7	41.9	47.2	41.0	43.7	36.8	28.9	35.5	49.9	46.7	41.5	36.7	50.6	33.8	39.3	49.0	40.6	33.2	44.2	41.1	43.1	30.8	36.2	47.6	31.3	24.3	35.5	31.3	29.8	34.2	38.4	46.7	30.2
Nov 8	48.1	35.0	34.0	30.0	36.5	43.3	36.7	40.3	42.7	45.7	42.0	24.0	45.1	34.2	31.4	32.0	44.7	44.5	42.5	40.3	37.7	39.3	46.9	41.2	33.7	37.8	49.6	44.3	38.6	51.8	29.0	37.6	41.6	40.0	35.0	27.3	26.4	42.3	31.2	18.8	29.8	45.0	22.9	36.5	45.2	45.5	44.7
Nov 9	55.1	37.1	42.4	39.7	41.2	37.0	30.9	45.2	44.0	44.8	40.1	31.6	38.6	31.7	34.1	30.4	41.9	45.2	38.9	41.8	32.1	39.1	32.8	44.3	27.8	45.0	48.8	41.6	43.6	39.6	23.8	37.8	39.5	32.1	37.0	31.3	23.2	40.3	31.8	31.5	38.7	37.8	40.9	26.9	49.9	35.4	37.7
Nov 10	52.2	25.7	48.8	34.6	37.2	40.2	49.8	32.4	29.7	46.1	40.9	45.1	41.2	35.2	49.6	28.3	54.5	43.3	32.5	37.7	31.4	37.1	21.8	40.6	24.0	44.0	45.5	37.5	43.8	25.3	17.0	36.1	24.2	40.9	34.8	34.1	27.7	38.4	43.2	40.5	32.3	41.9	31.9	33.9	48.8	35.9	28.3
Nov 11	48.2	36.6	47.4	39.7	46.0	44.3	39.3	20.9	28.1	47.1	33.9	46.9	31.9	36.2	45.8	32.0	53.7	48.2	29.6	38.8	27.9	44.2	24.4	47.9	20.5	47.0	40.4	42.9	46.0	35.8	28.1	31.8	18.6	40.1	30.7	31.8	35.9	45.5	39.5	39.1	37.3	38.4	32.3	34.7	51.7	41.6	34.6
Nov 12	41.7	23.6	44.0	46.5	32.7	31.9	38.3	18.4	23.8	42.3	28.3	34.1	31.1	37.3	53.4	33.7	50.3	56.7	30.5	36.4	20.8	33.5	28.2	41.8	27.2	52.2	43.1	35.3	48.1	41.5	27.1	40.5	18.7	39.2	23.7	45.8	41.4	38.6	27.2	34.8	35.2	40.9	27.9	38.8	47.7	56.8	27.6
Nov 13	38.0	27.4	38.5	40.5	34.1	30.7	33.8	25.3	30.6	54.6	36.3	39.2	40.7	39.8	43.2	17.0	53.5	59.9	31.0	43.3	12.1	31.4	22.0	37.8	31.9	54.0	54.9	46.6	47.8	35.2	24.4	48.9	23.1	33.7	35.5	33.5	29.9	36.5	27.0	34.6	36.8	40.2	36.4	37.1	49.1	51.7	27.7
Nov 14	23.6	30.6	39.6	37.0	33.7	44.8	39.5	31.6	41.6	58.6	36.2	38.1	43.3	42.9	31.3	24.7	36.2	51.6	19.0	39.9	21.0	34.4	25.6	51.2	36.5	33.9	50.3	42.5	46.5	31.0	31.8	53.7	26.4	35.1	38.7	44.3	26.2	34.8	15.8	34.7	36.6	38.0	42.4	40.0	57.8	40.8	45.1
Nov 15	22.5	34.6	46.5	46.8	21.4	44.3	37.4	35.8	41.5	67.6	27.1	34.7	58.6	38.3	27.3	31.4	37.1	41.5	31.2	23.5	32.1	35.4	36.5	45.0	44.4	21.7	36.3	26.9	43.0	25.9	28.2	42.8	35.4	32.2	44.2	47.9	38.7	21.2	19.7	27.9	25.2	34.3	33.4	22.5	44.8	44.2	43.1
Nov 16	21.7	30.2	30.0	36.1	20.1	46.7	45.8	28.8	30.5	57.1	32.4	38.1	50.1	37.8	33.0	41.2	26.2	42.1	33.2	29.4	35.8	36.9	26.5	37.6	36.3	19.9	44.0	39.1	35.8	33.8	38.3	38.3	33.8	32.8	45.6	47.8	36.1	21.1	33.7	44.0	28.4	27.5	34.0	24.3	42.8	38.5	45.9
Nov 17	20.2	32.2	30.1	35.3	30.2	31.3	41.7	27.6	31.0	52.8	34.6	47.8	48.5	30.6	35.6	42.9	19.9	40.0	40.9	37.4	27.9	43.1	26.4	29.0	30.4	33.2	40.0	45.7	30.9	30.2	24.8	35.0	35.5	19.6	50.0	41.1	26.6	32.2	37.5	42.7	42.5	30.2	28.1	26.4	40.5	45.6	37.2
Nov 18	17.2	34.8	24.2	35.7	39.2	23.5	35.6	28.7	32.4	37.5	35.2	49.1	42.3	25.4	30.3	25.8	25.3	32.6	45.1	34.1	30.3	46.5	20.3	35.4	40.5	30.3	37.3	55.5	34.4	19.6	29.3	33.6	35.8	17.8	50.5	49.3	29.2	37.4	33.7	44.6	40.3	40.3	31.2	19.9	44.4	45.3	32.4
Nov 19	21.7	28.4	35.3	30.9	36.9	19.8	40.4	26.7	41.7	41.9	33.6	37.4	37.2	27.1	32.7	33.9	29.1	33.1	44.2	29.4	35.5	41.3	14.6	37.8	33.5	37.7	34.8	53.9	28.1	23.0	19.3	33.9	43.5	21.2	47.7	46.3	29.6	25.2	29.8	39.0	36.0	32.4	39.9	21.5	46.1	40.7	33.6
Nov 20	30.3	32.4	37.1	33.8	43.2	35.8	40.8	34.0	45.7	45.2	33.4	28.1	38.8	32.7	26.4	39.8	39.1	41.6	41.5	34.9	21.7	40.7	17.9	40.5	40.7	41.7	29.5	51.0	20.6	27.7	24.5	24.3	46.7	31.9	51.7	30.1	17.7	35.4	23.0	41.9	39.0	34.2	45.0	15.7	49.8	41.2	40.0
Nov 21	31.2	29.8	37.0	27.2	37.2	41.5	31.3	25.5	53.5	46.9	38.9	26.6	31.8	30.0	25.7	38.9	38.5	37.8	31.1	37.6	25.3	26.2	16.7	43.3	37.0	37.0	40.8	41.4	26.0	41.5	28.3	23.7	40.7	29.1	52.1	36.8	21.8	46.1	27.2	43.9	46.8	38.1	41.6	23.2	42.6	31.7	35.4
Nov 22	40.5	32.1	33.2	25.7	37.3	49.6	42.2	23.5	51.2	45.2	38.1	21.7	30.8	30.9	31.4	34.7	30.5	31.9	27.0	39.0	23.0	21.0	38.0	35.6	36.1	29.6	44.0	38.1	35.7	38.5	23.8	30.0	37.7	23.5	55.7	51.9	28.6	58.5	41.7	40.0	43.0	41.2	48.4	30.8	48.2	30.2	40.0
Nov 23	30.4	25.7	31.5	14.2	41.3	38.8	41.5	18.9	46.7	39.0	48.1	29.7	26.6	30.6	37.4	50.1	38.3	26.1	28.0	27.1	33.2	24.9	32.2	36.8	38.7	29.1	38.5	39.9	40.6	35.1	29.7	34.7	39.9	23.8	33.2	50.0	27.1	59.7	34.1	38.6	29.9	42.8	58.1	27.2	55.2	31.3	37.4
Nov 24	25.9	37.3	25.9	17.2	41.3	44.4	39.0	23.8	40.3	39.7	41.6	30.7	29.2	34.0	33.8	48.9	41.7	28.3	31.5	31.0	31.6	32.4	30.1	32.9	27.8	29.6	47.3	39.8	33.5	36.8	28.3	37.1	38.7	18.1	40.4	45.6	33.2	64.8	32.3	42.3	28.2	45.1	49.8	22.8	37.4	31.5	36.8
Nov 25	24.7	31.9	19.5	30.4	36.5	41.7	41.3	23.8	42.4	31.7	30.8	34.5	28.5	33.2	34.6	39.3	35.3	25.8	44.5	33.0	23.0	25.0	32.2	29.5	40.4	20.0	41.3	45.5	23.4	45.4	25.1	31.2	30.7	19.8	26.3	47.2	34.0	48.5	29.7	32.1	30.9	40.7	46.5	27.4	45.6	30.1	31.0
Nov 26	33.0	27.8	22.2	32.3	34.7	40.4	35.7	15.3	30.7	37.5	35.0	48.1	37.7	43.5	35.8	47.1	30.6	27.6	52.5	36.9	23.5	30.2	32.8	20.0	35.0	25.1	32.8	37.2	36.2	34.7	13.6	26.2	28.1	35.2	28.8	41.6	37.1	49.8	34.5	29.0	33.8	35.7	36.8	33.8	40.8	28.0	32.0
Nov 27	15.5	18.8	27.5	42.0	31.9	38.1	31.1	13.9	23.2	35.6	20.4	47.3	37.7	41.5	34.1	48.1	15.9	12.6	36.8	29.6	19.0	37.8	41.1	18.9	38.4	28.3	31.9	41.3	34.1	38.6	30.3	27.3	26.5	35.2	27.1	48.1	38.2	35.7	35.2	24.5	24.4	36.0	27.0	30.9	39.3	20.7	38.8
Nov 28	21.2	35.0	33.1	44.3	25.5	42.3	26.9	15.6	32.5	30.7	31.9	42.5	41.0	45.8	35.4	30.5	28.2	9.2	31.3	25.9	24.0	34.3	35.9	24.7	37.0	28.5	33.0	27.4	19.3	35.9	31.6	39.9	21.5	31.7	35.6	37.7	33.6	29.9	40.1	16.3	28.5	29.5	27.7	35.6	35.2	18.3	24.3
Nov 29	17.7	37.8	35.6	37.3	25.3	40.3	28.6	21.3	36.0	22.0	23.0	27.4	43.0	37.9	31.8	35.0	32.9	13.5	33.1	19.1	29.5	22.3	50.6	30.7	30.8	22.9	31.5	39.7	18.2	31.5	34.9	42.1	27.7	30.7	27.8	28.5	31.7	35.6	45.1	20.6	16.1	22.2	27.4	45.7	37.4	21.3	23.2
Nov 30	21.2	29.9	37.0	31.8	28.0	37.0	27.1	23.8	26.1	22.7	21.7	18.0	47.5	46.4	22.9	27.8	30.4	27.3	32.1	28.1	35.6	29.8	50.3	37.9	26.2	35.8	42.1	49.0	27.7	28.2	38.9	38.7	24.1	23.1	31.6	26.8	41.3	40.2	42.9	13.4	4.8	27.9	39.3	47.3	35.3	20.0	12.9
Dec 1	18.8	27.9	33.2	45.8	29.3	39.5	21.1	20.0	29.5	29.6	28.5	23.6	36.3	49.2	24.2	29.8	31.1	26.1	33.6	19.3	36.9	29.1	36.8	29.0	26.8	39.1	40.5	37.1	25.4	33.7	47.3	31.6	23.4	40.0	38.2	25.8	40.9	35.4	37.1	8.6	17.5	27.6	49.2	37.0	34.7	19.8	16.5
Dec 2	23.7	28.7	42.4	24.2	25.4	40.6	31.9	29.5	29.0	27.3	28.4	23.7	42.0	42.9	19.0	33.8	35.9	19.2	31.0	26.2	42.8	18.3	35.3	32.8	22.2	31.1	33.7	32.9	27.1	34.6	46.9	33.5	17.1	48.9	43.5	36.7	42.3	34.8	29.4	13.7	18.6	29.0	40.9	37.5	34.7	34.7	16.0
Dec 3	21.0	31.5	40.8	30.4	28.5	51.9	29.9	30.7	36.7	26.7	37.8	24.8	46.7	40.0	25.3	26.0	39.3	27.0	26.8	27.4	31.8	22.9	33.0	32.6	27.7	34.5	24.4	44.0	21.8	31.1	47.9	35.3	17.8	27.9	40.5	30.3	40.6	32.5	44.1	13.3	18.6	25.0	38.0	39.7	32.5	27.0	21.7
Dec 4	21.9	31.4	46.0	43.8	29.0	41.0	36.6	32.2	27.1	23.8	44.4	30.6	42.2	38.8	28.5	27.7	30.2	23.6	34.6	31.3	28.2	27.4	30.2	25.2	17.0	35.8	33.0	33.8	26.3	28.2	46.6	36.2	27.9	22.5	24.6	32.9	39.2	35.2	40.5	19.0	27.7	22.1	28.9	36.6	34.2	29.5	19.7
Dec 5	20.3	35.5	43.6	42.3	29.9	41.3	36.0	34.0	36.4	28.1	49.5	37.1	37.3	35.6	25.6	30.4	27.5	14.7	35.7	38.5	25.2	30.2	36.7	32.9	9.9	31.2	28.9	28.3	29.0	40.3	41.1	30.8	22.2	22.0	21.2	33.8	48.2	38.0	41.6	19.4	24.6	21.2	35.8	37.6	32.9	17.0	33.8
Dec 6	27.1	31.3	40.9	35.7	22.9	41.9	23.3	28.5	45.0	24.0	46.6	42.5	23.5	23.1	18.0	32.3	31.1	17.0	44.7	37.3	26.5	35.9	43.5	33.8	16.0	34.4	25.1	29.3	21.6	49.9	35.5	31.0	30.1	24.4	29.8	41.3	36.8	43.5	39.9	34.3	27.5	26.5	34.7	44.3	30.3	25.9	28.2
Dec 7	41.7	32.4	48.0	33.0	17.8	34.3	31.7	36.9	42.2	30.5	51.8	35.5	28.6	23.4	16.8	31.4	22.5	25.2	30.6	34.5	34.7	38.0	42.1	31.5	25.3	27.1	27.4	28.4	26.4	52.1	38.6	27.7	28.6	34.8	22.1	39.1	36.1	39.1	29.1	42.0	28.1	22.0	24.8	45.8	40.0	32.0	27.8
Dec 8	25.6	33.0	47.7	30.9	21.8	34.2	19.2	38.2	44.0	22.3	43.0	35.9	24.6	28.1	15.3	32.8	34.7	25.6	27.5	22.1	25.6	49.6	33.1	34.6	30.7	21.9	28.0	30.2	33.7	36.4	39.2	34.9	28.6	36.4	22.7	35.1	33.6	45.3	34.2	43.7	27.2	23.0	20.3	47.7	41.1	32.3	30.3
Dec 9	37.6	35.4	40.8	28.1	23.8	40.7	16.9	26.9	38.7	23.9	47.6	31.2	38.1	36.4	19.4	31.5	27.0	24.5	22.7	17.7	23.8	42.7	25.2	28.6	30.9	15.8	32.8	26.9	19.4	42.9	39.3	35.6	17.1	38.0	28.7	40.1	28.9	39.5	31.9	41.4	30.5	29.4	26.4	52.0	40.1	31.2	22.4
Dec 10	38.9	33.0	29.8	17.0	23.0	36.9	19.1	17.2	26.9	32.8	35.7	24.7	41.7	30.9	16.0	19.9	32.0	17.5	32.3	15.0	29.8	46.8	28.9	31.1	21.3	20.3	32.3	14.5	28.9	37.8	33.1	23.0	17.6	26.0	17.8	27.4	25.1	34.4	32.0	32.2	25.7	29.0	20.6	52.9	36.1	31.8	29.6
Dec 11	36.9	41.8	30.4	33.1	31.5	41.0	31.8	26.6	31.5	33.3	36.8	22.5	31.2	33.2	7.8	23.0	28.5	9.8	44.7	27.8	27.4	45.9	26.8	35.3	29.7	19.8	28.6	23.9	34.1	31.1	24.1	21.6	22.7	16.2	32.0	21.6	33.3	22.5	31.2	19.6	27.6	23.1	16.5	46.7	32.4	28.2	33.1
Dec 12	41.1	48.6	32.1	37.8	36.4	35.1	32.8	24.1	28.7	28.7	30.5	15.7	25.9	29.9	10.5	20.5	23.6	21.4	39.8	28.5	34.2	42.1	27.5	32.5	27.0	26.9	26.4	22.9	38.0	29.4	23.0	22.5	28.5	13.1	24.8	21.9	42.8	28.7	27.1	18.0	20.6	22.9	21.8	46.7	38.6	24.8	35.6
Dec 13	38.8	43.6	29.9	29.1	38.8	20.3	33.9	15.0	30.6	27.6	29.8	11.4	23.8	21.8	22.9	17.0	18.7	23.0	23.3	19.5	26.7	30.2	33.7	36.0	33.6	26.8	28.6	26.8	33.5	28.6	26.8	35.7	30.0	21.6	33.6	29.4	37.0	43.0	23.5	26.1	19.0	32.0	21.4	29.9	34.9	24.9	31.4
Dec 14	33.4	30.0	26.8	30.0	38.4	24.4	42.4	18.6	24.1	27.6	24.4	25.2	20.2	19.4	24.7	28.9	17.4	25.7	14.9	22.6	29.2	33.0	39.4	39.4	42.0	35.4	18.2	22.6	42.1	27.1	31.0	44.4	30.0	34.1	23.4	33.8	29.8	46.2	17.8	24.7	21.5	34.8	24.0	30.3	26.1	27.4	31.7
Dec 15	37.9	30.2	32.5	29.1	29.8	20.2	37.1	12.2	26.7	24.4	15.3	37.2	24.9	28.9	32.6	34.2	19.8	28.2	20.1	32.2	27.5	20.1	40.4	38.8	33.0	23.9	31.3	27.5	33.2	19.3	17.0	39.2	33.7	34.4	25.6	37.4	27.4	31.1	25.0	30.9	28.9	34.7	20.8	25.1	17.5	22.3	31.1
Dec 16	35.0	29.9	26.2	45.0	42.1	29.9	27.8	18.2	26.1	33.6	21.3	34.3	19.9	30.5	36.6	18.7	29.5	25.5	20.6	40.0	26.9	20.2	37.2	35.8	24.0	28.4	27.4	23.5	38.2	30.1	21.3	28.1	29.0	34.6	12.2	37.6	26.9	35.7	22.6	32.1	18.3	30.9	40.0	21.4	25.2	17.8	22.6
Dec 17	26.2	35.9	34.8	36.7	37.0	22.0	33.1	24.1	21.7	40.8	20.5	27.5	21.2	28.2	24.1	27.4	32.8	28.0	13.4	22.8	34.6	26.3	31.9	27.3	32.4	33.5	29.6	31.2	24.9	22.8	25.4	34.2	22.8	29.6	25.8	22.2	27.9	42.8	20.1	27.8	22.0	42.3	47.5	28.0	29.6	20.3	20.6
Dec 18	33.5	30.7	25.7	34.8	40.2	18.9	33.3	26.4	24.8	41.8	30.6	33.1	27.5	28.0	28.0	23.9	31.9	27.6	20.7	29.3	40.4	19.1	40.0	18.7	27.4	34.8	38.5	33.6	27.7	31.8	23.2	21.1	33.1	23.2	30.0	23.4	18.0	34.6	30.0	23.9	22.7	35.1	37.6	26.0	28.8	28.1	33.3
Dec 19	33.8	39.0	30.7	27.5	39.7	20.0	35.8	31.1	16.1	45.2	25.8	31.6	41.3	35.3	18.3	34.9	28.7	21.8	22.9	23.8	30.8	24.3	31.8	25.6	34.5	25.1	37.0	29.4	35.2	21.6	22.8	28.3	35.5	27.2	22.8	26.5	21.7	27.9	23.8	22.2	32.3	23.5	38.3	18.6	44.7	20.6	30.5
Dec 20	34.4	32.3	40.5	36.3	36.2	13.6	30.3	39.1	22.0	36.0	25.1	33.4	34.2	30.2	21.2	36.7	34.2	19.4	21.7	19.3	32.7	27.1	29.4	24.2	38.4	29.9	30.4	26.2	27.0	29.6	22.3	31.8	38.9	26.9	22.4	27.9	15.6	38.5	26.5	16.6	33.0	22.6	29.5	25.7	30.9	31.9	26.1
Dec 21	29.4	39.6	52.5	29.6	29.3	5.8	26.6	36.9	16.6	21.6	26.4	43.7	29.6	38.6	21.8	38.9	34.6	14.8	19.1	24.8	25.5	21.5	25.9	24.4	35.0	22.0	29.5	25.2	31.1	32.5	31.7	27.6	34.1	28.2	31.8	38.8	13.7	32.4	25.7	21.5	40.0	31.4	39.6	21.4	22.6	19.8	22.4
Dec 22	29.4	30.7	41.1	28.9	32.7	16.7	21.2	32.6	16.0	15.0	17.3	34.4	33.2	33.0	19.9	36.2	33.3	26.5	22.4	30.5	25.1	25.9	21.7	20.6	22.6	32.6	30.5	24.9	34.4	31.2	34.5	24.5	40.3	24.5	24.3	35.3	28.9	27.5	34.6	18.2	35.5	26.5	28.2	32.2	13.4	19.8	24.1
Dec 23	41.3	35.7	38.8	25.4	40.7	13.5	20.1	34.2	18.3	27.5	16.0	29.4	27.4	43.7	20.5	33.2	36.6	28.8	25.9	22.8	19.7	31.0	28.0	18.6	29.6	19.6	34.9	31.1	29.6	28.6	39.8	17.5	46.5	22.5	14.9	25.8	40.3	33.1	41.1	22.0	34.0	21.9	34.6	28.1	22.8	18.9	32.5
Dec 24	38.4	25.9	37.2	12.1	29.2	19.5	21.0	22.4	30.9	31.7	15.1	27.0	25.6	38.2	28.4	38.3	35.2	21.5	37.2	24.8	11.2	25.2	20.1	25.1	24.8	24.1	28.7	29.5	27.6	27.2	45.4	31.5	41.4	25.6	7.9	22.2	31.8	25.0	35.9	27.9	40.3	24.0	35.6	30.9	31.2	26.6	23.9
Dec 25	34.6	33.2	28.8	22.7	25.1	25.5	25.2	21.9	25.6	21.7	15.7	29.5	13.4	35.5	37.7	33.9	29.9	17.5	30.2	32.0	11.4	21.3	26.4	20.8	28.9	31.4	22.6	27.7	16.7	20.6	30.0	18.5	38.6	19.9	15.5	13.8	25.1	28.7	22.3	34.5	22.8	31.7	41.6	30.2	31.6	18.2	25.9
Dec 26	22.0	28.8	25.1	28.7	16.1	22.9	25.0	18.8	24.4	21.7	24.8	24.4	26.3	37.3	36.8	24.9	34.4	21.1	28.9	37.4	15.8	17.5	20.5	20.1	33.9	25.9	22.2	30.4	25.4	18.8	15.4	17.0	28.4	20.6	9.1	20.1	22.3	35.9	21.0	31.5	27.8	27.6	37.9	24.8	42.2	25.0	33.5
Dec 27	25.9	31.0	32.6	29.2	27.9	21.6	19.2	18.3	35.1	19.3	35.3	23.4	24.3	34.0	32.5	26.8	32.7	21.2	35.3	36.2	12.5	14.8	29.8	29.6	17.4	30.4	32.3	32.0	25.7	15.7	19.1	26.3	22.9	17.8	6.8	16.9	26.7	38.7	19.8	34.9	16.6	24.9	33.8	24.7	39.8	22.9	30.1
Dec 28	29.0	23.4	29.6	20.1	22.7	24.4	20.0	14.0	34.3	19.3	43.1	27.5	21.0	32.5	41.3	29.5	28.3	20.3	31.1	44.2	13.5	13.5	15.2	32.6	16.1	25.3	32.6	25.2	18.0	5.7	22.2	23.2	29.7	19.6	8.2	18.6	32.8	37.5	29.2	26.7	11.9	22.3	31.3	23.6	40.4	25.7	26.6
Dec 29	28.0	24.2	33.5	18.5	29.0	26.7	26.0	10.1	26.0	20.0	43.0	31.0	24.5	23.4	28.8	35.1	29.1	18.1	24.1	35.1	18.6	15.2	14.9	28.9	19.8	23.2	31.4	30.6	18.8	21.2	25.3	31.7	38.7	13.4	7.7	25.3	39.7	21.7	30.6	20.9	7.9	15.9	36.5	14.6	26.4	29.7	21.6
Dec 30	26.0	15.1	37.0	14.1	32.2	33.2	26.4	18.3	28.0	22.3	32.1	30.2	18.2	16.6	36.9	45.2	24.3	32.8	20.7	42.0	20.3	25.1	27.3	31.0	22.1	35.6	28.6	32.9	19.9	22.8	26.6	32.1	35.1	8.0	20.9	19.4	41.3	19.7	24.9	22.2	10.7	16.0	33.4	18.6	20.2	34.7	17.9
Dec 31	23.3	13.8	13.8	13.8	13.8	21.7	21.7	21.7	21.7	22.6	22.6	22.6	22.6	12.6	12.6	12.6	12.6	27.2	27.2	27.2	27.2	19.9	19.9	19.9	19.9	20.2	20.2	20.2	20.2	37.1	37.1	37.1	37.1	16.3	16.3	16.3	16.3	21.0	21.0	21.0	21.0	25.9	25.9	25.9	25.9	36.2	36.2

Mean	51.6	52.0	51.6	52.9	51.5	52.3	52.1	50.8	50.4	52.9	52.5	50.4	51.3	52.5	52.1	51.2	52.4	50.9	51.8	51.3	50.6	51.7	51.7	51.3	51.0	53.0	51.5	51.3	51.6	52.9	53.3	52.8	51.7	51.9	51.4	51.5	51.2	53.4	50.8	51.6	51.4	51.5	53.4	52.7	53.1	52.3	51.4
Min	10.7	13.8	9.5	12.1	10.2	5.8	16.9	10.1	14.4	15.0	15.1	11.4	13.4	12.6	7.8	12.6	12.2	9.2	13.4	8.6	10.3	11.1	14.6	14.8	9.9	11.8	13.4	13.8	16.7	5.7	13.6	16.5	16.2	8.0	6.8	9.5	13.7	17.0	15.1	8.6	4.8	15.4	16.5	14.6	13.3	13.2	12.9
Max	85.5	85.5	86.2	88.2	90.3	87.1	85.1	87.9	89.6	90.1	90.5	91.6	91.2	87.1	86.8	87.1	86.6	88.3	87.5	87.7	88.1	87.2	86.7	93.1	86.9	89.4	87.7	85.7	85.6	86.8	92.1	90.1	85.5	88.2	85.9	90.8	86.1	86.0	89.1	87.4	90.0	87.0	90.1	85.3	89.1	85.5	86.5

YEAR->	94	95	96	97	98	99	100	T_{avg}	T_{min}	T_{max}
Jan 1	21.9	35.1	18.4	31.0	48.6	36.3	34.4	31.663	15.8	51.6
Jan 2	11.1	33.8	26.4	24.5	50.5	39.3	28.5	31.158	11.1	50.5
Jan 3	25.3	24.2	32.6	32.7	40.3	34.5	23.1	31.682	12.9	53.4
Jan 4	26.1	15.6	27.6	29.8	41.2	44.5	24.4	31.677	12.9	47.1
Jan 5	36.2	12.0	36.8	32.0	38.1	49.3	20.2	31.187	12.0	51.8
Jan 6	27.7	9.1	38.4	38.5	35.9	54.7	23.5	31.424	9.1	54.7
Jan 7	37.5	22.4	32.6	32.6	39.4	50.4	23.8	29.980	8.5	50.4
Jan 8	31.7	29.7	34.6	31.8	29.0	53.1	18.8	29.868	15.7	53.1
Jan 9	29.3	37.7	26.3	29.8	36.0	48.2	23.5	29.906	14.9	48.2
Jan 10	29.8	33.2	31.5	32.3	30.8	46.2	24.6	29.961	9.5	47.6
Jan 11	26.0	41.5	31.3	34.6	27.6	41.0	14.2	30.147	10.1	50.6
Jan 12	26.4	36.2	30.9	30.3	22.6	33.3	20.3	30.641	15.1	46.2
Jan 13	24.5	20.9	32.7	31.9	27.0	29.0	10.9	29.509	10.9	48.1
Jan 14	27.0	23.4	28.8	27.6	33.0	34.0	15.6	30.052	12.7	46.8
Jan 15	30.4	27.3	31.7	35.1	38.4	31.7	13.8	30.456	13.8	45.8
Jan 16	31.3	35.1	25.3	28.8	27.0	41.2	15.9	29.982	11.7	46.2
Jan 17	36.8	31.2	22.8	25.9	25.0	33.5	12.9	30.754	12.9	52.9
Jan 18	37.7	18.3	19.9	29.1	30.5	39.6	18.1	30.395	10.4	48
Jan 19	29.9	28.2	14.6	19.6	29.4	39.8	23.0	29.450	14.6	48
Jan 20	36.9	30.7	27.3	19.6	31.7	47.5	22.2	30.222	11.5	47.5
Jan 21	45.1	29.8	27.3	24.5	35.0	45.5	14.9	29.713	10.2	52.8
Jan 22	44.4	37.9	26.7	28.7	39.2	40.7	20.6	31.188	11.4	46.9
Jan 23	41.6	35.4	26.2	26.6	30.9	27.3	16.0	31.152	16.0	49.2
Jan 24	34.3	28.3	28.8	29.6	35.7	19.1	27.0	30.403	12.0	48.7
Jan 25	34.3	32.0	24.9	32.9	23.0	24.4	34.5	30.791	10.9	51.2
Jan 26	27.3	28.6	20.1	35.9	25.0	21.9	32.9	30.889	13.4	48.8
Jan 27	19.2	35.6	33.4	31.8	30.9	9.6	25.3	30.390	9.6	48.1
Jan 28	27.1	46.1	26.7	28.8	31.1	13.1	30.0	30.453	11.0	55.5
Jan 29	30.8	45.7	17.4	26.3	23.9	14.4	18.5	30.327	9.2	47
Jan 30	22.6	35.6	23.5	25.0	34.3	8.9	19.2	28.867	8.9	51.8
Jan 31	22.6	43.2	30.5	33.3	36.1	9.2	21.4	29.842	9.2	55.9
Feb 1	34.7	35.1	17.1	33.6	33.9	20.9	30.2	28.991	13.0	45.7
Feb 2	27.0	31.8	18.9	35.8	26.4	22.4	30.9	28.672	14.1	44.6
Feb 3	14.6	39.5	12.0	47.0	28.0	13.7	32.2	29.311	12.0	47.2
Feb 4	22.8	43.0	25.9	39.7	33.2	24.6	20.7	29.824	6.7	44.3
Feb 5	34.6	38.8	29.9	32.9	17.8	26.3	27.8	29.643	11.8	43.9
Feb 6	40.0	24.9	28.8	39.6	21.6	19.6	40.6	30.395	8.6	45.9
Feb 7	38.2	20.9	17.6	30.7	22.4	28.2	28.2	29.940	12.4	53.5
Feb 8	29.4	23.3	21.8	30.6	27.5	34.4	27.4	29.902	11.7	49.5
Feb 9	25.2	18.6	29.5	29.4	22.2	35.5	28.7	29.385	13.4	49.2
Feb 10	31.0	25.7	37.3	29.8	19.4	31.4	24.0	30.554	14.5	51
Feb 11	38.6	31.7	31.9	39.5	29.5	39.5	23.1	31.722	10.8	57.6
Feb 12	38.0	29.3	28.3	30.3	27.8	42.7	28.0	31.244	14.7	60.6
Feb 13	40.2	37.4	31.0	31.7	41.2	47.0	28.1	31.911	11.9	54.9
Feb 14	39.5	41.9	35.8	32.1	45.3	40.5	31.1	32.403	15.6	54.9
Feb 15	49.2	45.2	25.5	26.6	38.0	43.9	28.8	32.333	11.1	54.3
Feb 16	31.8	31.4	18.3	42.5	36.2	49.0	40.6	32.357	8.6	49
Feb 17	39.9	48.9	37.6	38.8	32.4	41.8	38.8	32.781	14.9	51.1
Feb 18	36.6	46.8	20.8	45.7	35.0	36.3	25.6	33.019	18.7	53.5
Feb 19	37.2	45.8	24.5	41.9	37.0	33.1	26.6	32.422	13.6	55
Feb 20	44.0	41.2	27.3	30.1	41.2	40.9	31.1	32.607	15.8	46.8
Feb 21	29.4	24.4	25.4	37.3	31.4	42.4	39.4	31.753	17.4	48
Feb 22	29.9	25.0	29.4	27.2	32.0	41.3	44.8	32.654	13.5	52.5
Feb 23	40.2	32.7	18.9	20.2	43.9	37.4	45.1	32.837	6.7	53.4
Feb 24	30.6	35.9	19.9	22.5	39.3	35.0	48.3	33.571	14.1	54
Feb 25	31.3	39.5	16.9	28.4	45.2	32.1	39.2	33.487	11.8	50.7
Feb 26	35.7	37.3	24.7	32.1	42.6	34.9	37.5	35.529	11.6	52.6
Feb 27	25.1	52.3	37.4	37.0	47.7	37.0	26.9	35.700	19.5	60.9
Feb 28	39.0	49.6	40.5	33.8	51.3	35.6	38.7	36.532	19.6	55.8
Feb 29	49.6	45.4	36.4	32.3	48.9	38.8	37.5	38.600	16.6	56.8
Mar 1	39.6	49.3	46.5	32.2	44.7	39.2	37.7	38.192	20.1	57.3
Mar 2	32.3	43.2	44.8	32.6	40.8	38.0	44.3	38.838	20.5	59.4
Mar 3	34.1	36.2	30.9	44.4	38.3	46.8	52.1	39.342	16.5	59.3
Mar 4	31.8	55.9	40.3	48.3	35.0	28.3	38.1	38.873	21.4	59.7
Mar 5	34.5	56.1	43.4	46.3	43.7	32.8	42.6	38.678	24.1	57.9
Mar 6	30.6	46.3	46.4	37.4	42.2	41.1	49.0	39.482	22.4	58.7
Mar 7	32.3	40.5	41.3	30.2	36.2	32.7	42.3	39.282	15.1	59.3
Mar 8	39.2	32.6	32.2	36.4	31.1	29.4	48.8	39.035	15.2	59.5
Mar 9	50.5	32.0	44.3	26.6	31.9	31.9	57.0	38.671	17.7	63.3
Mar 10	48.6	40.0	43.3	24.3	38.8	32.1	57.9	38.755	20.8	66.3
Mar 11	55.6	33.5	32.8	29.6	52.5	43.1	53.9	39.260	18.3	68.9
Mar 12	43.7	41.3	33.7	32.2	38.5	45.4	47.1	39.752	10.5	59.6
Mar 13	54.5	36.7	33.9	40.6	37.8	43.1	34.2	40.819	18.3	61.3
Mar 14	43.7	47.6	45.8	41.7	28.9	45.3	39.9	40.978	19.5	57.9
Mar 15	51.5	44.6	40.4	38.7	30.6	41.3	45.1	40.555	18.6	61.8

YEAR->	94	95	96	97	98	99	100	T_{avg}	T_{min}	T_{max}
Mar 16	30.6	42.7	43.0	47.2	34.9	37.4	44.2	41.655	23.8	64.6
Mar 17	41.8	38.5	43.4	53.8	35.5	52.7	46.3	42.618	24.1	59.3
Mar 18	37.9	49.7	44.1	50.0	33.7	41.9	41.1	43.436	25.3	69.9
Mar 19	41.2	55.3	54.1	47.7	40.9	42.4	40.1	44.923	21.9	69.2
Mar 20	39.0	47.2	59.9	47.1	53.3	48.1	46.3	43.671	26.7	66.9
Mar 21	35.5	44.6	56.2	36.2	39.5	46.1	52.8	43.405	22.2	64
Mar 22	33.3	43.3	49.8	53.7	38.0	47.9	47.2	44.457	29.1	66
Mar 23	37.6	40.0	44.2	59.6	44.4	39.2	51.9	45.189	28.9	60.2
Mar 24	45.4	40.3	49.2	60.8	61.1	44.1	49.6	45.518	26.7	63.1
Mar 25	43.8	40.9	44.1	65.2	49.4	50.3	56.7	46.190	23.2	68.9
Mar 26	54.3	43.9	51.7	50.3	44.5	45.1	51.5	46.360	22.1	67.2
Mar 27	60.0	36.0	60.2	51.9	45.8	54.3	54.9	46.109	31.9	68.7
Mar 28	59.8	46.8	45.1	52.0	47.0	52.5	43.1	46.627	27.4	71.7
Mar 29	56.8	43.9	59.5	47.1	38.7	41.0	32.8	47.322	29.8	70.9
Mar 30	54.7	61.1	47.9	49.4	41.2	39.6	42.4	47.314	27.6	69.5
Mar 31	57.2	56.7	44.7	57.9	32.6	41.7	38.0	45.030	24.2	66.8
Apr 1	45.6	47.7	47.0	56.4	33.7	46.5	27.3	43.848	26.1	61.3
Apr 2	60.6	48.3	45.8	67.0	34.4	51.0	32.5	45.680	24.0	67.3
Apr 3	44.3	51.5	45.2	46.4	44.4	58.5	33.6	45.636	25.4	67.8
Apr 4	33.2	55.0	40.2	58.2	39.8	50.3	37.6	45.913	25.9	65
Apr 5	40.3	60.0	38.4	44.1	46.4	33.2	48.8	46.111	28.3	70.8
Apr 6	36.5	56.5	36.2	46.8	43.9	36.2	41.2	46.366	28.4	68.7
Apr 7	42.4	41.4	44.1	49.1	36.2	29.5	49.8	45.732	27.3	64.7
Apr 8	44.6	56.9	41.7	46.8	45.6	37.6	53.1	46.204	26.1	64.6
Apr 9	48.3	50.0	41.6	51.4	41.6	42.5	39.5	47.139	24.9	65.4
Apr 10	52.6	54.2	42.4	46.7	41.5	41.9	48.6	48.038	31.9	66
Apr 11	46.0	54.1	41.7	67.9	51.2	41.1	51.5	48.257	28.1	68.9
Apr 12	42.9	48.4	31.2	69.0	50.3	49.8	53.2	48.512	29.5	69
Apr 13	42.3	56.3	26.3	68.8	48.7	56.4	56.8	49.170	24.9	77.2
Apr 14	37.0	56.5	37.4	68.6	53.6	52.2	47.9	50.591	31.7	82.1
Apr 15	40.0	49.7	38.3	61.4	50.7	40.5	49.6	51.575	34.8	74.3
Apr 16	39.1	45.9	41.5	61.3	62.6	42.3	53.4	51.466	35.4	80.4
Apr 17	55.2	48.5	49.0	51.0	52.4	38.4	42.6	51.361	35.9	79.8
Apr 18	54.8	46.7	45.0	60.8	47.3	42.2	39.9	51.961	31.1	79.9
Apr 19	54.3	49.5	46.7	61.2	49.3	51.3	46.1	52.068	32.2	72.1
Apr 20	49.7	57.9	46.6	59.6	50.2	41.6	53.2	53.119	32.6	70.6
Apr 21	45.9	46.6	38.0	63.3	54.8	34.6	53.5	52.947	34.6	71.7
Apr 22	46.5	52.1	45.7	64.7	53.1	48.6	42.2	52.400	32.7	68.4
Apr 23	43.3	50.3	52.3	68.1	62.7	55.3	34.0	53.099	34.0	73.2
Apr 24	41.4	50.1	46.9	62.9	57.1	58.1	31.2	52.216	31.2	70.9
Apr 25	46.2	52.2	37.7	55.1	54.1	55.3	42.9	52.759	33.7	73.1
Apr 26	46.7	50.0	49.6	49.8	56.3	54.1	52.9	53.659	35.5	81.4
Apr 27	47.4	56.0	52.3	48.2	41.8	50.8	50.8	53.856	37.7	75.5
Apr 28	45.5	58.2	60.6	60.2	49.0	42.1	46.6	53.526	31.2	73.8
Apr 29	49.8	58.7	55.4	57.6	61.9	50.2	56.8	55.184	38.0	72.4
Apr 30	46.7	60.5	51.5	65.6	61.4	45.9	59.9	54.171	39.0	71.2
May 1	48.6	61.4	60.5	69.4	58.9	43.4	55.5	54.649	36.5	69.4
May 2	52.3	52.4	59.5	65.1	49.1	53.5	58.6	54.974	27.0	73.1
May 3	47.9	55.6	65.0	59.9	42.9	61.1	51.0	55.082	38.8	70.6
May 4	67.1	53.0	60.2	57.2	47.4	65.8	63.2	55.983	36.7	75.2
May 5	63.4	60.3	73.7	55.4	58.4	55.5	59.1	56.357	37.5	73.7
May 6	50.4	62.4	66.9	59.0	58.5	47.4	62.8	56.991	43.0	81.7
May 7	68.7	48.5	63.0	62.6	58.0	46.5	60.7	58.030	39.0	80.4
May 8	61.8	52.5	58.4	58.0	43.7	55.5	68.7	57.338	36.2	79.4
May 9	50.3	57.4	59.0	52.9	46.7	53.3	54.8	57.969	41.4	78.6
May 10	50.5	62.7	54.7	51.4	64.9	59.2	46.6	57.738	39.8	79.8
May 11	47.6	60.2	57.1	55.1	67.5	60.9	47.7	57.930	34.6	80.2
May 12	39.9	63.7	58.2	53.2	58.9	48.5	52.5	58.102	39.9	77.2
May 13	53.3	56.0	60.7	51.4	69.2	50.6	52.1	59.418	38.6	80
May 14	55.8	50.9	49.7	51.5	68.6	52.2	58.2	58.865	38.3	72.6
May 15	58.5	48.9	51.7	56.0	68.4	67.0	61.4	59.936	41.2	81.5
May 16	62.7	56.2	55.9	57.3	62.4	56.8	53.8	59.463	40.6	77.7
May 17	59.3	54.7	63.2	58.9	60.0	59.3	66.2	60.184	45.4	75.6
May 18	56.1	59.9	70.5	48.5	66.4	60.2	59.6	61.343	47.9	78.2
May 19	55.1	56.5	72.6	50.8	58.3	58.2	58.8	61.180	46.4	74.7
May 20	61.3	48.6	66.5	60.5	70.0	62.7	62.1	61.483	46.6	79.4
May 21	61.0	51.3	65.6	60.2	61.5	59.9	61.3	62.308	48.2	76.5
May 22	56.6	52.1	58.7	67.0	58.7	71.3	65.5	63.006	45.6	80.4
May 23	60.1	60.5	56.6	71.8	62.7	59.5	66.6	62.783	50.3	82.6
May 24	64.9	61.6	57.9	66.4	59.0	54.6	65.6	63.165	49.1	79.2
May 25	64.1	63.0	62.5	64.3	64.4	56.2	60.3	63.606	47.2	80.8
May 26	66.3	66.0	61.0	62.1	62.6	64.2	64.2	63.930	49.8	78.6
May 27	64.2	74.7	68.2	67.7	64.0	63.5	55.8	65.080	47.4	81.2
May 28	69.6	69.2	67.3	58.0	69.4	66.3	54.6	64.778	47.6	80
May 29	60.5	69.0	60.4	62.4	68.2	70.1	56.7	65.658	50.1	80.2

YEAR->	94	95	96	97	98	99	100	T_{avg}	T_{min}	T_{max}
May 30	63.1	70.1	60.3	59.1	60.2	84.4	56.5	66.203	52.7	84.4
May 31	71.1	65.6	65.1	64.3	63.1	74.9	60.7	65.685	52.1	76.2
Jun 1	75.3	64.8	62.5	64.1	65.6	71.7	64.9	66.554	51.0	83.2
Jun 2	77.4	57.6	61.6	60.4	65.2	82.3	58.8	66.560	49.5	82.3
Jun 3	79.5	55.0	65.6	61.3	63.8	82.8	63.1	66.961	49.6	82.8
Jun 4	81.3	51.6	65.9	70.7	66.1	73.4	66.4	67.479	51.6	81.3
Jun 5	80.6	58.7	63.7	69.7	66.0	78.7	69.6	66.976	52.5	80.6
Jun 6	79.9	57.6	60.1	71.7	77.5	75.4	73.9	67.900	54.2	81.3
Jun 7	73.4	58.8	53.9	70.9	75.0	77.0	70.2	67.668	53.9	80.6
Jun 8	71.4	65.4	50.7	71.8	69.3	71.6	69.6	68.173	50.7	81.8
Jun 9	71.1	67.5	53.9	64.7	64.5	68.0	72.6	68.409	53.9	82.4
Jun 10	66.6	59.1	59.0	60.1	66.6	73.7	74.3	68.631	54.5	82.6
Jun 11	68.3	69.7	64.3	61.0	71.2	67.5	67.0	68.210	51.3	81.4
Jun 12	65.6	67.8	72.7	65.7	66.2	73.0	63.8	68.355	49.9	80.6
Jun 13	67.5	71.5	71.2	67.9	72.8	66.4	70.7	68.694	53.2	80.9
Jun 14	72.9	68.7	64.0	71.8	77.2	70.0	69.9	69.813	58.2	83.1
Jun 15	71.0	73.9	69.5	76.4	74.5	70.8	76.5	69.929	54.3	81.4
Jun 16	76.0	69.4	68.2	71.5	70.3	72.2	77.1	70.310	57.5	79.9
Jun 17	69.7	75.6	73.6	70.2	70.7	69.6	71.7	70.850	55.5	80.8
Jun 18	75.6	72.9	71.9	72.1	71.2	71.9	76.2	71.280	57.2	84.5
Jun 19	73.8	66.6	66.0	66.0	73.6	78.1	69.3	71.003	58.2	83
Jun 20	73.1	66.8	70.0	66.2	69.4	66.4	66.2	70.413	56.7	81.6
Jun 21	67.8	68.8	66.5	67.7	61.0	66.8	70.2	70.512	55.5	84.6
Jun 22	69.0	70.7	75.5	68.2	59.8	68.6	67.3	71.103	57.2	84.2
Jun 23	76.7	69.5	71.0	66.7	65.6	70.4	73.5	70.964	57.1	80.9
Jun 24	74.0	72.1	74.2	70.0	69.9	72.2	69.9	71.347	56.8	82.3
Jun 25	72.9	64.2	66.5	63.6	73.8	74.4	75.4	71.603	60.2	83.2
Jun 26	69.5	66.4	71.7	66.9	71.5	76.7	74.4	71.793	59.8	84.6
Jun 27	72.2	70.3	70.0	69.2	71.1	73.7	73.7	72.156	59.6	80.7
Jun 28	76.1	66.2	70.8	70.0	67.8	75.8	75.5	72.299	56.7	80.2
Jun 29	78.6	68.2	70.6	72.4	71.9	77.1	74.3	72.912	59.9	84
Jun 30	76.1	69.3	74.7	71.8	67.7	81.8	75.3	75.974	65.0	87.6
Jul 1	89.1	71.7	76.3	74.7	75.5	79.8	80.2	78.251	67.4	94
Jul 2	80.9	70.9	75.0	69.2	71.9	85.3	78.3	78.321	66.0	91.5
Jul 3	78.4	72.0	75.9	67.9	71.6	79.8	76.0	78.233	64.8	93.1
Jul 4	78.5	73.4	79.7	66.0	75.4	77.0	79.7	78.786	65.8	85.9
Jul 5	83.1	71.2	82.0	69.2	81.1	78.5	82.1	78.863	69.2	88.9
Jul 6	85.5	77.5	87.7	73.6	83.0	77.9	74.9	78.897	70.1	90
Jul 7	83.0	73.6	85.2	75.7	81.2	79.1	77.7	78.856	66.9	90.5
Jul 8	78.5	81.2	81.8	77.7	79.2	79.1	72.1	78.808	67.3	88.1
Jul 9	84.2	83.3	82.9	77.3	79.9	82.1	74.9	78.659	63.4	89.1
Jul 10	79.6	83.1	82.2	81.4	79.9	81.9	73.8	78.633	69.3	90
Jul 11	77.3	80.1	77.5	80.6	77.4	82.3	78.4	78.815	69.1	86.8
Jul 12	75.7	79.3	77.0	86.4	77.2	82.6	75.9	79.478	71.0	89
Jul 13	78.3	82.9	74.2	84.8	80.1	82.1	78.8	79.559	71.3	88.2
Jul 14	72.4	74.2	74.7	78.3	80.8	77.6	80.9	79.169	68.8	89.3
Jul 15	68.4	76.9	72.4	74.9	78.9	76.2	77.8	78.726	68.4	87
Jul 16	77.5	78.8	82.8	75.6	77.4	73.0	80.1	78.256	70.3	87.1
Jul 17	78.8	79.5	81.9	75.1	77.4	77.4	76.3	78.644	70.0	87.1
Jul 18	80.4	77.3	76.7	77.7	76.3	78.1	81.0	79.347	69.7	88.8
Jul 19	78.3	82.5	81.9	81.9	79.2	79.8	80.5	79.476	69.7	91.6
Jul 20	72.8	75.3	81.6	83.8	81.6	82.8	83.5	79.583	69.9	88.5
Jul 21	74.6	75.8	78.5	83.3	77.6	85.8	87.3	79.842	66.8	88.1
Jul 22	76.6	76.9	72.9	84.4	83.3	77.1	84.6	79.426	69.5	86.8
Jul 23	83.3	80.1	73.1	85.0	72.4	78.9	79.9	79.409	69.9	88.1
Jul 24	83.2	76.0	77.9	81.9	75.5	74.4	77.1	79.160	69.3	87.4
Jul 25	84.7	79.2	84.8	86.5	72.4	75.6	74.6	79.358	67.8	89.9
Jul 26	89.3	75.9	84.8	89.3	69.4	71.5	77.2	78.610	65.4	89.3
Jul 27	86.3	76.9	82.7	81.8	73.8	66.3	76.0	78.027	65.1	91.3
Jul 28	82.4	76.8	81.7	81.1	73.0	73.6	70.3	77.636	65.0	88.9
Jul 29	81.3	77.0	80.6	80.2	76.1	72.3	65.7	77.820	65.7	89.5
Jul 30	86.3	78.7	84.0	83.3	81.4	73.9	64.9	78.457	64.9	90.1
Jul 31	85.0	83.2	76.7	85.8	77.0	73.9	73.1	79.417	70.2	90.1
Aug 1	84.7	80.6	81.3	87.0	85.2	77.4	77.2	80.094	69.5	90
Aug 2	87.6	83.3	85.7	82.8	81.9	83.0	77.9	79.671	69.9	90.1
Aug 3	80.5	82.0	85.2	77.3	77.5	83.0	74.8	79.488	70.8	89.2
Aug 4	83.6	79.1	82.5	82.5	83.8	91.1	82.9	79.887	64.7	91.7
Aug 5	82.7	78.3	83.5	81.5	84.2	90.2	80.0	79.412	64.4	90.2
Aug 6	83.2	74.6	83.2	85.1	84.8	87.5	81.4	78.905	67.3	90.8
Aug 7	82.3	77.9	77.7	83.7	74.6	86.4	76.4	78.627	63.6	88.5
Aug 8	80.0	77.8	79.8	78.2	77.4	88.0	77.7	78.442	66.1	90.3
Aug 9	84.4	75.9	77.7	79.0	78.0	84.8	81.3	78.614	64.4	87.9
Aug 10	81.6	77.8	79.9	76.0	80.8	83.2	86.1	78.132	67.4	90.1
Aug 11	77.6	81.2	74.3	75.3	83.0	82.9	91.6	77.745	64.3	91.6
Aug 12	78.4	76.2	82.7	75.0	75.7	84.6	85.1	77.086	63.9	92.5

YEAR->	94	95	96	97	98	99	100	T_{avg}	T_{min}	T_{max}
Aug 13	71.5	79.4	80.3	75.4	71.6	83.0	79.3	76.670	66.8	88.2
Aug 14	75.6	77.7	82.5	83.6	75.4	80.6	81.6	76.651	63.7	92.1
Aug 15	79.5	80.8	83.0	82.5	77.4	88.0	75.8	76.966	65.1	91.6
Aug 16	85.4	75.4	84.5	73.7	78.8	75.4	72.6	76.500	65.3	91
Aug 17	82.4	70.1	78.2	74.3	79.5	75.7	77.2	76.230	65.3	89.5
Aug 18	77.8	70.5	80.3	74.3	74.3	83.5	83.3	76.287	61.4	88.3
Aug 19	78.5	76.5	79.4	73.5	75.8	75.3	79.9	76.556	64.0	85.8
Aug 20	82.6	74.4	80.2	68.3	72.5	71.8	80.5	76.715	60.9	86.6
Aug 21	81.2	74.2	77.9	77.5	76.6	75.8	74.8	76.439	64.2	88.5
Aug 22	78.8	69.8	78.9	83.6	74.1	75.6	73.7	76.473	63.7	84.8
Aug 23	76.6	71.0	71.8	84.0	74.5	77.9	77.5	75.746	63.2	88.2
Aug 24	72.9	67.0	75.7	86.6	76.8	81.9	76.4	75.747	64.9	86.6
Aug 25	77.4	66.3	70.9	81.4	79.7	76.0	79.1	75.095	60.7	88.3
Aug 26	77.7	69.1	72.1	75.6	79.2	80.3	78.9	74.820	61.2	85.6
Aug 27	73.7	68.1	71.0	84.0	77.0	78.7	74.1	74.468	61.8	85
Aug 28	73.3	68.3	74.2	81.9	79.3	76.3	69.5	73.485	56.1	89.1
Aug 29	78.3	73.0	75.1	72.8	79.5	71.7	68.8	73.239	56.9	86.8
Aug 30	78.5	72.2	77.4	71.5	71.2	75.3	75.0	73.190	58.6	86
Aug 31	74.0	74.6	73.5	60.4	70.8	74.7	67.1	69.884	53.8	83.5
Sep 1	66.7	74.0	70.3	60.5	67.0	66.8	63.1	68.678	57.6	84.7
Sep 2	62.9	74.5	71.1	64.4	65.1	66.2	59.1	68.723	52.0	84.7
Sep 3	59.2	78.5	71.1	62.8	65.3	62.1	63.5	68.381	52.4	83.1
Sep 4	55.8	77.1	70.8	73.8	65.8	66.7	65.3	68.323	54.8	86.3
Sep 5	66.1	73.0	68.8	75.6	62.9	63.7	71.4	68.405	52.1	85.5
Sep 6	59.2	72.5	76.0	81.0	62.6	69.7	76.2	68.491	48.4	84.3
Sep 7	68.5	66.4	73.5	79.0	61.0	75.1	70.2	67.684	50.7	83
Sep 8	67.2	60.5	68.6	67.1	53.6	65.3	71.0	66.992	50.0	85.9
Sep 9	59.4	60.7	72.5	65.9	51.4	62.1	61.6	66.518	50.0	84
Sep 10	71.3	68.6	75.4	63.4	54.2	69.2	67.8	66.605	50.8	83.4
Sep 11	67.9	65.2	72.0	61.9	60.6	71.2	64.4	66.764	48.6	80.6
Sep 12	64.1	65.7	69.8	64.0	68.5	69.5	65.2	66.771	50.6	81.8
Sep 13	52.0	74.8	79.2	61.0	58.3	74.1	66.2	66.054	52.0	84.3
Sep 14	44.7	68.7	66.6	65.0	61.3	69.6	64.2	65.606	44.7	81.7
Sep 15	43.8	65.4	68.4	71.3	68.5	64.8	64.8	66.351	43.8	82
Sep 16	56.9	64.6	67.0	74.6	71.9	66.0	69.3	66.223	52.3	80.4
Sep 17	71.8	63.5	77.3	70.1	69.5	60.5	68.1	66.449	48.0	82.7
Sep 18	64.7	54.3	66.5	70.4	73.9	58.7	76.3	64.664	44.1	85.8
Sep 19	52.9	63.0	67.1	67.3	72.0	60.0	72.3	64.134	49.2	81.5
Sep 20	51.6	68.5	61.1	66.7	65.2	71.7	69.1	63.646	48.7	76.5
Sep 21	57.2	63.8	60.8	64.0	66.4	69.0	66.2	63.493	47.9	78.5
Sep 22	54.2	61.6	66.1	64.6	64.0	62.4	79.3	63.416	47.4	79.4
Sep 23	57.8	59.9	54.8	69.4	59.6	62.5	73.1	62.562	48.8	79.5
Sep 24	57.5	63.3	58.5	73.5	52.7	60.5	73.8	62.636	46.5	77.5
Sep 25	52.0	63.4	68.7	64.2	52.9	67.0	79.0	62.845	49.8	79.1
Sep 26	55.0	72.1	67.4	63.1	54.6	73.0	81.5	63.230	46.6	81.8
Sep 27	51.2	70.2	68.5	55.7	51.2	71.6	67.0	61.782	41.7	86.5
Sep 28	61.0	70.4	61.7	53.0	48.0	69.0	64.4	61.315	40.0	80.1
Sep 29	55.1	73.6	56.6	58.9	37.8	65.6	59.4	60.178	37.8	76.2
Sep 30	54.5	64.4	55.4	51.8	43.1	56.3	55.0	57.876	40.8	80.6
Oct 1	66.9	69.8	63.1	51.1	48.3	57.5	52.2	56.544	37.7	76.6
Oct 2	72.0	59.8	52.5	54.4	49.2	50.5	52.9	55.287	34.1	76.1
Oct 3	60.5	60.9	40.8	61.0	52.1	61.9	52.2	55.420	40.5	73.6
Oct 4	72.3	60.4	43.7	63.3	50.3	63.3	51.9	56.159	33.9	72.3
Oct 5	66.8	54.0	40.6	63.8	48.2	54.0	53.5	55.659	35.6	75.8
Oct 6	66.2	55.7	47.0	77.0	53.1	49.5	45.8	54.083	33.1	77
Oct 7	70.7	62.3	55.3	59.5	49.4	64.7	54.6	54.673	34.3	75.3
Oct 8	73.5	56.5	56.1	55.8	54.9	59.6	58.6	54.297	37.2	73.5
Oct 9	67.3	53.4	56.1	50.6	57.4	47.2	49.1	53.904	35.7	73.3
Oct 10	65.7	55.6	58.5	53.5	51.4	51.6	40.0	53.068	31.9	73.2
Oct 11	59.7	52.8	52.8	56.5	49.9	55.8	41.3	52.414	32.1	70.3
Oct 12	57.8	61.8	50.9	54.5	45.0	56.2	54.6	52.810	28.4	78.3
Oct 13	60.4	57.1	62.1	47.4	45.9	46.8	54.3	52.991	34.6	78.3
Oct 14	52.7	43.8	51.2	57.0	51.5	41.2	61.5	52.623	33.5	73.5
Oct 15	53.8	54.0	57.8	55.8	50.9	50.5	58.5	51.352	32.1	68
Oct 16	49.2	64.9	58.8	49.8	50.5	59.9	44.9	51.493	33.2	66.5
Oct 17	46.5	61.4	60.5	59.1	50.6	61.4	50.9	50.979	24.7	67.9
Oct 18	46.9	46.6	62.0	58.1	51.5	58.8	51.5	50.501	25.0	70.3
Oct 19	37.4	42.7	59.6	59.6	39.0	63.3	53.0	49.724	22.5	78.4
Oct 20	41.8	39.6	44.6	56.3	42.2	42.8	54.7	47.973	25.2	74.2
Oct 21	34.6	45.6	49.4	57.5	46.0	45.8	54.2	48.097	24.0	73.7
Oct 22	43.6	36.4	50.3	54.9	38.7	45.9	44.6	47.154	19.7	75.9
Oct 23	50.4	48.3	52.8	49.6	47.4	45.4	54.7	46.395	21.5	62.4
Oct 24	51.4	53.1	49.1	55.1	52.2	43.5	59.7	47.003	30.0	67.7
Oct 25	49.3	46.9	46.2	47.2	46.6	37.1	55.2	46.857	23.7	70.5
Oct 26	52.8	38.7	52.0	57.8	35.4	35.8	63.7	45.712	25.9	75.4

YEAR->	94	95	96	97	98	99	100	T_{avg}	T_{min}	T_{max}
Oct 27	56.5	50.6	52.5	54.9	38.3	37.0	49.5	45.734	27.8	67.3
Oct 28	51.1	51.4	57.7	51.9	43.2	44.2	58.1	45.606	25.5	63.6
Oct 29	63.3	50.4	53.3	57.5	39.6	49.1	63.5	45.739	28.8	63.5
Oct 30	58.8	50.9	59.5	44.6	43.2	52.7	51.5	46.365	27.8	68.4
Oct 31	51.9	51.4	56.9	23.5	48.6	36.3	58.8	44.180	23.5	64.8
Nov 1	48.9	34.7	58.7	20.3	36.0	42.5	59.8	43.163	20.3	65.3
Nov 2	45.7	34.1	67.3	27.8	35.6	44.2	54.5	41.415	24.3	67.3
Nov 3	44.2	44.3	58.4	23.6	29.2	38.8	45.7	41.088	17.0	65.6
Nov 4	48.4	51.5	57.1	40.6	36.5	38.5	58.4	41.336	12.6	62.3
Nov 5	53.5	43.5	62.5	37.6	47.3	33.4	49.0	39.957	13.0	62.5
Nov 6	57.0	37.1	57.5	39.3	37.1	36.4	41.9	40.008	19.2	61.9
Nov 7	57.3	43.1	48.8	48.0	46.2	41.3	29.5	40.409	23.1	57.3
Nov 8	54.5	44.8	35.7	44.0	47.7	39.5	30.1	38.978	18.8	64
Nov 9	40.2	50.4	30.2	41.9	53.1	37.8	34.8	39.000	16.8	61
Nov 10	45.6	40.5	23.4	50.9	55.6	41.2	44.9	38.386	17.0	58.6
Nov 11	34.0	49.1	17.6	46.8	42.7	53.6	37.2	37.896	17.6	55.9
Nov 12	40.5	42.6	17.8	54.9	40.6	58.2	27.7	37.709	17.8	58.2
Nov 13	40.4	35.9	18.8	44.5	37.7	42.3	33.6	37.471	12.1	59.9
Nov 14	44.4	26.5	30.1	55.8	40.5	36.8	25.7	37.876	15.8	58.6
Nov 15	53.4	22.3	32.3	50.4	41.6	47.3	29.3	36.033	18.2	67.6
Nov 16	44.3	31.1	25.4	58.1	40.0	43.9	25.9	35.675	17.4	65.7
Nov 17	39.3	28.2	33.0	51.6	32.8	38.9	24.1	35.382	18.0	63.2
Nov 18	55.5	32.1	38.6	41.5	28.7	42.2	27.5	35.095	17.2	56
Nov 19	44.2	39.4	40.5	51.9	46.2	40.2	31.5	35.186	14.6	62.4
Nov 20	37.3	32.6	43.1	35.3	43.1	52.9	27.0	36.006	15.7	53.7
Nov 21	38.3	27.8	43.7	41.1	38.6	44.1	27.4	36.125	14.3	53.5
Nov 22	40.3	31.4	44.7	38.9	52.9	39.5	28.8	36.240	12.3	58.5
Nov 23	40.3	37.0	46.8	28.9	57.5	34.4	29.8	35.787	14.2	59.7
Nov 24	43.7	29.6	47.1	25.8	36.4	29.9	24.9	35.297	11.6	64.8
Nov 25	38.7	34.5	32.6	28.7	46.2	27.5	22.9	33.770	12.6	52.9
Nov 26	39.6	41.0	27.5	37.0	39.4	26.0	20.4	33.348	13.6	53.1
Nov 27	41.4	39.2	31.8	27.2	39.9	27.0	17.6	32.389	7.1	51.3
Nov 28	37.8	35.6	36.4	28.6	41.4	29.3	22.6	31.590	9.2	51.6
Nov 29	39.9	37.7	34.1	25.6	41.6	34.8	24.1	31.091	13.5	54.1
Nov 30	44.3	44.8	29.1	35.4	42.8	25.9	24.8	32.247	4.8	51.5
Dec 1	41.5	42.1	30.5	34.3	35.7	26.9	25.1	31.698	8.6	50.6
Dec 2	40.6	29.2	28.1	48.1	21.1	13.5	27.6	31.425	13.5	54.8
Dec 3	42.5	18.9	28.2	34.7	25.1	16.1	25.4	31.054	13.3	56.4
Dec 4	41.2	25.7	25.9	31.3	21.1	21.0	28.2	30.590	10.5	52.8
Dec 5	33.6	19.9	29.9	36.7	18.1	22.4	21.0	30.462	8.3	50.9
Dec 6	37.9	19.6	23.6	37.6	15.8	23.1	21.3	30.544	9.0	51.4
Dec 7	39.5	16.3	24.1	27.0	20.1	25.2	18.3	30.788	13.7	52.1
Dec 8	34.1	21.5	23.1	23.7	18.8	24.7	25.9	30.472	13.1	49.6
Dec 9	38.1	29.0	25.8	29.2	18.9	35.9	36.2	30.046	11.9	52
Dec 10	37.9	34.4	35.6	24.1	21.8	41.5	38.8	28.297	14.1	52.9
Dec 11	35.1	27.9	29.6	24.7	21.0	38.4	28.3	28.324	7.8	46.7
Dec 12	29.4	26.8	27.2	31.8	27.4	25.6	24.6	28.295	10.5	48.6
Dec 13	39.5	27.7	28.0	25.6	26.3	17.1	24.3	27.733	9.0	44.4
Dec 14	31.3	29.5	21.9	23.4	18.3	9.7	34.1	28.788	9.7	48.6
Dec 15	34.5	20.4	18.1	23.2	27.6	14.1	26.6	28.471	12.2	49.2
Dec 16	37.5	24.3	21.1	25.9	22.7	21.5	31.8	28.268	9.3	46.1
Dec 17	32.6	29.9	32.5	19.0	20.7	19.3	23.3	27.488	9.7	49.6
Dec 18	35.7	32.8	42.3	18.2	29.9	18.7	22.9	27.959	13.2	48.7
Dec 19	30.8	37.5	45.3	27.5	30.9	20.7	37.3	28.559	3.7	46.3
Dec 20	34.5	39.2	38.7	22.8	33.4	16.9	31.5	29.249	8.3	47.2
Dec 21	25.6	30.9	26.6	29.4	33.3	16.5	39.5	28.216	5.8	52.5
Dec 22	31.0	27.7	35.1	29.7	28.9	20.4	31.3	28.416	13.4	43
Dec 23	33.3	38.5	22.5	15.6	22.2	31.2	40.3	28.483	12.7	46.5
Dec 24	26.9	39.4	26.7	28.7	16.7	31.2	24.9	27.516	6.0	45.4
Dec 25	18.1	34.3	16.0	34.6	15.2	45.7	26.4	26.654	11.4	45.7
Dec 26	25.7	36.4	26.6	35.0	15.9	40.0	30.8	26.539	5.4	42.2
Dec 27	19.1	28.7	33.2	34.2	20.0	31.6	33.3	26.447	6.8	49
Dec 28	27.3	28.7	31.9	43.6	21.2	27.8	33.9	25.858	5.7	44.4
Dec 29	30.4	21.9	32.2	49.4	19.4	25.9	39.0	25.731	7.7	49.4
Dec 30	25.5	18.5	39.2	46.9	24.3	23.3	30.2	26.481	8.0	46.9
Dec 31	36.2	36.2	29.4	29.4	29.4	29.4	30.0	24.590	12.6	37.1

Mean	53.3	52.3	51.7	53.5	51.3	52.5	51.3
Min	11.1	9.1	12.0	15.6	15.2	8.9	10.9
Max	89.3	83.3	87.7	89.3	85.2	91.1	91.6

Average daily temp:	51.88
Min daily temperature:	3.70
Max daily temperature:	94.0

TABLE 16. SITE-WIDE HYDRAULIC CONDUCTIVITY TEST RESULTS

Well/Test	Cell	Test Unit	Static Water Level (ft.btc)	Total Depth (ft)	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Well Hydraulic Conductivity (cm/sec)	Log Hydraulic Conductivity (log[cm/sec])	Well Hydraulic Conductivity (log[cm/sec])
PZ-1#1		Unit 2 Clay	14.75	30.4	3.49	1.23E-03		-2.910	
PZ-1#2		Unit 2 Clay	14.75	30.4	3.56	1.26E-03	1.24E-03	-2.901	-2.905
DH-31B1	MW	Unit 2 Clay	31.69	34.18	2.359	8.32E-04		-3.080	
DH-31B2	MW	Unit 2 Clay	31.69	34.18	2.661	9.39E-04		-3.027	
DH-31B3	MW	Unit 2 Clay	31.69	34.18	2.428	8.56E-04	8.76E-04	-3.067	-3.058
DH-32A1	LARW	Unit 2 Clay	28.63	33.26	0.030	1.08E-05		-4.968	
DH-32A2	LARW	Unit 2 Clay	28.63	33.26	0.033	1.17E-05	1.12E-05	-4.931	-4.949
DH-33A1	MW	Unit 2 Clay	31.03	33.83	0.006	2.23E-06	2.23E-06	-5.652	-5.652
DH-59A1	11.e(2)	Unit 3 Sand	20.99		0.186	6.55E-05		-4.184	
DH-59A2	11.e(2)	Unit 3 Sand	20.99		0.688	2.43E-04		-3.615	
DH-59A3	11.e(2)	Unit 3 Sand	20.99		0.861	3.04E-04	2.04E-04	-3.517	-3.772
DH-62A1	11.e(2)	Unit 3 Sand	21.37		2.938	1.04E-03		-2.985	
DH-62A3	11.e(2)	Unit 3 Sand	21.37		2.938	1.04E-03		-2.985	
DH-62B2	11.e(2)	Unit 3 Sand	21.37		2.868	1.01E-03	1.03E-03	-2.995	-2.988
GW-16R-A1	LARW	Unit 2 Clay	31.81	36.94	1.754	6.19E-04		-3.208	
GW-16R-B1	LARW	Unit 2 Clay	31.81	36.94	1.979	6.98E-04		-3.156	
GW-16R-B2	LARW	Unit 2 Clay	31.81	36.94	1.028	3.63E-04	5.60E-04	-3.440	-3.268
GW-17AA1	VITRO	Unit 2 Clay	27.95	34.61	2.074	7.32E-04		-3.136	
GW-17AB1	VITRO	Unit 2 Clay	27.95	34.61	2.497	8.81E-04		-3.055	
GW-17AB2	VITRO	Unit 2 Clay	27.95	34.61	2.393	8.44E-04	8.19E-04	-3.074	-3.088
GW-19AA1	11.e(2)	Unit 3 Sand	20.4	29.44	0.221	7.80E-05		-4.108	
GW-19AB1	11.e(2)	Unit 3 Sand	20.4	29.44	0.178	6.28E-05		-4.202	
GW-19AB2	11.e(2)	Unit 3 Sand	20.4	29.44	0.253	8.93E-05	7.67E-05	-4.049	-4.120
GW-20-A1	LARW	Unit 2 Clay	25.92	36.05	5.011	1.77E-03		-2.753	
GW-20-A2	LARW	Unit 2 Clay	25.92	36.05	5.495	1.94E-03		-2.713	
GW-20-A3	LARW	Unit 2 Clay	25.92	36.05	6.661	2.35E-03	2.02E-03	-2.629	-2.698
GW-21A1	VITRO	Unit 2 Clay	35.51	44.26	5.149	1.82E-03		-2.741	
GW-21A2	VITRO	Unit 2 Clay	35.51	44.26	4.251	1.50E-03		-2.824	
GW-21A3	VITRO	Unit 2 Clay	35.51	44.26	5.365	1.89E-03	1.74E-03	-2.723	-2.763
GW-22-A1	LARW	Unit 2 Clay	27.64	33.3	2.445	8.63E-04		-3.064	
GW-22-A2	LARW	Unit 2 Clay	27.64	33.3	2.203	7.77E-04		-3.109	
GW-22-A3	LARW	Unit 2 Clay	27.64	33.3	2.108	7.44E-04	7.95E-04	-3.129	-3.101
GW-23-A3	LARW	Unit 2 Clay	26.66	33.28	1.469	5.18E-04		-3.286	
GW-23-B1	LARW	Unit 2 Clay	26.66	33.28	1.693	5.97E-04	5.58E-04	-3.224	-3.255
GW-24-A1	LARW	Unit 2 Clay	26.32	33.18	0.605	2.13E-04		-3.671	
GW-24-B1	LARW	Unit 2 Clay	26.32	33.18	0.775	2.73E-04		-3.563	
GW-24-B2	LARW	Unit 2 Clay	26.32	33.18	0.719	2.54E-04	2.47E-04	-3.596	-3.610
GW-25-B1	11.e(2)	Unit 3 Sand	25.65	35	2.316	8.17E-04		-3.088	
GW-25-B2	11.e(2)	Unit 3 Sand	25.65	35	3.326	1.17E-03		-2.931	
GW-25-B3	11.e(2)	Unit 3 Sand	25.65	35	3.568	1.26E-03		-2.900	
GW-25-B4	11.e(2)	Unit 3 Sand	25.65	35	2.557	9.02E-04		-3.045	
GW-25-B5	11.e(2)	Unit 3 Sand	25.65	35	3.154	1.11E-03	1.05E-03	-2.954	-2.983
GW-26-A1	11.e(2)	Unit 3 Sand	24.83	31	0.950	3.35E-04		-3.475	
GW-26-A2	11.e(2)	Unit 3 Sand	24.83	31	0.924	3.26E-04	3.31E-04	-3.487	-3.481
GW-27A1	11.e(2)	Unit 3 Sand	23.35	32	0.125	4.42E-05		-4.355	
GW-27B1	11.e(2)	Unit 3 Sand	23.35	32	0.074	2.60E-05		-4.585	
GW-27B2	11.e(2)	Unit 3 Sand	23.35	32	0.098	3.44E-05	3.49E-05	-4.463	-4.467
GW-28A1	11.e(2)	Unit 3 Sand	21.35	31.41	0.684	2.41E-04		-3.617	
GW-28B1	11.e(2)	Unit 3 Sand	21.35	31.41	0.569	2.01E-04		-3.697	
GW-28B2	11.e(2)	Unit 3 Sand	21.35	31.41	0.431	1.52E-04	1.98E-04	-3.818	-3.711
GW-29A1	LARW	Unit 2 Clay	25.83		2.436	8.60E-04		-3.066	
GW-29A2	LARW	Unit 2 Clay	25.83		0.582	2.05E-04		-3.687	
GW-29A3	LARW	Unit 2 Clay	25.83		1.331	4.69E-04	5.11E-04	-3.328	-3.361
GW-36A1	11.e(2)	Unit 3 Sand	20.81	31.64	1.875	6.61E-04		-3.180	
GW-36A2	11.e(2)	Unit 3 Sand	20.81	31.64	1.728	6.10E-04		-3.215	
GW-36A3	11.e(2)	Unit 3 Sand	20.81	31.64	1.840	6.49E-04	6.40E-04	-3.188	-3.194
GW-37A1	11.e(2)	Unit 3 Sand	19.37	31.74	0.976	3.44E-04		-3.463	
GW-37B1	11.e(2)	Unit 3 Sand	19.37	31.74	1.020	3.60E-04		-3.444	
GW-37B2	11.e(2)	Unit 3 Sand	19.37	31.74	1.071	3.78E-04	3.61E-04	-3.423	-3.443
GW-38A1	11.e(2)	Unit 3 Sand	21.99	32.14	1.788	6.31E-04		-3.200	
GW-38B1	11.e(2)	Unit 3 Sand	21.99	32.14	1.572	5.55E-04		-3.256	
GW-38B2	11.e(2)	Unit 3 Sand	21.99	32.14	1.572	5.55E-04	5.80E-04	-3.256	-3.237
GW-41A1	MW	Unit 2 Clay	30.15	37.48	1.391	4.91E-04		-3.309	
GW-41B1	MW	Unit 2 Clay	30.15	37.48	2.048	7.22E-04		-3.141	
GW-41B2	MW	Unit 2 Clay	30.15	37.48	1.979	6.98E-04	6.37E-04	-3.156	-3.202
GW-42A1	MW	Unit 2 Clay	29.96	37.06	2.195	7.74E-04		-3.111	
GW-42B1	MW	Unit 2 Clay	29.96	37.06	2.713	9.57E-04		-3.019	
GW-42B2	MW	Unit 2 Clay	29.96	37.06	2.246	7.92E-04	8.41E-04	-3.101	-3.077
GW-43A1	MW	Unit 2 Clay	31.22	37.68	2.056	7.25E-04		-3.139	
GW-43B2	MW	Unit 2 Clay	31.22	37.68	3.231	1.14E-03		-2.943	
GW-43B3	MW	Unit 2 Clay	31.22		2.843	1.00E-03	9.56E-04	-2.999	-3.027
GW-44A1	MW	Unit 2 Clay	29.67	36.82	1.400	4.94E-04		-3.306	
GW-44B1	MW	Unit 2 Clay	29.67	36.82	2.359	8.32E-04		-3.080	
GW-44B2	MW	Unit 2 Clay	29.67	36.82	2.229	7.86E-04	7.04E-04	-3.104	-3.164
GW-45A1	MW	Unit 2 Clay	29.87	36.85	0.459	1.62E-04		-3.791	
GW-45B1	MW	Unit 2 Clay	29.87	36.85	0.682	2.40E-04		-3.619	
GW-45B2	MW	Unit 2 Clay	29.87	36.85	0.687	2.42E-04	2.15E-04	-3.616	-3.675
GW-46A1	MW	Unit 2 Clay	29.85	37.31	0.296	1.05E-04		-3.981	
GW-46B1	MW	Unit 2 Clay	29.85	37.31	0.300	1.06E-04		-3.976	
GW-46B2	MW	Unit 2 Clay	29.85	37.31	0.330	1.16E-04	1.09E-04	-3.934	-3.963
GW-56R-A1	LARW	Unit 2 Clay	29.71	36.5	6.843	2.41E-03		-2.617	
GW-56R-A2	LARW	Unit 2 Clay	29.71	36.5	2.635	9.30E-04		-3.032	
GW-56R-A3	LARW	Unit 2 Clay	29.71	36.5	4.225	1.49E-03		-2.827	
GW-56R-A4	LARW	Unit 2 Clay	29.71	36.5	7.422	2.62E-03	1.86E-03	-2.582	-2.764

TABLE 16. SITE-WIDE HYDRAULIC CONDUCTIVITY TEST RESULTS

Well/Test	Cell	Test Unit	Static Water Level (ft.btc)	Total Depth (ft)	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Well Hydraulic Conductivity (cm/sec)	Log Hydraulic Conductivity (log[cm/sec])	Well Hydraulic Conductivity (log[cm/sec])
GW-57A1	11.e(2)	Unit 3 Sand	22.38	32.13	0.461	1.63E-04		-3.788	
GW-57B1	11.e(2)	Unit 3 Sand	22.38	32.13	0.334	1.18E-04		-3.928	
GW-57B2	11.e(2)	Unit 3 Sand	22.38	32.13	0.527	1.86E-04	1.56E-04	-3.731	-3.816
GW-58A1	11.e(2)	Unit 3 Sand	20.58	31.77	1.590	5.61E-04		-3.251	
GW-58B1	11.e(2)	Unit 3 Sand	20.58	31.77	1.322	4.66E-04		-3.331	
GW-58B2	11.e(2)	Unit 3 Sand	20.58	31.77	0.950	3.35E-04	4.54E-04	-3.475	-3.352
GW-60-A1	11.e(2)	Unit 3 Sand	23.71	29.44	5.694	2.01E-03		-2.697	
GW-60-A3	11.e(2)	Unit 3 Sand	23.71	29.44	13.565	4.79E-03	3.40E-03	-2.320	-2.509
GW-63-A1	11.e(2)	Unit 3 Sand	20.75		2.532	8.93E-04		-3.049	
GW-63-A2	11.e(2)	Unit 3 Sand	20.75	31.1	2.462	8.69E-04		-3.061	
GW-63-A3	11.e(2)	Unit 3 Sand	20.75	31.1	1.279	4.51E-04	7.38E-04	-3.346	-3.152
GW-64-B1	LARW	Unit 2 Clay	29.08	36.61	2.048	7.22E-04		-3.141	
GW-64-B2	LARW	Unit 2 Clay	29.08	36.61	1.875	6.61E-04		-3.180	
GW-64-B4	LARW	Unit 2 Clay	29.08		1.970	6.95E-04	6.93E-04	-3.158	-3.160
GW-66A1	MW	Unit 2 Clay	29.74	37.36	0.218	7.68E-05		-4.115	
GW-66B1	MW	Unit 2 Clay	29.74	37.36	0.148	5.21E-05		-4.283	
GW-66B2	MW	Unit 2 Clay	29.74	37.36	0.290	1.02E-04	7.71E-05	-3.990	-4.129
GW-67A1	MW	Unit 2 Clay	32.85	39.63	0.976	3.44E-04		-3.463	
GW-67B1	MW	Unit 2 Clay	32.85	39.63	1.192	4.21E-04		-3.376	
GW-67B2	MW	Unit 2 Clay	32.85	39.63	1.166	4.11E-04		-3.386	
GW-67 #1	MW	Unit 2 Clay	32.54	40.83	1.98	6.99E-04		-3.156	
GW-67 #2	MW	Unit 2 Clay	32.54	40.83	1.97	6.95E-04	5.14E-04	-3.158	-3.308
GW-67R#1	MW	Unit 2 Clay	31.8	39.3	5.32	1.88E-03		-2.727	
GW-67R#2	MW	Unit 2 Clay	31.8	39.3	5.25	1.85E-03	1.86E-03	-2.732	-2.729
GW-68A1	MW	Unit 2 Clay	33.23	42.09	0.327	1.16E-04		-3.937	
GW-68B1	MW	Unit 2 Clay	33.23	42.09	0.270	9.54E-05		-4.020	
GW-68B2	MW	Unit 2 Clay	33.23	42.09	0.260	9.17E-05		-4.037	
GW-68 #1	MW	Unit 2 Clay	32.75	43.96	0.94	3.32E-04		-3.479	
GW-68 #2	MW	Unit 2 Clay	32.75	43.96	0.93	3.28E-04	1.92E-04	-3.484	-3.792
GW-68R#1	MW	Unit 2 Clay	32.62	39.15	8.24	2.91E-03		-2.537	
GW-68R#2	MW	Unit 2 Clay	32.62	39.15	8.44	2.98E-03	2.94E-03	-2.526	-2.531
GW-69B1	MW	Unit 2 Clay	32.44	40.68	0.124	4.39E-05		-4.358	
GW-69A1	MW	Unit 2 Clay	32.44	40.68	0.131	4.63E-05		-4.334	
GW-69 #1	MW	Unit 2 Clay	32.11	42.35	2.82	9.95E-04		-3.002	
GW-69 #2	MW	Unit 2 Clay	32.11	42.35	2.12	7.48E-04	4.58E-04	-3.126	-3.705
GW-69R#1	MW	Unit 2 Clay	32.13	39.4	4.25	1.50E-03		-2.824	
GW-69R#2	MW	Unit 2 Clay	32.13	39.4	3.32	1.17E-03	1.34E-03	-2.931	-2.878
GW-70A1	MW	Unit 2 Clay	32.82	42.36	0.463	1.63E-04		-3.787	
GW-70B1	MW	Unit 2 Clay	32.82	42.36	0.606	2.14E-04		-3.670	
GW-70B2	MW	Unit 2 Clay	32.82	42.36	0.480	1.69E-04		-3.772	
GW-70 #1	MW	Unit 2 Clay	32.46	42.45	7.98	2.82E-03		-2.550	
GW-70 #2	MW	Unit 2 Clay	32.46	42.45	7.79	2.75E-03	1.22E-03	-2.561	-3.268
GW-71A1	MW	Unit 2 Clay	32.51	42.4	4.355	1.54E-03		-2.814	
GW-71B1	MW	Unit 2 Clay	32.51	42.4	2.402	8.47E-04		-3.072	
GW-71B2	MW	Unit 2 Clay	32.51	42.4	2.203	7.77E-04		-3.109	
GW-71 #1	MW	Unit 2 Clay	32.08	43.97	8.89	3.14E-03		-2.504	
GW-71 #2	MW	Unit 2 Clay	32.08	43.97	8.86	3.13E-03	1.88E-03	-2.505	-2.801
GW-75A1	LARW	Unit 2 Clay	28.9		0.026	9.33E-06		-5.030	
GW-75A2	LARW	Unit 2 Clay	28.9		0.066	2.33E-05	1.63E-05	-4.633	-4.832
GW-76A1	LARW	Unit 2 Clay	27.81		0.046	1.61E-05		-4.794	
GW-76A2	LARW	Unit 2 Clay	27.81		0.282	9.94E-05	5.77E-05	-4.003	-4.398
GW-77 #1	LARW	Unit 2 Clay	32.7	40	2.56	9.03E-04		-3.044	
GW-77 #2	LARW	Unit 2 Clay	32.7	40	2.5	8.82E-04	8.93E-04	-3.055	-3.049
GW-78 #1		Unit 2 Clay	30.98	40	5.08	1.79E-03		-2.747	
GW-78 #2		Unit 2 Clay	30.98	40	4.15	1.46E-03	1.63E-03	-2.834	-2.791
GW-79 #1	MW	Unit 2 Clay	30.32	36.5	4.5	1.59E-03		-2.799	
GW-79 #2	MW	Unit 2 Clay	30.32	36.5	4.12	1.45E-03	1.52E-03	-2.838	-2.818
GW-80 #1	MW	Unit 2 Clay	26.04	36.18	4.91	1.73E-03		-2.761	
GW-80 #2	MW	Unit 2 Clay	26.04	36.18	5.01	1.77E-03	1.75E-03	-2.753	-2.757
GW-81 #1	WLARW	Unit 2 Clay	28.12	36.71	1.490	5.26E-04		-3.279	
GW-81 #2	WLARW	Unit 2 Clay	28.12	36.71	1.470	5.19E-04	5.22E-04	-3.285	-3.282
GW-82 #1	WLARW	Unit 2 Clay	27.68	36.44	1.820	6.42E-04		-3.192	
GW-82 #2	WLARW	Unit 2 Clay	27.68	36.44	1.450	5.12E-04	5.77E-04	-3.291	-3.242
GW-83 #1	WLARW	Unit 3 Sand	27.71	36.45	8.540	3.01E-03		-2.521	
GW-83 #2	WLARW	Unit 3 Sand	27.71	36.45	8.760	3.09E-03	3.05E-03	-2.510	-2.516
GW-84 #1	WLARW	Unit 2 Clay	27.95	36.76	10.950	3.86E-03		-2.413	
GW-84 #2	WLARW	Unit 2 Clay	27.95	36.76	10.300	3.63E-03	3.75E-03	-2.440	-2.426
GW-85 #1	WLARW	Unit 2 Clay	28.47	37.34	11.140	3.93E-03		-2.406	
GW-85 #2	WLARW	Unit 2 Clay	28.47	37.34	11.180	3.94E-03	3.94E-03	-2.404	-2.405
GW-86 #1	WLARW	Unit 2 Clay	28.73	41.4	4.800	1.69E-03		-2.771	
GW-86 #2	WLARW	Unit 2 Clay	28.73	41.4	4.570	1.61E-03	1.65E-03	-2.793	-2.782
GW-88 #1	WLARW	Unit 2 Clay	29.86	36.78	2.660	9.38E-04		-3.028	
GW-88 #2	WLARW	Unit 2 Clay	29.86	36.78	2.920	1.03E-03	9.84E-04	-2.987	-3.007
GW-89 #1	WLARW	Unit 2 Clay	29.43	37.02	1.670	5.89E-04		-3.230	
GW-89 #2	WLARW	Unit 2 Clay	29.43	37.02	1.880	6.63E-04	6.26E-04	-3.178	-3.204
GW-90 #1	WLARW	Unit 2 Clay	28.64	36.84	8.860	3.13E-03		-2.505	
GW-90 #2	WLARW	Unit 2 Clay	28.64	36.84	7.780	2.74E-03	2.94E-03	-2.562	-2.533
GW-91 #1	WLARW	Unit 2 Clay	28.37	36.92	5.730	2.02E-03		-2.694	
GW-91 #2	WLARW	Unit 2 Clay	28.37	36.92	5.480	1.93E-03	1.98E-03	-2.714	-2.704
GW-92 #1	WLARW	Unit 2 Clay	28.33	36.93	2.450	8.64E-04		-3.063	
GW-92 #2	WLARW	Unit 2 Clay	28.33	36.93	2.470	8.71E-04	8.68E-04	-3.060	-3.062
GW-93 #1	WLARW	Unit 2 Clay	27.28	37.49	17.04	6.01E-03		-2.221	
GW-93 #2	WLARW	Unit 2 Clay	27.28	37.49	16.72	5.90E-03	5.96E-03	-2.229	-2.225
GW-94 #1	WLARW	Unit 2 Clay	26.15	36.91	12.730	4.49E-03		-2.348	

TABLE 16. SITE-WIDE HYDRAULIC CONDUCTIVITY TEST RESULTS

Well/Test	Cell	Test Unit	Static Water Level (ft.btc)	Total Depth (ft)	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Well Hydraulic Conductivity (cm/sec)	Log Hydraulic Conductivity (log[cm/sec])	Well Hydraulic Conductivity (log[cm/sec])
GW-94 #2	WLARW	Unit 2 Clay	26.15	36.91	13.710	4.84E-03	4.66E-03	-2.315	-2.332
GW-95 #1	WLARW	Unit 3 Sand	26.9	31.99	1.040	3.67E-04		-3.435	
GW-95 #2	WLARW	Unit 3 Sand	26.9	31.99	1.010	3.56E-04	3.62E-04	-3.448	-3.442
GW-99 #1	WLARW	Unit 3 Sand	24.43	31.8	0.850	3.00E-04		-3.523	
GW-99 #2	WLARW	Unit 3 Sand	24.43	31.8	0.820	2.89E-04	2.95E-04	-3.539	-3.531
GW-100 #1	WLARW	Unit 3 Sand	25.24	32.95	1.780	6.28E-04		-3.202	
GW-100 #2	WLARW	Unit 3 Sand	25.24	32.95	1.870	6.60E-04	6.44E-04	-3.181	-3.191
GW-101 #1	WLARW	Unit 3 Sand	26.1	36.53	2.360	8.33E-04		-3.080	
GW-101 #2	WLARW	Unit 3 Sand	26.1	36.53	1.910	6.74E-04	7.53E-04	-3.171	-3.126
GW-102 #1	WLARW	Unit 3 Sand	26.85	36.8	2.370	8.36E-04		-3.078	
GW-102 #2	WLARW	Unit 3 Sand	26.85	36.8	2.460	8.68E-04	8.52E-04	-3.062	-3.070
GW-103	LARW	Unit 2 Clay	27.79	41.32	11.45	4.04E-03		-2.394	
GW-103	LARW	Unit 2 Clay	27.79	41.32	11.67	4.12E-03		-2.386	
GW-103	LARW	Unit 2 Clay	27.79	41.32	17.83	6.29E-03		-2.201	
GW-103	LARW	Unit 2 Clay	27.79	41.32	8.85	3.12E-03	4.39E-03	-2.505	-2.372
GW-104	LARW	Unit 2 Clay	28.39	40.28	7.17	2.53E-03		-2.597	
GW-104	LARW	Unit 2 Clay	28.39	40.28	10.39	3.66E-03		-2.436	
GW-104	LARW	Unit 2 Clay	28.39	40.28	8.89	3.14E-03	3.11E-03	-2.503	-2.512
GW-105	LARW	Unit 2 Clay	28.92	38.58	15.72	5.55E-03		-2.256	
GW-105	LARW	Unit 2 Clay	28.92	38.58	15.18	5.35E-03		-2.271	
GW-105	LARW	Unit 2 Clay	28.92	38.58	15.80	5.57E-03	5.49E-03	-2.254	-2.260
I-1-30A1	MW	Unit 2 Clay	29.71	37.72	2.203	7.77E-04		-3.109	
I-1-30A2	MW	Unit 2 Clay	29.71	37.72	2.402	8.47E-04		-3.072	
I-1-30A3	MW	Unit 2 Clay	29.71	37.72	2.359	8.32E-04	8.19E-04	-3.080	-3.087
I-2-30A2	LARW	Unit 2 Clay	30.37	40.22	0.494	1.74E-04	1.74E-04	-3.759	-3.759
I-3-30A1	MW	Unit 2 Clay	32.29	37.12	1.097	3.87E-04		-3.412	
I-3-30B1	MW	Unit 2 Clay	32.29	37.12	0.633	2.23E-04		-3.651	
I-3-30B2	MW	Unit 2 Clay	32.29	37.12	0.670	2.36E-04	2.82E-04	-3.627	-3.563
GW-106	A,B&C		27.26		1.75	6.19E-04		-3.208	
GW-106	A,B&C		27.26		1.68	5.94E-04	6.07E-04	-3.226	-3.217
GW-107	A,B&C		26.98		1.41	4.96E-04		-3.305	
GW-107	A,B&C		26.98		1.54	5.45E-04	5.21E-04	-3.264	-3.284
GW-108	A,B&C		26.56		1.82	6.41E-04		-3.193	
GW-108	A,B&C		26.56		1.74	6.13E-04	6.27E-04	-3.213	-3.203
GW-109	A,B&C		27.38		1.84	6.50E-04		-3.187	
GW-109	A,B&C		27.38		1.71	6.04E-04	6.27E-04	-3.219	-3.203
GW-110	A,B&C		27.55		2.27	8.00E-04		-3.097	
GW-110	A,B&C		27.55		2.10	7.41E-04	7.71E-04	-3.130	-3.114
GW-111	A,B&C		27.81		5.39	1.90E-03		-2.721	
GW-111	A,B&C		27.81		4.39	1.55E-03	1.73E-03	-2.810	-2.765
GW-112	A,B&C		28.31		5.95	2.10E-03		-2.678	
GW-112	A,B&C		28.31		6.49	2.29E-03	2.20E-03	-2.640	-2.659
GW-113	A,B&C		29.56		3.12	1.10E-03		-2.959	
GW-113	A,B&C		29.56		2.69	9.50E-04	1.03E-03	-3.022	-2.990
GW-114	A,B&C		30.04		3.03	1.07E-03		-2.971	
GW-114	A,B&C		30.04		3.37	1.19E-03	1.13E-03	-2.924	-2.948
GW-115	A,B&C		30.46		3.94	1.39E-03		-2.857	
GW-115	A,B&C		30.46		4.11	1.45E-03	1.42E-03	-2.839	-2.848
GW-116	A,B&C		31.35		6.72	2.37E-03		-2.625	
GW-116	A,B&C		31.35		7.06	2.49E-03	2.43E-03	-2.604	-2.615
GW-117	A,B&C		30.46		5.75	2.03E-03		-2.693	
GW-117	A,B&C		30.46		6.32	2.23E-03	2.13E-03	-2.652	-2.672
GW-118	MW		35.05	46.6	6.98	2.46E-03		-2.608	
GW-118	MW		35.05	46.6	6.70	2.36E-03	2.41E-03	-2.627	-2.618
GW-119	MW		35.55	46.6	0.78	2.73E-04		-3.563	
GW-119	MW		35.55	46.6	3.04	1.07E-03	6.72E-04	-2.970	-3.267
GW-120	MW		36.31	46.5	5.76	2.03E-03		-2.692	
GW-120	MW		36.31	46.5	6.88	2.43E-03	2.23E-03	-2.615	-2.654
GW-121	MW		36.75	46.22	0.34	1.21E-04		-3.919	
GW-121	MW		36.75	46.22	0.34	1.18E-04	1.20E-04	-3.927	-3.923
GW-122	MW		36.54	44.53	2.21	7.79E-04		-3.108	
GW-122	MW		36.54	44.53	2.35	8.28E-04	8.04E-04	-3.082	-3.095
GW-123	MW		39.91	51.4	5.45	1.92E-03		-2.716	
GW-123	MW		39.91	51.4	1.82	6.43E-04	1.28E-03	-3.192	-2.954
GW-124	MW		29.19	42.44	0.80	2.84E-04		-3.547	
GW-124	MW		29.19	42.44	0.72	2.55E-04	2.69E-04	-3.594	-3.571
GW-38R	11e.(2)		24.55	37.33	0.28	1.00E-04		-3.999	
GW-38R	11e.(2)		24.55	37.33	0.29	1.04E-04	1.02E-04	-3.983	-3.991
P3-95 NEC	Pond		33.78	41.92	0.98	3.46E-04		-3.461	
P3-95 NEC	Pond		33.78	41.92	0.81	2.87E-04		-3.542	
P3-95 NEC	Pond		33.78	41.92	0.85	3.01E-04	3.11E-04	-3.522	-3.508
P3-95 SWC	Pond		31.15	39.3	0.13	4.53E-05		-4.344	
P3-95 SWC	Pond		31.15	39.3	0.10	3.48E-05	4.01E-05	-4.458	-4.401
P3-97 NEC	Pond		32.95	36.96	0.73	2.58E-04		-3.589	
P3-97 NEC	Pond		32.95	36.96	0.32	1.13E-04	1.86E-04	-3.945	-3.767

		Mean log[K]	-3.215
Mean K (cm/s)	1.18E-03	Geo Mean K:	6.09E-04

Site-wide mean K 1.18E-03
Site-wide Geometric Mean K 6.09E-04

90% UCL Site-wide Geometric Mean K 7.67E-04
90% LCL Site-wide Geometric Mean K 4.81E-04

TABLE 27. SORPTION COEFFICIENT (K_d) VALUES FOR RADIONUCLIDES AND METALS

Ac-225	4.5	Sheppard, M.I. and Thibault, D.H. 1990 gave a calculated Kd value = 450 L/kg, which was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. In the model, the Kd value was conservatively set two orders of magnitude lower than calculated value by Sheppard and Thibault Lowest value from McKinley, I.G., et al. 1991, in surficial sediments is 250 L/kg.
Ag-105 Ag-108m Ag-110m Ag-111 Ag	2.7	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values). The range of 12 reported values in sand was 2.7 to 1,000 L/kg, with a mean value of 90 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 10 L/kg. Recommended value is 100 L/kg. Site-specific in-situ Kd value of 218 L/kg (+/- 0.5) determined by Enchemica (2002). MFG (2000) determined site-specific batch Kd of 0.579 L/kg, with a range of 0 to 6.72 L/kg.
Al-26	15	Default Kd estimated to be 1500 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Am-241 Am-242 Am-242m Am-243	1	Lowest Kd value from "Estimation of Geochemical Parameters for Assessing Subsurface Transport at the Savannah River Plant," by B.B. Looney, M.W. Grant, and C.M. King, DuPont DPST-85-904, March 1987, Table 1, is 1 L/kg. Recommended value is 100 L/kg. Lowest Kd value for soil/surface sediments found in McKinley, I.G. and Scholtis, A., 1993, Table 4. Kd values for soil/surface sediments ranged from 100 to 100,000 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 8.2 L/kg. The range of 29 reported values in sand was 8.2 to 300,000 L/kg, with a mean value of 1,900 L/kg.
As-73 As-74 As	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 10 L/kg. Reported range is 1-10. Recommended value is 3.16 L/kg. Site-specific in-situ Kd value of 103 L/kg (+/- 1.6) determined by Enchemica (2002). MFG (2000) determined site-specific batch Kd of 4.5 L/kg, with a range of 3.66 to 45.6 L/kg.
Au-195 Au-198 Au-199	0.25	Default Kd estimated to be 25 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Ba-133 Ba-140 Ba	10	Literature range of Ba Kd values in Bingham (1993) report is 10 - 1,000,000 L/kg, and 10 L/kg value was by DRC in previous modeling. The contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984) uses a default Kd value of 60 L/kg. Site-specific in-situ Kd value of 9,224 L/kg (+/- 77) determined by Enchemica (2002). MFG (2000) determined site-specific batch Kd of 14.2 L/kg, with a range of 9 to 22.2 L/kg.
Be-7 Be	2.5	Sheppard, M.I. and Thibault, D.H. (1990) calculated Kd value = 250 L/kg, which was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. In the model, the Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard and Thibault The CR values used were taken from Baes et al. (1984) Site-specific in-situ Kd value of 121 L/kg (+/- 0.15) determined by Enchemica (2002). MFG (2000) determined site-specific batch Kd of 27.9 L/kg, with a range of >27.9 to >2,862 L/kg.
Bk-249 Bk-250	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg. Berkelium is a member of the actinide rare earth series. All rare earth elements have similar physical and chemical properties. ("General Chemistry" by Nebergall, et al., 1976.) Kd values are available for Np, Am and Cm, which are also actinide rare earth elements. Consequently, it is reasonable to assign the lowest Kd value from these three elements (Am) to berkelium, Kd = 1 L/kg.
Bi-205 Bi-206 Bi-207 Bi-210m	1	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 100 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
C-14	8.52	Kd value from site-specific measurements. See the Response to Interrogatories (ABC 1997) which includes a re-evaluation of the Bingham (1995) Kd values. (Summary of Results, Radionuclide Kd Tests, Bingham Environmental, Inc. August 3, 1995). The lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 1.7 L/kg. The range of 3 reported values in sand was 1.7 to 7.1 L/kg, with a mean value of 5 L/kg.
Ca-45 Ca-47	0.05	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 50 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Cd-109 Cd-113m Cd	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 1 L/kg. Recommended value is 6.3 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 2.7 L/kg. The range of 14 reported values in sand was 2.7 to 625 L/kg, with the mean value at 80 L/kg. Site-specific laboratory batch Kd of 2.39 determined by MFG (2000), with a range of 0.703 to 4.0 L/kg.
Ce-139 Ce-141 Ce-143 Ce-144	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 1000 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 40 L/kg. The range of 12 reported values in sand was 40 to 3,968 L/kg, with a mean value of 500 L/kg.
Cf Cf-248 Cf-249 Cf-250 Cf-251 Cf-252	2	Kd value of 2.0 is two orders of magnitude lower than the default Kd value of 200 L/kg used in the RESRAD code (EAD, 2001; Yu et al., 1993, 2000). The RESRAD code was developed at Argonne National Laboratory and is authorized for use at DOE Sites, under DOE Order 5400.5. Kd value of 2.0 approved by DRC (DRC, Sept 2001.) In NUREG/CR-5512, Vol. 1, a Cf Kd value of 510 is used (Kennedy and Strenge, 1992). A letter report prepared by Sandia National Laboratory for the NRC reviewed the parameter data for NUREG/CR-5512 and suggesgted a Kd value of 158 for Cf (Beveler, et al., 1998.) Californium is a member of the actinide rare earth series. All rare earth elements have similar physical and chemical properties. ("General Chemistry" by Nebergall, Schmidt, and Holtzclaw, D.C. Health and Company, 1976, p. 905). Kd values are available for Np, Am and Cm, which are also actinide rare earth elements.

TABLE 27. SORPTION COEFFICIENT (K_d) VALUES FOR RADIONUCLIDES AND METALS

Cl-36	0.0025	Default Kd estimated to be 0.25 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). Kd value in model is conservatively set two orders of magnitude lower than the default value used by TERRA.
Cm-241 Cm-242 Cm-243 Cm-244 Cm-245 Cm-246 Cm-247 Cm-248	93.3	Lowest Kd value found in Baes, C.F. and Sharp, R.D. (1983) is 93.3. The range of the 31 reported values was 93.3 to 51,900 L/kg in agricultural soils and clays. The lowest Kd value found in Looney, et al., March, 1987, Table 1 is 100 L/kg. Recommended value is 3162 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 780 L/kg. The range of 2 reported values in sand was 780 to 22,970 L/kg, with a mean value of 4,000 L/kg.
Co-56 Co-57 Co-58 Co-60	370	Site-specific Kd, reported by Bingham, 1996. Consistent with range of values in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1. The range of 33 reported values in sand was 0.07 to 9,000 L/kg, with a mean value of 60 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 0.1 L/kg. Recommended value is 1 L/kg.
Cr Cr-51	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 39.8 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 1.7 L/kg . The range of 15 reported values in sand was 1.7 to 1,729 L/kg, with a mean value of 70 L/kg. Site-specific in-situ Kd value of 459 L/kg (+/- 3.0) determined by Enchemica (2002). MFG (2000) determined site-specific batch Kd of 6.23 L/kg, with a range of 5.69 to 758 L/kg.
Cs-134 Cs-135 Cs-136 Cs-137	133	Site-specific Kd, reported by Bingham, 1996. Consistent with range of values in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (Range of 81 reported values in sand was 0.2 to 10,000 L/kg, with a mean value of 280 L/kg.) Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 10 L/kg. Recommended value is 501.1 L/kg.
Cu Cu-67	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1 is 1 L/kg. Recommended value is 25.11 L/kg. Site-specific laboratory batch Kd of 8.58 determined by MFG (2000), with a range of 0 to >2,365 L/kg.
Dy-166	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Es-253 Es-254	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg.
Eu-152 Eu-154 Eu-155 Eu-156	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Fe-52 Fe-55 Fe-59 Fe-60	1.4	Lowest Kd value found in Baes, C.F. and Sharp, R.D. (1983) is 1.4. The range of the 30 reported values was 1.4 to 1,000 L/kg in agricultural soils and clays. Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values) is 5 L/kg. The range of 16 reported values in sand was 5 to 6,000 L/kg, with a mean value of 280 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 100 L/kg.
Fm-252	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg.
Ga-67	15	Default Kd estimated to be 1500 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Gd-148 Gd-153	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Ge-68	0.25	Default Kd estimated to be 25 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
H-3	0.04	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values).
Hf-172 Hf-175 Hf-181	4.5	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 450 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Hg Hg-194 Hg-203	10	Kd value of 10.0 was from DRC, taken from Bingham Environmental value for stable mercury. (May, 1993 Report, Table 4-2 and August, 1993 Report, Table 3-4. Lowest Kd value found in Buchter et al., 1989, Table 3, for a sandy loam soil is 19.6 L/kg. The range of 11 reported values in various soil types was 19.6 to 299.2 L/kg. Kd values in interbed sediment range from 80.8 to 998 L/kg (Del Debbio, J.A., 1991). Site-specific laboratory batch Kd of 387 determined by MFG (2000), with a range of 0.586 to >388 L/kg.
Ho-166m	2.5	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 250 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd.
I-125 I-126 I-129 I-131 I-133	0.12	Kd value from Summary of Results, Radionuclide Kd Tests (Bingham Environmental, Inc. August 3, 1995) was 0.7 L/Kg. Re-evaluated in Response to Interrogatories (ABC 1997), with a recommended value of 0.46. Lowest slope of curve is 0.12 L/kg. The lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 0.04 L/kg. The range of 22 reported values in sand was 0.04 to 81 L/kg, with a mean value of 1.0 L/kg.
In-111 In-113m In-114 In-114m	15	Default Kd estimated to be 1500 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Ir-192	1.5	Default Kd estimated to be 150 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
K-40	0.15	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 15 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984) The lowest published Kd value for potassium is 2.0, found in Dragun (1988)
Kr-85	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg.

TABLE 27. SORPTION COEFFICIENT (K_d) VALUES FOR RADIONUCLIDES AND METALS

La-140	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Mn-52 Mn-52m Mn-54	6.4	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values). The range of 54 reported values was 6.4 to 5,000 L/kg, with a mean value of 50 L/kg.
Mo Mo-99	1.0	Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 1.0 L/kg. The range of 15 reported values in sand was 1.0 to 32 L/kg, with a geometric mean value of 10 L/kg. Kd conservatively set one order of magnitude lower than site-specific in-situ Kd value of 6.5 L/kg (+/- 0.51) determined by Enchemica (2002). MFG (2000) determined site-specific batch Kd of 0 L/kg, with a range of 0 to 0.260 L/kg.
Na-22	1	Default Kd estimated to be 100 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Nb-93m Nb-94	1.6	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 160 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Nd-144 Nd-147	6.5	Kd assigned a conservatively low value of 6.5 L/kg. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 650 L/kg (Baes et al. 1984).
Ni-59 Ni-63 Ni-63	10	Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 10 L/kg. Recommended value is 100 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 60 L/kg. The range of 11 reported values was 60 to 3,600 L/kg, with a mean value of 400 L/kg. Site-specific in-situ Kd value of 170 L/kg (+/- 2.7) determined by Enchemica (2002). MFG (2000) determined site-specific batch Kd of 18.6 L/kg, with a range of >7.96 to 60.9 L/kg.
Np-235 Np-237	3	Kd value from Summary of Results, Radionuclide Kd Tests (Bingham Environmental, Inc. August 3, 1995) was 400. Re-evaluation of the data (ABC 1997 Response to Interrogatories) calculated a Kd of 425. DRC recommended using the literature value. Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kds), is 0.5 L/kg, but applies to pH 2.0 solutions. Lowest value for pH>4.0 is greater than 3 L/kg. For pH = 7, Kd is over 20.
Os-191 Os-191m Os-194	4.5	Default Kd estimated to be 450 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Pa-231 Pa-233 Pa-234 Pa-234m	5.5	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 550 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
P-32 P-33	0.035	Default Kd estimated to be 3.5 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Pb-203 Pb-210	19	Note: Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 19 L/kg. The range of 3 reported values in sand was 19 to 1,405 L/kg, with a mean value of 150 L/kg. Geometric mean Kd is 270 L/kg. Default Kd estimated to be 900 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). Site-specific in-situ Kd value of 686 L/kg (+/- 1.4) determined by Enchemica (2002). MFG (2000) determined site-specific batch Kd of 10.6 L/kg, with a range of >10.6 to >3,194 L/kg.
Pd-103	0.55	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 55 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Pm-143 Pm-147	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Po-208 Po-210	9	Note: Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 9 L/kg. The range of 36 reported values in sand was 9 to 7,020 L/kg, with a mean value of 150 L/kg.

Pu-236 Pu-238 Pu-239 Pu-240 Pu-241 Pu-242 Pu-243 Pu-244	10	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 100 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 27 L/kg. The range of 39 reported values in sand was 27 to 36,000 L/kg, with a mean value of 550 L/kg.
Pt-193	0.9	Kd assigned a conservatively low value of 0.9 L/kg. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 90 L/kg (Baes et al. 1984).
Ra-225 Ra-226 Ra-228	10	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 100 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 57 L/kg. The range of 3 reported values in sand was 57 to 21,000 L/kg, with a mean value of 500 L/kg.
Re-183 Re-184 Re-184m Re-186 Re-187 Re-188	0.075	Default Kd estimated to be 7.5 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Rb-82 Rb-83 Rb-84 Rb-86	0.55	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 55 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Rh-103m	0.001	Kd not reported in literature. Therefore assigned a value of 0.001 L/kg.
Ru-103 Ru-106	5	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values). The range of 7 reported values in sand was 5 to 490 L/kg, with a mean value of 55 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 100 L/kg. Recommended value is 158 L/kg.
S-35	0.075	Default Kd estimated to be 7.5 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Sb-122 Sb-124 Sb-125 Sb-126 Sb-126m	100	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 3162 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 45 L/kg, from one reported observation in sand.
Sc-44 Sc-46 Sc-47	10	Default Kd estimated to be 1000 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Se-75 Se-79	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 1 L/kg. Recommended value is 2.5 L/kg. Lowest Kd value for soil/surface sediments found in McKinley, I.G. and Scholtis, A., 1993, Table 4. Kd values for soil/surface sediments ranged from 1 to 50 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 36 L.kg. The range of 3 reported values in sand was 36 to 70 L/kg, with a mean value of 55 L/kg. Lowest Kd value found for Se (IV) in Baes, C.F. and Sharp, R.D. (1983) is 1.2. The range of the 19 reported values was 1.2 to 8.6 L/kg. Site-specific in-situ Kd value of 62 L/kg (+/- 0.4) determined by Enchemica (2002). MFG (2000) determined site-specific batch Kd of 29.3 L/kg, with a range of 13.0 to >405 L/kg.
Si-32	0.35	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 35 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd.
Sm-145 Sm-151 Sm-153	2.45	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 245 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Sn-113 Sn-117m Sn-119m Sn-121 Sn-121m Sn-126	50	Lowest Kd value for soil/surface sediments found in McKinley, I.G. and Scholtis, A., 1993, Table 4. Kd values for soil/surface sediments ranged from 50 to 700 L/kg. Sheppard, M.I. and Thibault, D.H. (1990) calculated Kd value = 130 L/kg; calculated using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984) Recommended Kd value found in Looney, et al., March, 1987, Table 1, is 100 L/kg.
Sr-82 Sr-85 Sr-89 Sr-90	0.05	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values). The range of 81 reported values in sand was 0.05 to 190 L/kg, with a mean value of 15 L/kg. Average Kd in near-neutral pH, saline brines is 0.66 L/kg, based on data from NTIS (1981) and Serne, et al. (1977). Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 1 L/kg. Recommended value is 2.5 L/kg.
Ta-182	2.2	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 220 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Te-123m Te-125m Te-129 Te-129m	1.25	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 125 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Tb-157 Tb-158 Tb-160	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Tc-95 Tc-95m Tc-99 Tc-99m	0.11	Site-specific Kd value from Summary of Results, Radionuclide Kd Tests (Bingham Environmental, Inc. August 3, 1995) was 0.07 L/kg. Re-evaluated in Response to Interrogatories (ABC 1997), result 0.11 L/kg . The lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 0.01 L/kg. The range of 19 reported values in sand was 0.01 to 16 L/kg, with a mean value of 0.1 L/kg.
Th-229 Th-230		Lowest Kd value for soil/surface sediments found in McKinley, I.G. and Scholtis, A., 1993, Table 4. Kd values for soil/surface sediments ranged from 80 to 60,000 L/kg.

TABLE 27. SORPTION COEFFICIENT (K_d) VALUES FOR RADIONUCLIDES AND METALS

Th-231 Th-232	10	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 100 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 207 L/kg. The range of 10 reported values in sand was 207 to 150,000 L/kg, with a mean value of 3,200 L/kg.
Ti-44	10	Default Kd estimated to be 1000 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Tl-201 Tl-202 Tl-204	0.15	Based on similarities between ionic radii and valance, thallium Kd estimated using lowest published potassium value of 2.0 found in Dragun, 1988 (Whetstone Associates, 2000). The 'Kd value for potassium was conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 15 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. Due to similarities in ionic structure, thallium Kd values would be similar to potassium
Tm-170 Tm-171	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
U-232 U-233 U-234 U-235 U-236 U-238 U-238	6	Site-specific Kd value from Summary of Results, Radionuclide Kd Tests (Bingham Environmental, Aug 3, 1995). Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 0.03 L/kg. The range of 24 reported values in sand was 0.03 to 2,200 L/kg, with a mean value of 35 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 0.1 L/kg. Recommended value is 39.8 L/kg.
V-48	10	Default Kd estimated to be 1000 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
W-181 W-185 W-188	1.5	Default Kd estimated to be 150 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Xe-127 Xe-133 Xe-131m Xe-133m	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg.
Y-88 Y-91	1.7	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 170 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Yb-169	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Zn Zn-65	368	Site-specific in-situ Kd value of 374 L/kg (+/- 4.1) determined by Enchemica (2002). MFG (2000) determined site-specific batch Kd of 116 L/kg, with a range of >116 to >1,648 L/kg. Site specific value of 368 L/kg approved by DRC (DRC, Feb 2003). Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values) is 0.1 L/kg. The range of 22 reported values in sand was 0.1 to 8,000 L/kg, with a mean value of 200 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1, is also *0.1 L/kg*. Recommended value is 15.8 L/kg.
Zr-88 Zr-93 Zr-95	10	Lowest Kd value for soil/surface sediments found in McKinley, I.G. and Scholtis, A., 1993, Table 4. Kd values for soil/surface sediments ranged from 10 to 8,300 L/kg. Sheppard, M.I. and Thibault, D.H. (1990) calculated a Kd value of 600 L/kg. Calculation was based on the soil-to-plant ratio (CR), which is strongly correlated with Kd.

TABLE 37.

PEAK RADIONUCLIDE CONCENTRATIONS AND TIME TO EXCEED GWPL AT THE WATER TABLE VERTICAL PATHRAE RESULTS FOR CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Ac-227	-1	0		> 10,000
Ag-108m	-1	3.08E+02	3.08E+11	4,852
Al-26	-1	0		> 10,000
Am-241	875	4.32E-04	4.32E+05	2,381
Am-242m	-1	9.95E-08	9.95E+01	1,799
Am-243	900	3.57E-03	3.57E+06	2,689
Ba-133	-1	0		> 10,000
Be-10	-1	4.20E+03	4.20E+12	6,548
Bi-207	-1	1.33E-07	1.33E+02	1,020
Bi-210m	670	2.61E+02	2.61E+11	2,718
Bk-247	145	6.62E-10	6.62E-01	167
C-14	-1	0		> 10,000
Ca-41	215	8.71E-06	8.71E+03	292
Cd-113	-1	1.98E-07	1.98E+02	2,718
Cd-113m	-1	0		---
Cf-249	-1	3.91E-07	3.91E+02	3,748
Cf-250	-1	0		---
Cf-251	-1	5.50E-05	5.50E+04	4,535
Cf-252	-1	0		---
Cl-36	155	2.04E-06	2.04E+03	172
Cm-243	-1	0		> 10,000
Cm-244	-1	0		> 10,000
Cm-245	-1	0		> 10,000
Cm-246	-1	0		> 10,000
Cm-247	-1	0		> 10,000
Cm-248	-1	0		> 10,000
Co-60	-1	0		> 10,000
Cs-135	-1	0		> 10,000
Cs-137	-1	0		> 10,000
Eu-152	-1	0		> 10,000
Eu-154	-1	0		> 10,000
Eu-155	-1	0		> 10,000
Fe-55	-1	0		---
Fe-60	850	1.33E+03	1.33E+12	3,736
Gd-148	-1	0		> 10,000
H-3	115	7.54E-04	7.54E+05	174
Hg-194	-1	0		> 10,000
Ho-166m	-1	1.02E+04	1.02E+13	> 5,680
I-129	155	1.32E-02	1.32E+07	472
K-40	160	1.60E+01	1.60E+10	548
Ks-20	-1	0		---
Ks-21	-1	0		---
Ks-22	-1	0		---
Ks-23	-1	0		---
Ks-24	-1	0		> 10,000
Ks-25	-1	0		> 10,000
Ks-26	-1	0		---
Mn-53	-1	0		> 10,000
Na-22	-1	0		---
Nb-91	925	3.15E+04	3.15E+13	3,624
Nb-92	-1	3.31E+01	3.31E+10	4,246
Nb-93m	-1	0		---
Nb-94	-1	3.32E-03	3.32E+06	4,226
Ni-59	-1	0		> 10,000
Ni-63	-1	0		> 10,000
Np-237	-1	3.58E-02	3.58E+07	> 10,750
Os-194	-1	0		> 10,000
Pa-231	-1	0		> 10,000
Pb-202	-1	0		> 10,000
Pb-210	-1	0		> 10,000
Pd-107	470	4.07E+02	4.07E+11	1,570
Pm-145	-1	0		> 10,000
Pm-147	-1	0		> 10,000
Po-208	-1	0		> 10,000
Po-209	-1	0		> 10,000
Pt-193	720	4.28E-03	4.28E+06	1,165
Pu-236	-1	0		> 10,000
Pu-238	-1	0		> 10,000
Pu-239	-1	0		> 10,000
Pu-240	-1	0		> 10,000
Pu-241	-1	0		> 10,000
Pu-242	-1	0		> 10,000
Pu-244	-1	0		> 10,000
Ra-226	-1	0		> 10,000
Ra-228	-1	0		> 10,000
Re-187	185	6.23E-02	6.23E+07	356
Se-79	620	3.11E+04	3.11E+13	2,714
Si-32	210	1.50E+06	1.50E+15	905
Sm-151	-1	1.53E-06	1.53E+03	2,604
Sn-121m	-1	0		> 10,000
Sn-126	-1	0		> 10,000
Sr-90	100	2.12E-04	2.12E+05	231
Tb-157	-1	0		> 10,000
Tb-158	-1	0		> 10,000
Tc-99	160	5.25E-01	5.25E+08	446
Te-123	-1	1.09E-04	1.09E+05	3,354
Th-229	-1	0		> 10,000
Th-230	-1	0		> 10,000
Th-232	-1	0		> 10,000
Ti-44	-1	0		> 10,000
Tl-204	-1	0		---
Tm-170	-1	0		> 10,000
U-232	-1	0		> 10,000
U-233	-1	0		> 10,000
U-234	-1	0		> 10,000
U-235	-1	0		> 10,000
U-236	-1	0		> 10,000
U-238	-1	0		> 10,000
V-50	-1	0		> 10,000
Zr-93	-1	0		> 10,000

NOTES: -1 indicates that nuclide did not exceed standard within the 1,000 years modeled

--- indicates that concentrations do not peak at the water table within 10,000 yrs

TABLE 38. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	1	3	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
Ac-227	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	670	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	145	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8E-10	1E-08	1.9E-07	2.1E-06	1.5E-05	7.9E-05	3.2E-04	1.1E-03	3.0E-03	7.2E-03	1.5E-02	3.0E-02	5.2E-02	8.5E-02	1.3E-01	1.8E-01
C-14	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-10	4.6E-09	1E-07	1.4E-06	1.4E-05	0.00011	6.4E-04	3.1E-03	1.3E-02	4.4E-02	1.4E-01	3.8E-01	9.4E-01
Cd-113	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	155	0	0	0	0	0	0	0	0	0	0	0	0	3.3E-09	3.7E-07	1.5E-05	3.0E-04	3.4E-03	2.6E-02	1.5E-01	6.2E-01	2.1E+00	6.1E+00	1.5E+01	3.4E+01	6.7E+01	1.2E+02	2.0E+02	3.1E+02	4.6E+02
Cm-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	115	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3E-09	8.7E-07	7.6E-05	0.0029	0.06	0.75	6.3	38	180	6.7E+02	2.1E+03	5.5E+03	1.3E+04	2.7E+04	4.9E+04	8.4E+04
Hg-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.1E-11	5.9E-10	1.1E-08	1.6E-07	1.7E-06	1.4E-05	9.7E-05	0.00056	0.0028
K-40	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-10	4.6E-09	1E-07	1.6E-06	1.9E-05	0.00019	0.0015	0.0095
Ks-20	-1	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	3.6E-11	4.2E-11	2.4E-11	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	925	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	470	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-145	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 38. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)

NUCLIDE	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	2.5E-01	3.2E-01	3.9E-01	4.6E-01	5.2E-01	5.8E-01	6.2E-01	6.5E-01	6.6E-01	6.6E-01	6.5E-01	6.2E-01	5.9E-01	5.5E-01	5.0E-01	4.5E-01	4.1E-01	3.6E-01	3.2E-01	2.8E-01	2.4E-01	2.0E-01
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	2.2E+00	4.6E+00	9.2E+00	1.7E+01	3.1E+01	5.2E+01	8.5E+01	1.3E+02	2.0E+02	2.9E+02	4.1E+02	5.7E+02	7.6E+02	1.0E+03	1.3E+03	1.6E+03	2.0E+03	2.4E+03	2.9E+03	3.4E+03	3.9E+03	4.4E+03
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	6.4E+02	8.3E+02	1.0E+03	1.3E+03	1.5E+03	1.7E+03	1.8E+03	1.9E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03	1.9E+03	1.8E+03	1.7E+03	1.6E+03	1.4E+03	1.3E+03	1.1E+03	1.0E+03	8.7E+02	7.5E+02
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.3E+05	2.0E+05	2.7E+05	3.5E+05	4.4E+05	5.3E+05	6.1E+05	6.7E+05	7.2E+05	7.5E+05	7.5E+05	7.4E+05	7.1E+05	6.7E+05	6.2E+05	5.5E+05	4.9E+05	4.3E+05	3.7E+05	3.1E+05	2.6E+05	2.1E+05
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	0.012	0.046	0.16	0.49	1.4	3.8	9.3	22	48	100	200	3.8E+02	7.0E+02	1.2E+03	2.1E+03	3.5E+03	5.6E+03	8.8E+03	1.3E+04	2.0E+04	2.9E+04	4.1E+04
K-40	0.053	0.26	1.1	4.3	15	48	140	390	990	2400	5500	12000	2.5E+04	4.9E+04	9.3E+04	1.7E+05	3.1E+05	5.3E+05	8.9E+05	1.4E+06	2.3E+06	3.6E+06
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-11	5.9E-11	2.5E-10
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 38. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)

NUCLIDE	235	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.9E-11	2E-10
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.7E-01	1.4E-01	1.2E-01	1.0E-01	8.3E-02	6.8E-02	5.6E-02	4.5E-02	3.7E-02	3.0E-02	2.4E-02	1.9E-02	1.5E-02	1.2E-02	7.6E-03	4.7E-03	2.9E-03	1.7E-03	1.0E-03	6.3E-04	3.7E-04	2.2E-04
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	4.9E+03	5.5E+03	6.0E+03	6.5E+03	7.0E+03	7.4E+03	7.8E+03	8.1E+03	8.3E+03	8.5E+03	8.6E+03	8.7E+03	8.7E+03	8.6E+03	8.4E+03	7.9E+03	7.3E+03	6.7E+03	5.9E+03	5.2E+03	4.5E+03	3.8E+03
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	6.5E+02	5.5E+02	4.7E+02	3.9E+02	3.3E+02	2.7E+02	2.3E+02	1.9E+02	1.5E+02	1.3E+02	1.0E+02	8.3E+01	6.7E+01	5.4E+01	3.4E+01	2.2E+01	1.4E+01	8.4E+00	5.2E+00	3.2E+00	1.9E+00	1.2E+00
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.7E+05	1.4E+05	1.1E+05	8.4E+04	6.5E+04	5.0E+04	3.8E+04	2.9E+04	2.1E+04	1.6E+04	1.2E+04	8.6E+03	6.2E+03	4.5E+03	2.3E+03	1.2E+03	5.7E+02	2.8E+02	1.3E+02	6.2E+01	2.9E+01	1.3E+01
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	5.8E+04	8.0E+04	1.1E+05	1.4E+05	1.9E+05	2.5E+05	3.1E+05	4.0E+05	5.0E+05	6.1E+05	7.5E+05	9.0E+05	1.1E+06	1.3E+06	1.8E+06	2.4E+06	3.0E+06	3.8E+06	4.7E+06	5.7E+06	6.7E+06	7.7E+06
K-40	5.4E+06	8.1E+06	1.2E+07	1.7E+07	2.4E+07	3.3E+07	4.5E+07	6.1E+07	8.0E+07	1.1E+08	1.4E+08	1.7E+08	2.2E+08	2.8E+08	4.2E+08	6.2E+08	8.8E+08	1.2E+09	1.6E+09	2.1E+09	2.7E+09	3.4E+09
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	9.9E-10	3.7E-09	1.3E-08	4.5E-08	1.4E-07	4.4E-07	1.3E-06	3.6E-06	9.9E-06	0.000026	0.000065	0.00016	0.00038	0.00087	0.0042	0.019	0.074	0.27	0.92	2.9	8.7	24
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 38. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)

NUCLIDE	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	1.3E-11	4.6E-11	1.5E-10	4.5E-10	1.3E-09	3.6E-09	9.7E-09	2.5E-08	6.2E-08	1.5E-07	3.4E-07	7.6E-07	1.6E-06	3.5E-06	7.1E-06	0.000014
Am-242m	0	0	0	0	0	0	0	0	0	1.9E-11	5.3E-11	1.4E-10	3.7E-10	9.2E-10	2.2E-09	5.1E-09	1.1E-08	2.4E-08	5.1E-08	1E-07	2.1E-07	4E-07
Am-243	0	0	0	0	0	0	0	1.9E-11	6.2E-11	1.9E-10	5.6E-10	1.6E-09	4.3E-09	1.1E-08	2.8E-08	6.9E-08	1.6E-07	3.6E-07	8E-07	1.7E-06	3.6E-06	7.3E-06
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	8.9E-10	3.8E-09	1.4E-08	5.2E-08	1.7E-07	5.4E-07	1.6E-06	4.4E-06	0.000011	0.000029	0.000068	0.00015	0.00034	0.00071	0.0014	0.0028	0.0052	0.0095	0.017	0.029	0.049	0.079
Bi-210m	4.9E-11	2.6E-10	1.2E-09	5.5E-09	2.3E-08	8.9E-08	3.2E-07	1.1E-06	3.6E-06	0.000011	0.000033	0.000095	0.00026	0.00067	0.0017	0.0041	0.0096	0.022	0.048	0.1	0.21	0.44
Bk-247	1.3E-04	7.4E-05	4.3E-05	2.5E-05	1.4E-05	8.2E-06	4.6E-06	2.6E-06	1.5E-06	8.4E-07	4.7E-07	2.7E-07	1.5E-07	8.3E-08	4.7E-08	2.6E-08	1.4E-08	8.0E-09	4.4E-09	2.4E-09	1.3E-09	7.4E-10
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	3.2E+03	2.7E+03	2.2E+03	1.8E+03	1.5E+03	1.2E+03	9.4E+02	7.4E+02	5.8E+02	4.6E+02	3.5E+02	2.7E+02	2.1E+02	1.6E+02	1.2E+02	9.3E+01	7.0E+01	5.3E+01	3.9E+01	2.9E+01	2.2E+01	1.6E+01
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7E-11	3.6E-11	7.8E-11	1.6E-10	3.3E-10
Cd-113m	0	0	0	0	0	1.4E-11	3.2E-11	6.7E-11	1.3E-10	2.5E-10	4.6E-10	7.9E-10	1.3E-09	2.1E-09	3.2E-09	4.8E-09	6.9E-09	9.5E-09	1.3E-08	1.7E-08	2.2E-08	2.7E-08
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	6.9E-01	4.1E-01	2.4E-01	1.4E-01	8.3E-02	4.9E-02	2.8E-02	1.6E-02	9.4E-03	5.4E-03	3.1E-03	1.8E-03	1.0E-03	5.8E-04	3.3E-04	1.9E-04	1.1E-04	6.0E-05	3.4E-05	1.9E-05	1.1E-05	6.0E-06
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3E-11	1.2E-10	4.2E-10	1.4E-09	4.3E-09	1.3E-08	3.8E-08	1.1E-07	2.9E-07
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	6.0E+00	2.7E+00	1.2E+00	5.3E-01	2.3E-01	1.0E-01	4.3E-02	1.8E-02	7.9E-03	3.3E-03	1.4E-03	5.9E-04	2.5E-04	1.0E-04	4.2E-05	1.7E-05	7.2E-06	2.9E-06	1.2E-06	4.9E-07	2.0E-07	8.1E-08
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	8.7E+06	9.6E+06	1.1E+07	1.1E+07	1.2E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07	1.2E+07	1.2E+07	1.1E+07	1.1E+07	9.9E+06	9.2E+06	8.5E+06	7.9E+06	7.2E+06	6.5E+06
K-40	4.2E+09	5.1E+09	6.0E+09	7.0E+09	8.0E+09	9.1E+09	1.0E+10	1.1E+10	1.2E+10	1.3E+10	1.4E+10	1.4E+10	1.5E+10	1.5E+10	1.6E+10	1.6E+10	1.6E+10	1.6E+10	1.6E+10	1.5E+10	1.5E+10	1.4E+10
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4E-11	1.5E-10	5.6E-10	2E-09	6.6E-09	2.1E-08	6.6E-08
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	64	160	380	870	1900	4000	8200	16000	31000	57000	100000	180000	310000	5.2E+05	8.6E+05	1.4E+06	2.2E+06	3.4E+06	5.1E+06	7.6E+06	1.1E+07	1.6E+07
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 38. *RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)*

NUCLIDE	610	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6E-11	4.3E-10	2.8E-09
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0.000028	0.000053	0.000099	0.00018	0.00032	0.00057	0.00098	0.0017	0.0028	0.0046	0.012	0.028	0.066	0.14	0.3	0.73	1.6	3.5	7.1	14	26
Am-242m	7.6E-07	1.4E-06	2.5E-06	4.5E-06	7.8E-06	0.000013	0.000022	0.000036	0.000058	0.000093	0.00022	0.00051	0.0011	0.0022	0.0044	0.0097	0.02	0.04	0.075	0.13	0.23
Am-243	0.000014	0.000028	0.000053	0.000098	0.00018	0.00032	0.00056	0.00096	0.0016	0.0027	0.0072	0.018	0.043	0.097	0.21	0.52	1.2	2.7	5.7	12	22
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.2E-11	3.4E-10	2E-09
Bi-207	0.13	0.2	0.3	0.45	0.65	0.94	1.3	1.8	2.5	3.3	5.7	9.2	14	21	29	42	57	73	89	100	120
Bi-210m	0.87	1.7	3.2	5.9	11	19	34	58	98	160	430	1100	2600	5900	13000	32000	75000	170000	3.5E+05	7.1E+05	1.4E+06
Bk-247	4.1E-10	2.2E-10	1.2E-10	6.8E-11	3.7E-11	2.0E-11	1.1E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.2E+01	8.9E+00	6.6E+00	4.8E+00	3.5E+00	2.6E+00	1.9E+00	1.4E+00	1.0E+00	7.3E-01	3.8E-01	2.0E-01	1.0E-01	5.3E-02	2.7E-02	1.2E-02	5.1E-03	2.2E-03	9.3E-04	3.9E-04	1.7E-04
Cd-113	6.6E-10	1.3E-09	2.4E-09	4.5E-09	8.2E-09	1.5E-08	2.6E-08	4.4E-08	7.5E-08	1.2E-07	3.3E-07	8.3E-07	0.000002	4.5E-06	9.7E-06	0.000024	0.000057	0.00013	0.00027	0.00054	0.0011
Cd-113m	3.2E-08	3.9E-08	4.5E-08	5.1E-08	5.7E-08	6.2E-08	6.6E-08	7E-08	7.2E-08	7.4E-08	7.3E-08	6.9E-08	6.1E-08	5.2E-08	4.2E-08	3.1E-08	2.1E-08	1.4E-08	8.5E-09	5E-09	2.9E-09
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-11	5.2E-11
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4E-11	1.6E-10
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	3.4E-06	1.9E-06	1.1E-06	5.9E-07	3.3E-07	1.8E-07	1.0E-07	5.7E-08	3.2E-08	1.8E-08	5.5E-09	1.7E-09	5.1E-10	1.6E-10	4.8E-11	1.1E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	7.6E-07	1.9E-06	4.7E-06	0.000011	0.000026	0.00006	0.00013	0.00029	0.0006	0.0012	0.005	0.018	0.063	0.2	0.62	2.3	7.8	25	73	200	540
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	3.3E-08	1.3E-08	5.3E-09	2.1E-09	8.5E-10	3.4E-10	1.4E-10	5.4E-11	2.2E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0	0	0	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.5E-11	3.6E-10	2.5E-09	1.6E-08	9.3E-08
I-129	5.9E+06	5.3E+06	4.8E+06	4.2E+06	3.8E+06	3.3E+06	2.9E+06	2.6E+06	2.2E+06	2.0E+06	1.5E+06	1.1E+06	8.1E+05	5.9E+05	4.3E+05	2.8E+05	1.8E+05	1.2E+05	7.5E+04	4.8E+04	3.0E+04
K-40	1.4E+10	1.3E+10	1.3E+10	1.2E+10	1.1E+10	1.0E+10	9.7E+09	9.0E+09	8.3E+09	7.7E+09	6.4E+09	5.3E+09	4.3E+09	3.5E+09	2.8E+09	2.0E+09	1.5E+09	1.1E+09	7.7E+08	5.4E+08	3.8E+08
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	2E-07	5.6E-07	1.6E-06	4.2E-06	0.000011	0.000027	0.000067	0.00016	0.00037	0.00085	0.0041	0.018	0.072	0.27	0.94	4.1	17	61	210	650	1900
Nb-92	0	2.1E-11	5.8E-11	1.6E-10	4.1E-10	1E-09	2.6E-09	6.2E-09	1.5E-08	3.4E-08	1.6E-07	7.3E-07	0.000003	0.000012	0.000041	0.00019	0.00076	0.0029	0.01	0.033	0.099
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	1.9E-11	8.3E-11	3.4E-10	1.3E-09	4.7E-09	2.1E-08	8.6E-08	3.2E-07	1.1E-06	3.7E-06	0.000011
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	2.3E+07	3.3E+07	4.6E+07	6.3E+07	8.6E+07	1.2E+08	1.5E+08	2.0E+08	2.7E+08	3.4E+08	5.6E+08	8.8E+08	1.4E+09	2.0E+09	2.9E+09	4.5E+09	6.7E+09	9.8E+09	1.4E+10	1.9E+10	2.5E+10
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 38. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)

NUCLIDE	YEAR TO EXCEED:	1	3	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
Po-208	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	720	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.9E-11	3.3E-09	1.5E-07	3.9E-06	6.7E-05	0.00081	0.0074	0.052	0.3	1.5	6	22	70
Se-79	620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sm-151	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.2E-11	5.2E-09	3.5E-07	1.2E-05	0.00023	0.0029	0.026	0.17	0.9	3.8	14	43	1.2E+02	2.9E+02	6.4E+02
Tb-157	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.6E-10	1.7E-08	3.9E-07	6.4E-06	7.7E-05	0.00071	0.0053	0.033	0.17	0.76
Te-123	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2E-11	6.3E-11	1.7E-10
Tm-170	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL r Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL in years modeled

TABLE 38. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)

NUCLIDE	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.0E+02	5.3E+02	1.3E+03	2.9E+03	6.3E+03	1.3E+04	2.4E+04	4.3E+04	7.5E+04	1.2E+05	2.0E+05	3.1E+05	4.7E+05	6.9E+05	9.9E+05	1.4E+06	1.9E+06	2.5E+06	3.3E+06	4.3E+06	5.4E+06	6.8E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	6.9E-11	1.2E-09	1.8E-08	2.1E-07	2.1E-06	0.000019	0.00014	0.00093	0.0055	0.029	0.14	0.63	2.6	9.7	34	110	350	1000	2900	7700	20000
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.3E+03	2.5E+03	4.3E+03	7.2E+03	1.1E+04	1.7E+04	2.5E+04	3.4E+04	4.6E+04	5.9E+04	7.4E+04	9.1E+04	1.1E+05	1.3E+05	1.4E+05	1.6E+05	1.7E+05	1.9E+05	2.0E+05	2.0E+05	2.1E+05	2.1E+05
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	3	11	34	99	270	660	1600	3.4E+03	7.2E+03	1.4E+04	2.7E+04	5.0E+04	8.7E+04	1.5E+05	2.4E+05	3.9E+05	6.0E+05	9.1E+05	1.3E+06	1.9E+06	2.7E+06	3.8E+06
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	3.7E-10	7.2E-10	1.2E-09	1.9E-09	2.7E-09	3.4E-09	4E-09	4.4E-09	4.5E-09	4.3E-09	4E-09	3.5E-09	2.9E-09	2.3E-09	1.7E-09	1.3E-09	9.1E-10	6.3E-10	4.2E-10	2.7E-10	1.7E-10	1.1E-10
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 38. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)

NUCLIDE	235	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4E-11	3.2E-10	2.3E-09	1.4E-08	7.9E-08	4E-07	1.8E-06
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	8.4E+06	1.0E+07	1.2E+07	1.4E+07	1.7E+07	1.9E+07	2.2E+07	2.5E+07	2.8E+07	3.1E+07	3.5E+07	3.8E+07	4.1E+07	4.4E+07	4.9E+07	5.4E+07	5.8E+07	6.1E+07	6.2E+07	6.2E+07	6.1E+07	5.9E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4E-11	1.7E-10	1E-09
Si-32	48000	110000	250000	560000	1200000	2400000	4800000	9200000	17000000	32000000	57000000	1E+08	1.7E+08	2.9E+08	7.7E+08	1.9E+09	4.5E+09	1.0E+10	2.1E+10	4.2E+10	8.0E+10	1.5E+11
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.1E+05	2.1E+05	2.0E+05	1.9E+05	1.8E+05	1.7E+05	1.6E+05	1.5E+05	1.4E+05	1.2E+05	1.1E+05	9.9E+04	8.8E+04	7.7E+04	5.9E+04	4.4E+04	3.2E+04	2.3E+04	1.6E+04	1.1E+04	7.5E+03	5.0E+03
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	5.2E+06	7.0E+06	9.2E+06	1.2E+07	1.5E+07	1.9E+07	2.4E+07	3.0E+07	3.7E+07	4.4E+07	5.3E+07	6.3E+07	7.4E+07	8.6E+07	1.1E+08	1.5E+08	1.8E+08	2.2E+08	2.6E+08	3.1E+08	3.5E+08	3.9E+08
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	6.6E-11	3.9E-11	2.3E-11	1.3E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 38. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)

NUCLIDE	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	7.6E-06	0.000029	0.00011	0.00036	0.0011	0.0033	0.0092	0.025	0.062	0.15	0.35	0.77	1.6	3.4	6.8	13	24	45	79	140	230	380
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	5.7E+07	5.3E+07	4.9E+07	4.5E+07	4.1E+07	3.7E+07	3.2E+07	2.8E+07	2.5E+07	2.1E+07	1.8E+07	1.6E+07	1.3E+07	1.1E+07	9.3E+06	7.7E+06	6.4E+06	5.2E+06	4.3E+06	3.5E+06	2.8E+06	2.3E+06
Se-79	6E-09	3.1E-08	1.5E-07	6.7E-07	2.8E-06	0.000011	0.000039	0.00014	0.00044	0.0014	0.0041	0.012	0.031	0.082	0.21	0.5	1.2	2.7	5.8	13	26	53
Si-32	2.6E+11	4.4E+11	7.4E+11	1.2E+12	1.8E+12	2.8E+12	4.2E+12	6.0E+12	8.6E+12	1.2E+13	1.6E+13	2.2E+13	2.9E+13	3.8E+13	4.9E+13	6.1E+13	7.7E+13	9.5E+13	1.2E+14	1.4E+14	1.7E+14	2.0E+14
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	3.3E+03	2.2E+03	1.4E+03	9.0E+02	5.8E+02	3.6E+02	2.3E+02	1.4E+02	8.7E+01	5.4E+01	3.3E+01	2.0E+01	1.2E+01	7.2E+00	4.3E+00	2.6E+00	1.5E+00	9.0E-01	5.3E-01	3.1E-01	1.8E-01	1.1E-01
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	4.2E+08	4.6E+08	4.8E+08	5.0E+08	5.2E+08	5.2E+08	5.2E+08	5.2E+08	5.1E+08	4.9E+08	4.7E+08	4.5E+08	4.2E+08	3.9E+08	3.7E+08	3.4E+08	3.1E+08	2.8E+08	2.5E+08	2.3E+08	2.0E+08	1.8E+08
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 38. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION)

NUCLIDE	610	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	610	960	1500	2200	3300	4900	7000	9900	14000	19000	34000	59000	97000	150000	230000	3.7E+05	5.5E+05	7.9E+05	1.1E+06	1.4E+06	1.8E+06
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.9E+06	1.5E+06	1.2E+06	9.6E+05	7.6E+05	6.0E+05	4.8E+05	3.8E+05	3.0E+05	2.3E+05	1.4E+05	8.8E+04	5.3E+04	3.2E+04	1.9E+04	9.9E+03	5.1E+03	2.6E+03	1.3E+03	6.8E+02	3.4E+02
Se-79	110	200	390	720	1300	2300	4100	7100	12000	20000	53000	130000	320000	720000	1600000	3900000	9.1E+06	2.0E+07	4.3E+07	8.7E+07	1.7E+08
Si-32	2.3E+14	2.7E+14	3.1E+14	3.5E+14	4.0E+14	4.5E+14	5.0E+14	5.5E+14	6.1E+14	6.7E+14	7.9E+14	9.1E+14	1.0E+15	1.1E+15	1.2E+15	1.3E+15	1.4E+15	1.5E+15	1.5E+15	1.5E+15	1.5E+15
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.2E-11	2.4E-10	1.2E-09	5.7E-09
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	6.2E-02	3.6E-02	2.1E-02	1.2E-02	6.9E-03	4.0E-03	2.3E-03	1.3E-03	7.5E-04	4.3E-04	1.4E-04	4.5E-05	1.4E-05	4.6E-06	1.5E-06	3.5E-07	8.1E-08	1.9E-08	4.4E-09	1.0E-09	2.4E-10
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	1.6E+08	1.4E+08	1.2E+08	1.1E+08	9.3E+07	8.0E+07	6.9E+07	6.0E+07	5.1E+07	4.4E+07	3.2E+07	2.3E+07	1.6E+07	1.1E+07	7.8E+06	4.9E+06	3.1E+06	1.9E+06	1.2E+06	7.0E+05	4.2E+05
Te-123	2.2E-11	5.1E-11	1.1E-10	2.5E-10	5.3E-10	1.1E-09	2.2E-09	4.4E-09	8.6E-09	1.6E-08	5.6E-08	1.8E-07	5.4E-07	1.5E-06	4.1E-06	0.000013	0.000039	0.00011	0.00028	0.0007	0.0016
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 40.
PEAK RADIONUCLIDE CONCENTRATIONS AND TIME TO EXCEED GWPL AT THE WATER TABLE
VERTICAL PATHRAE RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Ac-227	-1	0		> 10,000
Ag-108m	-1	4.21E+02	4.21E+11	4,717
Al-26	-1	0		> 10,000
Am-241	850	5.00E-04	5.00E+05	2,295
Am-242m	975	1.41E-07	1.41E+02	1,750
Am-243	850	3.62E-03	3.62E+06	2,585
Ba-133	-1	0		> 10,000
Be-10	-1	4.21E+03	4.21E+12	6,298
Bi-207	-1	3.18E-07	3.18E+02	996
Bi-210m	640	2.62E+02	2.62E+11	2,614
Bk-247	145	6.14E-10	6.14E-01	161
C-14	-1	0		> 10,000
Ca-41	220	6.48E-06	6.48E+03	282
Cd-113	-1	1.99E-07	1.99E+02	2,614
Cd-113m	-1	0		---
Cf-249	-1	5.21E-07	5.21E+02	3,642
Cf-250	-1	0		---
Cf-251	-1	6.31E-05	6.31E+04	4,382
Cf-252	-1	0		---
Cl-36	155	1.93E-06	1.93E+03	165
Cm-243	-1	0		> 10,000
Cm-244	-1	0		> 10,000
Cm-245	-1	0		> 10,000
Cm-246	-1	0		> 10,000
Cm-247	-1	0		> 10,000
Cm-248	-1	0		> 10,000
Co-60	-1	0		> 10,000
Cs-135	-1	0		> 10,000
Cs-137	-1	0		> 10,000
Eu-152	-1	0		> 10,000
Eu-154	-1	0		> 10,000
Eu-155	-1	0		> 10,000
Fe-55	-1	0		---
Fe-60	800	1.33E+03	1.33E+12	3,593
Gd-148	-1	0		> 10,000
H-3	110	1.10E-03	1.10E+06	170
Hg-194	-1	0		> 10,000
Ho-166m	-1	1.16E+04	1.16E+13	5,493
I-129	150	1.33E-02	1.33E+07	453
K-40	155	1.60E+01	1.60E+10	527
Ks-20	-1	0		---
Ks-21	-1	0		---
Ks-22	-1	0		---
Ks-23	-1	0		---
Ks-24	-1	0		> 10,000
Ks-25	-1	0		> 10,000
Ks-26	-1	0		---
Mn-53	-1	0		> 10,000
Na-22	-1	0		---
Nb-91	875	3.63E+04	3.63E+13	3,503
Nb-92	-1	3.32E+01	3.32E+10	4,090
Nb-93m	-1	0		---
Nb-94	-1	3.34E-03	3.34E+06	4,064
Ni-59	-1	0		> 10,000
Ni-63	-1	0		> 10,000
Np-237	-1	3.57E-02	3.57E+07	> 10,375
Os-194	-1	0		> 10,000
Pa-231	-1	0		> 10,000
Pb-202	-1	0		> 10,000
Pb-210	-1	0		> 10,000
Pd-107	450	4.08E+02	4.08E+11	1,510
Pm-145	-1	0		> 10,000
Pm-147	-1	0		> 10,000
Po-208	-1	0		> 10,000
Po-209	-1	0		> 10,000
Pt-193	680	8.02E-03	8.02E+06	1,137
Pu-236	-1	0		> 10,000
Pu-238	-1	0		> 10,000
Pu-239	-1	0		> 10,000
Pu-240	-1	0		> 10,000
Pu-241	-1	0		> 10,000
Pu-242	-1	0		> 10,000
Pu-244	-1	0		> 10,000
Ra-226	-1	0		> 10,000
Ra-228	-1	0		> 10,000
Re-187	195	1.95E-02	1.95E+07	343
Se-79	590	3.12E+04	3.12E+13	2,610
Si-32	200	1.73E+06	1.73E+15	875
Sm-151	-1	3.32E-06	3.32E+03	2,546
Sn-121m	-1	0		> 10,000
Sn-126	-1	0		> 10,000
Sr-90	100	2.63E-04	2.63E+05	224
Tb-157	-1	0		> 10,000
Tb-158	-1	0		> 10,000
Tc-99	160	2.18E-01	2.18E+08	429
Te-123	-1	1.09E-04	1.09E+05	3,226
Th-229	-1	0		> 10,000
Th-230	-1	0		> 10,000
Th-232	-1	0		> 10,000
Ti-44	-1	0		> 10,000
Tl-204	-1	0		---
Tm-170	-1	0		> 10,000
U-232	-1	0		> 10,000
U-233	-1	0		> 10,000
U-234	-1	0		> 10,000
U-235	-1	0		> 10,000
U-236	-1	0		> 10,000
U-238	-1	0		> 10,000
V-50	-1	0		> 10,000
Zr-93	-1	0		> 10,000

NOTES: -1 indicates that nuclide did not exceed standard within the 1,000 years modeled
--- indicates that concentrations do not peak at the water table within 10,000 yrs

TABLE 41. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	1	3	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115
Ac-227	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	640	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	145	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-11	1.0E-09	3.3E-08	5.3E-07	5.2E-06	3.4E-05	1.7E-04	6.2E-04	1.9E-03	5.1E-03	1.2E-02	2.4E-02	4.3E-02	7.3E-02	1.1E-01	1.6E-01
C-14	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.5E-10	1.8E-08	3.5E-07	4.4E-06	4.0E-05	2.8E-04	1.5E-03	6.8E-03	2.6E-02	8.5E-02	2.5E-01	6.5E-01
Cd-113	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	155	0	0	0	0	0	0	0	0	0	0	0	4.6E-11	1.6E-08	1.4E-06	5.0E-05	8.7E-04	9.0E-03	6.2E-02	3.2E-01	1.2E+00	4.0E+00	1.1E+01	2.6E+01	5.4E+01	1.0E+02	1.8E+02	2.8E+02	4.2E+02
Cm-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	110	0	0	0	0	0	0	0	0	0	0	0	0	3.6E-11	3.1E-08	6.5E-06	4.7E-04	1.5E-02	2.7E-01	3.0E+00	2.3E+01	1.3E+02	5.4E+02	1.9E+03	5.5E+03	1.4E+04	3.0E+04	5.9E+04	1.0E+05
Hg-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9E-10	4.6E-09	7.8E-08	9.8E-07	9.4E-06	7.3E-05	4.6E-04	2.5E-03
K-40	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.8E-11	1.6E-09	4.4E-08	8.5E-07	1.2E-05	1.3E-04	1.1E-03	8.2E-03
Ks-20	-1	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-11	1.5E-10	1.5E-10	7.4E-11	2.3E-11	0	0	0	0	0	0	0	0	0	0	0
Ks-21	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-145	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 41. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	2.3E-01	2.9E-01	3.6E-01	4.3E-01	4.9E-01	5.4E-01	5.8E-01	6.0E-01	6.1E-01	6.1E-01	5.9E-01	5.6E-01	5.3E-01	4.9E-01	4.4E-01	4.0E-01	3.5E-01	3.1E-01	2.7E-01	2.3E-01	2.0E-01	1.7E-01
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.6E+00	3.4E+00	7.0E+00	1.3E+01	2.4E+01	4.2E+01	6.9E+01	1.1E+02	1.6E+02	2.4E+02	3.4E+02	4.7E+02	6.4E+02	8.4E+02	1.1E+03	1.3E+03	1.7E+03	2.0E+03	2.4E+03	2.8E+03	3.2E+03	3.6E+03
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	5.9E+02	7.8E+02	9.9E+02	1.2E+03	1.4E+03	1.6E+03	1.7E+03	1.8E+03	1.9E+03	1.9E+03	1.9E+03	1.8E+03	1.8E+03	1.7E+03	1.5E+03	1.4E+03	1.3E+03	1.1E+03	9.8E+02	8.6E+02	7.4E+02	6.3E+02
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.7E+05	2.6E+05	3.7E+05	4.9E+05	6.2E+05	7.5E+05	8.7E+05	9.7E+05	1.0E+06	1.1E+06	1.1E+06	1.1E+06	1.0E+06	9.8E+05	9.0E+05	8.0E+05	7.1E+05	6.1E+05	5.2E+05	4.4E+05	3.6E+05	2.9E+05
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.1E-02	4.6E-02	1.7E-01	5.4E-01	1.6E+00	4.4E+00	1.1E+01	2.7E+01	5.9E+01	1.3E+02	2.5E+02	4.9E+02	9.0E+02	1.6E+03	2.8E+03	4.6E+03	7.4E+03	1.2E+04	1.8E+04	2.6E+04	3.8E+04	5.5E+04
K-40	5.0E-02	2.6E-01	1.2E+00	4.7E+00	1.7E+01	5.7E+01	1.7E+02	4.9E+02	1.3E+03	3.1E+03	7.3E+03	1.6E+04	3.3E+04	6.7E+04	1.3E+05	2.4E+05	4.3E+05	7.4E+05	1.2E+06	2.0E+06	3.2E+06	5.0E+06
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.9E-11	1.8E-10	7.6E-10
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 41. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9E-11	1.1E-10	5.7E-10
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0E-11
Bk-247	1.4E-01	1.2E-01	9.5E-02	7.8E-02	6.4E-02	5.2E-02	4.2E-02	3.3E-02	2.7E-02	2.1E-02	1.7E-02	1.3E-02	1.0E-02	8.2E-03	6.4E-03	3.9E-03	2.3E-03	1.4E-03	8.1E-04	4.7E-04	2.7E-04	1.6E-04
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	4.0E+03	4.4E+03	4.8E+03	5.2E+03	5.5E+03	5.8E+03	6.0E+03	6.2E+03	6.3E+03	6.4E+03	6.5E+03	6.5E+03	6.4E+03	6.3E+03	6.2E+03	5.8E+03	5.3E+03	4.8E+03	4.2E+03	3.7E+03	3.1E+03	2.6E+03
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	5.4E+02	4.5E+02	3.8E+02	3.1E+02	2.6E+02	2.1E+02	1.7E+02	1.4E+02	1.1E+02	9.3E+01	7.4E+01	5.9E+01	4.7E+01	3.8E+01	3.0E+01	1.8E+01	1.1E+01	6.8E+00	4.1E+00	2.4E+00	1.4E+00	8.5E-01
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	2.4E+05	1.9E+05	1.5E+05	1.1E+05	8.8E+04	6.7E+04	5.0E+04	3.8E+04	2.8E+04	2.1E+04	1.5E+04	1.1E+04	7.8E+03	5.6E+03	4.0E+03	2.0E+03	9.7E+02	4.6E+02	2.2E+02	1.0E+02	4.6E+01	2.1E+01
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	7.6E+04	1.1E+05	1.4E+05	1.9E+05	2.5E+05	3.2E+05	4.1E+05	5.1E+05	6.3E+05	7.8E+05	9.5E+05	1.1E+06	1.4E+06	1.6E+06	1.9E+06	2.5E+06	3.3E+06	4.1E+06	5.1E+06	6.1E+06	7.1E+06	8.2E+06
K-40	7.6E+06	1.1E+07	1.6E+07	2.3E+07	3.3E+07	4.6E+07	6.2E+07	8.3E+07	1.1E+08	1.4E+08	1.8E+08	2.3E+08	3.0E+08	3.7E+08	4.5E+08	6.7E+08	9.6E+08	1.3E+09	1.8E+09	2.4E+09	3.0E+09	3.8E+09
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	3.0E-09	1.1E-08	4.1E-08	1.4E-07	4.4E-07	1.4E-06	4.0E-06	1.1E-05	3.0E-05	7.8E-05	2.0E-04	4.8E-04	1.1E-03	2.6E-03	5.7E-03	2.6E-02	1.1E-01	4.1E-01	1.4E+00	4.6E+00	1.4E+01	3.9E+01
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 41. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	3.5E-11	1.2E-10	3.9E-10	1.2E-09	3.5E-09	9.6E-09	2.6E-08	6.6E-08	1.6E-07	3.9E-07	8.9E-07	2.0E-06	4.3E-06	9.0E-06	1.8E-05	3.6E-05
Am-242m	0	0	0	0	0	0	0	0	1.7E-11	5.2E-11	1.5E-10	3.9E-10	1.0E-09	2.5E-09	6.0E-09	1.4E-08	3.1E-08	6.6E-08	1.4E-07	2.8E-07	5.6E-07	1.1E-06
Am-243	0	0	0	0	0	0	1.4E-11	4.9E-11	1.6E-10	5.0E-10	1.5E-09	4.2E-09	1.1E-08	2.9E-08	7.4E-08	1.8E-07	4.2E-07	9.4E-07	2.1E-06	4.4E-06	9.1E-06	1.8E-05
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	2.7E-09	1.1E-08	4.5E-08	1.6E-07	5.5E-07	1.7E-06	5.1E-06	1.4E-05	3.7E-05	9.3E-05	2.2E-04	5.1E-04	1.1E-03	2.3E-03	4.6E-03	9.0E-03	1.7E-02	3.1E-02	5.4E-02	9.3E-02	1.5E-01	2.5E-01
Bi-210m	1.2E-10	6.3E-10	3.1E-09	1.4E-08	5.8E-08	2.3E-07	8.4E-07	2.9E-06	9.5E-06	3.0E-05	8.8E-05	2.5E-04	6.7E-04	1.8E-03	4.4E-03	1.1E-02	2.5E-02	5.6E-02	1.2E-01	2.6E-01	5.5E-01	1.1E+00
Bk-247	9.0E-05	5.1E-05	2.9E-05	1.6E-05	9.1E-06	5.1E-06	2.8E-06	1.6E-06	8.7E-07	4.8E-07	2.6E-07	1.4E-07	7.8E-08	4.3E-08	2.3E-08	1.3E-08	6.8E-09	3.7E-09	2.0E-09	1.1E-09	5.8E-10	3.1E-10
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	2.2E+03	1.8E+03	1.5E+03	1.2E+03	9.4E+02	7.5E+02	5.9E+02	4.6E+02	3.5E+02	2.7E+02	2.1E+02	1.6E+02	1.2E+02	9.0E+01	6.7E+01	5.0E+01	3.7E+01	2.8E+01	2.0E+01	1.5E+01	1.1E+01	8.0E+00
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9E-11	4.3E-11	9.4E-11	2.0E-10	4.2E-10	8.4E-10
Cd-113m	0	0	0	0	2.5E-11	5.9E-11	1.3E-10	2.8E-10	5.7E-10	1.1E-09	2.0E-09	3.4E-09	5.6E-09	9.0E-09	1.4E-08	2.0E-08	2.9E-08	4.0E-08	5.4E-08	7.1E-08	9.0E-08	1.1E-07
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	5.0E-01	2.9E-01	1.7E-01	9.6E-02	5.5E-02	3.1E-02	1.8E-02	1.0E-02	5.6E-03	3.2E-03	1.8E-03	9.9E-04	5.5E-04	3.1E-04	1.7E-04	9.4E-05	5.2E-05	2.9E-05	1.6E-05	8.6E-06	4.7E-06	2.6E-06
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	3.3E-11	1.3E-10	4.6E-10	1.6E-09	5.2E-09	1.6E-08	4.9E-08	1.4E-07	4.0E-07	1.1E-06
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	9.4E+00	4.1E+00	1.8E+00	7.9E-01	3.4E-01	1.5E-01	6.2E-02	2.6E-02	1.1E-02	4.5E-03	1.9E-03	7.8E-04	3.2E-04	1.3E-04	5.3E-05	2.2E-05	8.7E-06	3.5E-06	1.4E-06	5.6E-07	2.3E-07	9.0E-08
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	9.2E+06	1.0E+07	1.1E+07	1.2E+07	1.2E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07	1.2E+07	1.2E+07	1.1E+07	1.1E+07	9.9E+06	9.2E+06	8.4E+06	7.7E+06	7.0E+06	6.3E+06	5.7E+06
K-40	4.6E+09	5.6E+09	6.6E+09	7.7E+09	8.8E+09	9.8E+09	1.1E+10	1.2E+10	1.3E+10	1.4E+10	1.4E+10	1.5E+10	1.6E+10	1.6E+10	1.6E+10	1.6E+10	1.6E+10	1.6E+10	1.5E+10	1.5E+10	1.4E+10	1.4E+10
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-11	4.5E-11	1.8E-10	7.1E-10	2.6E-09	9.0E-09	3.0E-08	9.6E-08	2.9E-07
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0E-11
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	1.0E+02	2.6E+02	6.3E+02	1.5E+03	3.2E+03	6.8E+03	1.4E+04	2.7E+04	5.2E+04	9.7E+04	1.7E+05	3.1E+05	5.2E+05	8.8E+05	1.4E+06	2.3E+06	3.6E+06	5.6E+06	8.4E+06	1.3E+07	1.8E+07	2.7E+07
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 41. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE	600	610	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7E-11	1.4E-10	1.0E-09	6.9E-09	4.1E-08
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	7.1E-05	1.3E-04	2.5E-04	4.5E-04	8.1E-04	1.4E-03	2.4E-03	4.1E-03	6.7E-03	1.1E-02	1.8E-02	4.3E-02	1.0E-01	2.2E-01	4.7E-01	9.6E-01	2.2E+00	4.8E+00	9.9E+00	1.9E+01	3.6E+01	6.6E+01
Am-242m	2.0E-06	3.7E-06	6.6E-06	1.2E-05	2.0E-05	3.4E-05	5.6E-05	9.2E-05	1.5E-04	2.3E-04	3.6E-04	8.3E-04	1.8E-03	3.7E-03	7.4E-03	1.4E-02	3.0E-02	6.0E-02	1.1E-01	2.0E-01	3.5E-01	5.9E-01
Am-243	3.6E-05	7.0E-05	1.3E-04	2.4E-04	4.4E-04	7.8E-04	1.4E-03	2.3E-03	3.9E-03	6.4E-03	1.0E-02	2.7E-02	6.4E-02	1.5E-01	3.2E-01	6.7E-01	1.6E+00	3.6E+00	7.7E+00	1.6E+01	3.1E+01	5.7E+01
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-11	1.1E-10	7.4E-10	4.4E-09	2.4E-08
Bi-207	4.0E-01	6.2E-01	9.3E-01	1.4E+00	2.0E+00	2.9E+00	4.0E+00	5.5E+00	7.4E+00	9.9E+00	1.3E+01	2.1E+01	3.3E+01	4.9E+01	6.9E+01	9.3E+01	1.3E+02	1.7E+02	2.1E+02	2.4E+02	2.8E+02	3.0E+02
Bi-210m	2.2E+00	4.2E+00	7.9E+00	1.5E+01	2.6E+01	4.7E+01	8.2E+01	1.4E+02	2.4E+02	3.9E+02	6.3E+02	1.6E+03	3.9E+03	8.9E+03	1.9E+04	4.1E+04	9.8E+04	2.2E+05	4.7E+05	9.6E+05	1.9E+06	3.5E+06
Bk-247	1.7E-10	8.9E-11	4.8E-11	2.6E-11	1.4E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	5.9E+00	4.3E+00	3.1E+00	2.2E+00	1.6E+00	1.2E+00	8.4E-01	6.0E-01	4.3E-01	3.1E-01	2.2E-01	1.1E-01	5.6E-02	2.8E-02	1.4E-02	7.0E-03	2.9E-03	1.2E-03	4.9E-04	2.0E-04	8.2E-05	3.3E-05
Cd-113	1.7E-09	3.2E-09	6.0E-09	1.1E-08	2.0E-08	3.6E-08	6.2E-08	1.1E-07	1.8E-07	3.0E-07	4.8E-07	1.2E-06	3.0E-06	6.8E-06	1.5E-05	3.1E-05	7.4E-05	1.7E-04	3.6E-04	7.3E-04	1.4E-03	2.7E-03
Cd-113m	1.3E-07	1.6E-07	1.8E-07	2.1E-07	2.3E-07	2.5E-07	2.6E-07	2.7E-07	2.8E-07	2.9E-07	2.9E-07	2.7E-07	2.4E-07	2.1E-07	1.7E-07	1.3E-07	9.4E-08	6.2E-08	3.9E-08	2.3E-08	1.3E-08	7.3E-09
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6E-11	1.0E-10	3.8E-10
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7E-11	7.7E-11	3.2E-10	1.2E-09
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.4E-06	7.8E-07	4.2E-07	2.3E-07	1.3E-07	6.8E-08	3.7E-08	2.0E-08	1.1E-08	5.9E-09	3.2E-09	9.4E-10	2.8E-10	8.0E-11	2.3E-11	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	2.8E-06	7.0E-06	1.7E-05	4.1E-05	9.4E-05	2.1E-04	4.6E-04	9.9E-04	2.1E-03	4.2E-03	8.5E-03	3.2E-02	1.1E-01	3.7E-01	1.1E+00	3.3E+00	1.1E+01	3.7E+01	1.1E+02	3.2E+02	8.4E+02	2.1E+03
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	3.6E-08	1.4E-08	5.6E-09	2.2E-09	8.7E-10	3.4E-10	1.3E-10	5.3E-11	2.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.0E-11	7.5E-10	5.5E-09	3.6E-08	2.1E-07	1.1E-06
I-129	5.1E+06	4.5E+06	4.0E+06	3.5E+06	3.1E+06	2.7E+06	2.4E+06	2.1E+06	1.8E+06	1.5E+06	1.3E+06	9.6E+05	7.0E+05	5.0E+05	3.6E+05	2.5E+05	1.6E+05	1.0E+05	6.3E+04	3.9E+04	2.4E+04	1.5E+04
K-40	1.3E+10	1.2E+10	1.2E+10	1.1E+10	1.0E+10	9.4E+09	8.6E+09	7.9E+09	7.2E+09	6.6E+09	6.0E+09	4.9E+09	3.9E+09	3.1E+09	2.4E+09	1.9E+09	1.4E+09	9.6E+08	6.7E+08	4.7E+08	3.2E+08	2.2E+08
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	8.7E-07	2.5E-06	6.8E-06	1.8E-05	4.7E-05	1.2E-04	2.8E-04	6.7E-04	1.5E-03	3.5E-03	7.6E-03	3.4E-02	1.4E-01	5.4E-01	1.9E+00	6.4E+00	2.6E+01	9.8E+01	3.4E+02	1.1E+03	3.3E+03	9.4E+03
Nb-92	3.1E-11	9.0E-11	2.5E-10	6.7E-10	1.7E-09	4.4E-09	1.1E-08	2.6E-08	6.0E-08	1.4E-07	3.0E-07	1.4E-06	5.8E-06	2.3E-05	8.2E-05	2.8E-04	1.2E-03	4.5E-03	1.6E-02	5.4E-02	1.7E-01	4.8E-01
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	1.5E-11	3.4E-11	1.6E-10	6.6E-10	2.6E-09	9.3E-09	3.1E-08	1.3E-07	5.1E-07	1.8E-06	6.0E-06	1.9E-05	5.4E-05
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	3.8E+07	5.3E+07	7.4E+07	1.0E+08	1.4E+08	1.8E+08	2.4E+08	3.2E+08	4.1E+08	5.3E+08	6.8E+08	1.1E+09	1.6E+09	2.5E+09	3.6E+09	5.1E+09	7.6E+09	1.1E+10	1.6E+10	2.2E+10	2.9E+10	3.8E+10
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 41. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	1	3	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115
Po-208	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	680	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	195	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-10	8.0E-09	3.0E-07	7.0E-06	1.1E-04	1.2E-03	9.6E-03	6.3E-02	3.4E-01	1.5E+00	5.8E+00	2.0E+01
Se-79	590	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sm-151	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-10	3.8E-08	2.1E-06	6.2E-05	1.1E-03	1.2E-02	9.6E-02	5.9E-01	2.8E+00	1.1E+01	3.8E+01	1.1E+02	2.9E+02	6.7E+02
Tb-157	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3E-11	1.7E-09	5.4E-08	1.1E-06	1.6E-05	1.8E-04	1.5E-03	1.0E-02	5.8E-02	2.8E-01
Te-123	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6E-11	1.3E-10	3.6E-10
Tm-170	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL r Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL in years modeled

TABLE 41. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	6.0E+01	1.7E+02	4.2E+02	9.8E+02	2.1E+03	4.3E+03	8.4E+03	1.5E+04	2.7E+04	4.5E+04	7.3E+04	1.1E+05	1.7E+05	2.6E+05	3.7E+05	5.1E+05	7.0E+05	9.4E+05	1.2E+06	1.6E+06	2.0E+06	2.5E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	7.1E-11	1.4E-09	2.2E-08	2.9E-07	3.1E-06	2.9E-05	2.3E-04	1.6E-03	9.7E-03	5.4E-02	2.7E-01	1.2E+00	5.0E+00	1.9E+01	6.9E+01	2.3E+02	7.3E+02	2.2E+03	6.1E+03	1.6E+04	4.2E+04
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.4E+03	2.8E+03	5.0E+03	8.6E+03	1.4E+04	2.1E+04	3.1E+04	4.3E+04	5.8E+04	7.5E+04	9.4E+04	1.2E+05	1.4E+05	1.6E+05	1.8E+05	2.0E+05	2.2E+05	2.4E+05	2.5E+05	2.6E+05	2.6E+05	2.6E+05
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	1.2E+00	4.4E+00	1.5E+01	4.4E+01	1.2E+02	3.2E+02	7.6E+02	1.7E+03	3.6E+03	7.3E+03	1.4E+04	2.6E+04	4.6E+04	7.8E+04	1.3E+05	2.1E+05	3.2E+05	4.9E+05	7.2E+05	1.0E+06	1.5E+06	2.0E+06
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	8.7E-10	1.8E-09	3.3E-09	5.3E-09	7.7E-09	1.0E-08	1.2E-08	1.4E-08	1.4E-08	1.4E-08	1.3E-08	1.2E-08	9.7E-09	7.8E-09	6.0E-09	4.4E-09	3.2E-09	2.2E-09	1.5E-09	9.6E-10	6.1E-10	3.8E-10
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 41. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE:	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.0E-11	6.8E-10	5.0E-09	3.2E-08	1.9E-07	9.6E-07	4.5E-06
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.1E+06	3.7E+06	4.4E+06	5.2E+06	6.1E+06	7.0E+06	7.9E+06	8.9E+06	9.9E+06	1.1E+07	1.2E+07	1.3E+07	1.4E+07	1.5E+07	1.6E+07	1.7E+07	1.8E+07	1.9E+07	1.9E+07	1.9E+07	1.9E+07	1.8E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.3E-11	3.8E-10	2.5E-09
Si-32	1.0E+05	2.4E+05	5.4E+05	1.2E+06	2.5E+06	5.1E+06	1.0E+07	1.9E+07	3.7E+07	6.7E+07	1.2E+08	2.1E+08	3.6E+08	6.0E+08	9.8E+08	2.5E+09	6.0E+09	1.3E+10	2.9E+10	5.8E+10	1.1E+11	2.1E+11
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.6E+05	2.5E+05	2.4E+05	2.3E+05	2.2E+05	2.1E+05	1.9E+05	1.7E+05	1.6E+05	1.4E+05	1.3E+05	1.1E+05	9.8E+04	8.6E+04	7.4E+04	5.5E+04	4.0E+04	2.8E+04	1.9E+04	1.3E+04	8.9E+03	5.9E+03
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	2.8E+06	3.7E+06	4.9E+06	6.3E+06	8.1E+06	1.0E+07	1.3E+07	1.6E+07	1.9E+07	2.3E+07	2.7E+07	3.2E+07	3.7E+07	4.3E+07	5.0E+07	6.4E+07	8.0E+07	9.8E+07	1.2E+08	1.3E+08	1.5E+08	1.7E+08
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	2.3E-10	1.4E-10	8.0E-11	4.5E-11	2.6E-11	1.4E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 41. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	1.9E-05	7.6E-05	2.8E-04	9.3E-04	3.0E-03	8.8E-03	2.5E-02	6.6E-02	1.7E-01	4.1E-01	9.4E-01	2.1E+00	4.5E+00	9.2E+00	1.8E+01	3.5E+01	6.6E+01	1.2E+02	2.1E+02	3.6E+02	6.1E+02	9.9E+02
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.7E+07	1.6E+07	1.5E+07	1.3E+07	1.2E+07	1.0E+07	9.2E+06	8.0E+06	6.9E+06	5.9E+06	5.0E+06	4.2E+06	3.5E+06	2.9E+06	2.4E+06	2.0E+06	1.6E+06	1.3E+06	1.0E+06	8.4E+05	6.8E+05	5.4E+05
Se-79	1.4E-08	7.6E-08	3.7E-07	1.7E-06	7.1E-06	2.8E-05	1.0E-04	3.5E-04	1.2E-03	3.6E-03	1.1E-02	3.0E-02	8.2E-02	2.1E-01	5.4E-01	1.3E+00	3.0E+00	6.9E+00	1.5E+01	3.2E+01	6.7E+01	1.3E+02
Si-32	3.7E+11	6.3E+11	1.0E+12	1.7E+12	2.6E+12	4.0E+12	5.9E+12	8.6E+12	1.2E+13	1.7E+13	2.3E+13	3.1E+13	4.1E+13	5.3E+13	6.8E+13	8.6E+13	1.1E+14	1.3E+14	1.6E+14	1.9E+14	2.3E+14	2.7E+14
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	3.9E+03	2.5E+03	1.6E+03	1.0E+03	6.3E+02	3.9E+02	2.4E+02	1.5E+02	9.1E+01	5.5E+01	3.3E+01	2.0E+01	1.2E+01	6.9E+00	4.1E+00	2.4E+00	1.4E+00	8.1E-01	4.7E-01	2.7E-01	1.6E-01	9.0E-02
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	1.8E+08	2.0E+08	2.1E+08	2.1E+08	2.2E+08	2.2E+08	2.2E+08	2.1E+08	2.1E+08	2.0E+08	1.9E+08	1.8E+08	1.6E+08	1.5E+08	1.4E+08	1.3E+08	1.1E+08	1.0E+08	9.2E+07	8.1E+07	7.2E+07	6.3E+07
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	3.0E-11
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 41. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION)

NUCLIDE	600	610	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	1.6E+03	2.5E+03	3.8E+03	5.8E+03	8.5E+03	1.2E+04	1.8E+04	2.5E+04	3.5E+04	4.7E+04	6.3E+04	1.1E+05	1.8E+05	2.9E+05	4.4E+05	6.5E+05	9.9E+05	1.4E+06	2.0E+06	2.6E+06	3.4E+06	4.2E+06
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	4.3E+05	3.4E+05	2.7E+05	2.1E+05	1.7E+05	1.3E+05	1.0E+05	7.9E+04	6.2E+04	4.8E+04	3.7E+04	2.2E+04	1.3E+04	7.7E+03	4.5E+03	2.6E+03	1.3E+03	6.5E+02	3.2E+02	1.6E+02	7.8E+01	3.8E+01
Se-79	2.7E+02	5.1E+02	9.7E+02	1.8E+03	3.2E+03	5.7E+03	9.9E+03	1.7E+04	2.9E+04	4.7E+04	7.7E+04	2.0E+05	4.7E+05	1.1E+06	2.4E+06	5.0E+06	1.2E+07	2.7E+07	5.7E+07	1.2E+08	2.3E+08	4.3E+08
Si-32	3.1E+14	3.6E+14	4.1E+14	4.7E+14	5.3E+14	5.9E+14	6.5E+14	7.2E+14	7.9E+14	8.6E+14	9.4E+14	1.1E+15	1.2E+15	1.3E+15	1.5E+15	1.6E+15	1.7E+15	1.7E+15	1.7E+15	1.7E+15	1.7E+15	1.6E+15
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-11	1.0E-10	6.1E-10	3.2E-09	1.5E-08	6.6E-08
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	5.2E-02	3.0E-02	1.7E-02	9.6E-03	5.4E-03	3.1E-03	1.7E-03	9.8E-04	5.5E-04	3.1E-04	1.7E-04	5.5E-05	1.7E-05	5.3E-06	1.6E-06	5.0E-07	1.1E-07	2.6E-08	5.8E-09	1.3E-09	2.9E-10	6.4E-11
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	5.5E+07	4.8E+07	4.2E+07	3.6E+07	3.1E+07	2.6E+07	2.2E+07	1.9E+07	1.6E+07	1.4E+07	1.2E+07	8.1E+06	5.6E+06	3.9E+06	2.7E+06	1.8E+06	1.1E+06	6.6E+05	4.0E+05	2.4E+05	1.4E+05	8.1E+04
Te-123	7.1E-11	1.6E-10	3.6E-10	7.7E-10	1.6E-09	3.4E-09	6.8E-09	1.3E-08	2.6E-08	4.8E-08	9.0E-08	2.9E-07	8.9E-07	2.6E-06	6.9E-06	1.8E-05	5.4E-05	1.5E-04	4.1E-04	1.0E-03	2.4E-03	5.5E-03
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 43.
PEAK RADIONUCLIDE CONCENTRATIONS AND TIME TO EXCEED GWPL AT THE WATER TABLE
VERTICAL PATHRAE RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m³)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Ac-227	-1	0		---
Ag-108m	680	3.7E+04	3.7E+13	2,656.2
Al-26	-1	0		> 10,000
Am-241	390	4.1E-03	4.1E+06	1,255.0
Am-242m	410	2.0E-05	2.0E+04	999.8
Am-243	410	4.2E-03	4.2E+06	1,237.4
Ba-133	-1	0		> 10,000
Be-10	740	4.3E+03	4.3E+12	2,991.8
Bi-207	290	1.8E-01	1.8E+08	640.6
Bi-210m	300	2.7E+02	2.7E+11	1,243.3
Bk-247	70	6.3E-10	6.3E-01	79.5
C-14	-1	1.3E-01	1.3E+08	9,529.4
Ca-41	110	5.6E-06	5.6E+03	136.6
Cd-113	780	2.0E-07	2.0E+02	1,243.3
Cd-113m	330	3.4E-07	3.4E+02	460.7
Cf-249	780	3.1E-05	3.1E+04	2,023.7
Cf-250	-1	0		---
Cf-251	740	4.0E-04	4.0E+05	2,239.8
Cf-252	-1	0		---
Cl-36	75	1.9E-06	1.9E+03	81.4
Cm-243	-1	0		> 10,000
Cm-244	-1	0		> 10,000
Cm-245	-1	0		> 10,000
Cm-246	-1	0		> 10,000
Cm-247	-1	0		> 10,000
Cm-248	-1	0		> 10,000
Co-60	-1	0		> 10,000
Cs-135	-1	0		> 10,000
Cs-137	-1	0		> 10,000
Eu-152	-1	0		---
Eu-154	-1	0		---
Eu-155	-1	0		---
Fe-55	-1	0		---
Fe-60	380	1.4E+03	1.4E+12	1,708.2
Gd-148	-1	2.4E-10	2.4E-01	2,646.9
H-3	45	2.3E-01	2.3E+08	98.5
Hg-194	-1	0		> 10,000
Ho-166m	660	6.6E+04	6.6E+13	2,794.6
I-129	140	1.8E-07	1.8E+02	218
K-40	125	1.0E-04	1.0E+05	253.1
Ks-20	-1	3.9E-11	3.9E-02	32
Ks-21	-1	2.2E-12	2.2E-03	34.2
Ks-22	-1	0		---
Ks-23	-1	0		---
Ks-24	-1	0		> 10,000
Ks-25	-1	0		> 10,000
Ks-26	-1	0		---
Mn-53	-1	1.4E+02	1.4E+11	7,530.2
Na-22	-1	0		---
Nb-91	410	2.6E+05	2.6E+14	1,796.7
Nb-92	550	3.4E+01	3.4E+10	1,940.5
Nb-93m	-1	1.1E-10	1.1E-01	625.5
Nb-94	780	3.6E-03	3.6E+06	1,937.4
Ni-59	-1	0		> 10,000
Ni-63	-1	0		> 10,000
Np-237	-1	3.3E-02	3.3E+07	5,086.6
Os-194	-1	0		---
Pa-231	-1	3.7E+03	3.7E+12	6,451.8
Pb-202	-1	0		> 10,000
Pb-210	-1	0		> 10,000
Pd-107	215	4.1E+02	4.1E+11	719.3
Pm-145	-1	0		---
Pm-147	-1	0		---
Po-208	-1	0		---
Po-209	-1	7.2E-11	7.2E-02	3,638.3
Pt-193	275	9.7E+01	9.7E+10	708.3
Pu-236	-1	0		> 10,000
Pu-238	-1	0		> 10,000
Pu-239	-1	0		> 10,000
Pu-240	-1	0		> 10,000
Pu-241	-1	0		> 10,000
Pu-242	-1	0		> 10,000
Pu-244	-1	0		> 10,000
Ra-226	-1	0		> 10,000
Ra-228	-1	0		> 10,000
Re-187	-1	3.6E-06	3.6E+03	165.6
Se-79	280	3.2E+04	3.2E+13	1,241.3
Si-32	95	1.2E+07	1.2E+16	449.9
Sm-151	760	4.5E-01	4.5E+08	1,618.5
Sn-121m	-1	0		> 10,000
Sn-126	-1	0		> 10,000
Sr-90	60	1.5E-05	1.5E+04	120.8
Tb-157	-1	3.3E-11	3.3E-02	2,587.8
Tb-158	-1	2.7E-03	2.7E+06	3,816.1
Tc-99	155	8.2E-06	8.2E+03	206.6
Te-123	740	1.1E-04	1.1E+05	1,533.8
Th-229	-1	0		> 10,000
Th-230	-1	0		> 10,000
Th-232	-1	0		> 10,000
Ti-44	-1	0		> 10,000
Tl-204	-1	8.2E-10	8.2E-01	106.7
Tm-170	-1	0		---
U-232	-1	1.8E-10	1.8E-01	2,444.8
U-233	-1	6.0E-03	6.0E+06	7,053.3
U-234	-1	5.0E+02	5.0E+11	7,064.7
U-235	-1	1.6E-04	1.6E+05	7,064.7
U-236	-1	5.3E+00	5.3E+09	7,064.7
U-238	-1	2.8E-02	2.8E+07	7,064.7
V-50	-1	0		> 10,000
Zr-93	-1	0		> 10,000

NOTES: -1 indicates that nuclide did not exceed standard within the 1,000 years modeled
--- indicates that concentrations do not peak at the water table within 10,000 yrs

TABLE 44. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	1	3	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
Ac-227	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	680	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	410	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	410	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	740	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	70	0	0	0	0	0	0	0	0	0	0	7.7E-06	0.00022	0.0025	0.014	0.05	1.3E-01	2.5E-01	3.9E-01	5.2E-01	6.0E-01	6.3E-01	6.0E-01	5.2E-01	4.3E-01	3.4E-01	2.5E-01	1.8E-01	1.3E-01	8.6E-02
C-14	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	110	0	0	0	0	0	0	0	0	0	0	2.1E-09	1E-06	0.0001	0.0033	0.049	0.43	2.5	10	34	92	210	420	7.4E+02	1.2E+03	1.8E+03	2.5E+03	3.2E+03	3.9E+03	4.6E+03
Cd-113	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	740	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	75	0	0	0	0	0	0	0	0	0	0	0.014	0.43	5.1	31	1.2E+02	3.2E+02	6.4E+02	1.1E+03	1.5E+03	1.8E+03	1.9E+03	1.9E+03	1.7E+03	1.4E+03	1.2E+03	8.9E+02	6.6E+02	4.7E+02	3.3E+02
Cm-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	380	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	45	0	0	0	0	0	0	0	0	0	0	0.29	61	2900	51000	440000	2300000	8300000	2.2E+07	4.7E+07	8.3E+07	1.3E+08	1.7E+08	2.0E+08	2.3E+08	2.3E+08	2.2E+08	1.9E+08	1.6E+08	1.3E+08
Hg-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	660	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.1E-10	2.9E-08	6.1E-07	7.9E-06	6.9E-05	0.00043	0.0021	0.0084	0.028	0.08	0.2	0.46	0.95	1.8	3.2
K-40	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.4E-10	5E-08	1.8E-06	3.7E-05	0.00047	0.0042	0.028	0.15	0.63	2.3	7	19	47	110	220
Ks-20	-1	0	0	0	0	0	0	0	0	0	0	0.035	0.032	0.011	0.002	0.00022	1.8E-05	1.1E-06	5.3E-08	2.2E-09	8E-11	0	0	0	0	0	0	0	0	0
Ks-21	-1	0	0	0	0	0	0	0	0	0	0	0.0014	0.0022	0.0011	0.00029	4.4E-05	4.5E-06	3.5E-07	2.2E-08	1.1E-09	5E-11	0	0	0	0	0	0	0	0	0
Ks-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	410	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4E-10	4.5E-09	6.6E-08	7.8E-07
Pm-145	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 44. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9E-11	7.2E-11	2.6E-10	8.8E-10	2.8E-09	8.6E-09
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6E-11	8.8E-11	2.8E-10	8.3E-10
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2E-11	7.4E-11	2.5E-10	8.2E-10	2.5E-09
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	8.4E-11	7.1E-10	5.2E-09	3.4E-08	2E-07	0.000001	4.9E-06	0.000021	0.000086	0.00032	0.0011	0.0036	0.011	0.032	0.089
Bi-210m	0	0	0	0	0	0	0	0	0	0	1.7E-11	1.1E-10	6.3E-10	3.3E-09	1.6E-08	7.3E-08	3E-07	1.2E-06	4.3E-06	0.000015	0.000048	0.00015
Bk-247	5.7E-02	3.7E-02	2.3E-02	1.5E-02	8.9E-03	5.4E-03	3.2E-03	1.9E-03	1.1E-03	6.5E-04	3.7E-04	2.1E-04	1.2E-04	6.9E-05	3.9E-05	2.2E-05	1.2E-05	6.6E-06	3.7E-06	2.0E-06	1.1E-06	6.0E-07
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	5.1E+03	5.4E+03	5.6E+03	5.6E+03	5.4E+03	5.0E+03	4.6E+03	4.2E+03	3.7E+03	3.2E+03	2.7E+03	2.2E+03	1.9E+03	1.5E+03	1.2E+03	9.7E+02	7.7E+02	6.0E+02	4.7E+02	3.6E+02	2.8E+02	2.1E+02
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	3.3E-11	2.1E-10	1.2E-09	6.1E-09	2.8E-08	1.2E-07	4.4E-07	1.5E-06	0.000005	0.000015	0.000044	0.00012	0.0003	0.00071
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	2.2E+02	1.5E+02	9.4E+01	6.0E+01	3.8E+01	2.3E+01	1.4E+01	8.5E+00	5.1E+00	3.0E+00	1.8E+00	1.0E+00	6.0E-01	3.4E-01	2.0E-01	1.1E-01	6.3E-02	3.6E-02	2.0E-02	1.1E-02	6.2E-03	3.5E-03
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.0E+08	7.5E+07	5.3E+07	3.7E+07	2.5E+07	1.7E+07	1.1E+07	6.7E+06	4.2E+06	2.6E+06	1.5E+06	9.2E+05	5.4E+05	3.1E+05	1.8E+05	1.0E+05	5.8E+04	3.3E+04	1.8E+04	1.0E+04	5.5E+03	3.0E+03
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	5.4	8.6	13	19	26	35	46	58	71	86	100	1.1E+02	1.3E+02	1.4E+02	1.5E+02	1.6E+02	1.7E+02	1.7E+02	1.8E+02	1.8E+02	1.8E+02	1.7E+02
K-40	420	750	1300	2100	3200	4800	6900	9600	13000	17000	22000	27000	3.3E+04	4.0E+04	4.7E+04	5.4E+04	6.1E+04	6.8E+04	7.5E+04	8.2E+04	8.8E+04	9.3E+04
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	7.4E-06	0.00006	0.00041	0.0024	0.013	0.059	0.25	0.94	3.3	11	32	92	240	620	1500	3400	7500	16000	32000	63000	120000	220000
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 44. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE	235	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	2.5E-08	6.9E-08	1.8E-07	4.7E-07	1.1E-06	2.7E-06	6.2E-06	0.000014	0.000029	0.000061	0.00012	0.00025	0.00047	0.00089	0.003	0.0091	0.026	0.069	0.17	0.41	0.92	2
Am-242m	2.4E-09	6.5E-09	1.7E-08	4.2E-08	1E-07	2.4E-07	5.3E-07	1.2E-06	2.4E-06	0.000005	0.00001	0.000019	0.000037	0.000068	0.00022	0.00065	0.0018	0.0046	0.011	0.026	0.056	0.12
Am-243	7.4E-09	2.1E-08	5.5E-08	1.4E-07	3.5E-07	8.3E-07	1.9E-06	4.3E-06	9.2E-06	0.000019	0.000039	0.000079	0.00015	0.00029	0.00098	0.003	0.0088	0.024	0.06	0.15	0.33	0.72
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0.23	0.58	1.4	3.2	7.1	15	31	63	120	230	420	750	1300	2200	6000	15000	35000	76000	160000	300000	550000	960000
Bi-210m	0.00043	0.0012	0.0032	0.0082	0.02	0.048	0.11	0.25	0.54	1.1	2.3	4.6	8.9	17	57	180	510	1400	3500	8500	19000	42000
Bk-247	3.3E-07	1.8E-07	9.6E-08	5.2E-08	2.8E-08	1.5E-08	8.0E-09	4.3E-09	2.3E-09	1.2E-09	6.5E-10	3.5E-10	1.9E-10	9.8E-11	2.8E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.6E+02	1.2E+02	8.9E+01	6.6E+01	4.9E+01	3.6E+01	2.6E+01	1.9E+01	1.4E+01	1.0E+01	7.4E+00	5.3E+00	3.8E+00	2.8E+00	1.4E+00	7.1E-01	3.6E-01	1.8E-01	8.8E-02	4.3E-02	2.1E-02	1.0E-02
Cd-113	0	0	0	0	1.5E-11	3.7E-11	8.4E-11	1.9E-10	4.1E-10	8.5E-10	1.7E-09	3.5E-09	6.8E-09	1.3E-08	4.3E-08	1.3E-07	3.9E-07	1.1E-06	2.7E-06	6.5E-06	0.000015	0.000032
Cd-113m	0.0016	0.0036	0.0074	0.015	0.029	0.054	0.097	0.17	0.29	0.47	0.75	1.2	1.8	2.6	5.4	10	18	30	47	69	97	130
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.9E-03	1.1E-03	5.8E-04	3.2E-04	1.8E-04	9.6E-05	5.2E-05	2.8E-05	1.5E-05	8.4E-06	4.6E-06	2.5E-06	1.3E-06	7.2E-07	2.1E-07	6.0E-08	1.7E-08	5.0E-09	1.4E-09	4.1E-10	1.2E-10	3.3E-11
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	1.8E-11	7.7E-11	3.1E-10	1.1E-09	4.1E-09	1.4E-08	4.4E-08	1.4E-07	4E-07	1.1E-06	3.1E-06	8.2E-06	0.000021	0.000052	0.00029	0.0014	0.0065	0.027	0.1	0.35	1.2	3.5
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.6E+03	8.8E+02	4.7E+02	2.5E+02	1.3E+02	7.1E+01	3.8E+01	2.0E+01	1.0E+01	5.5E+00	2.9E+00	1.5E+00	7.8E-01	4.0E-01	1.1E-01	2.9E-02	7.5E-03	2.0E-03	5.1E-04	1.3E-04	3.4E-05	8.7E-06
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-11
I-129	1.7E+02	1.6E+02	1.5E+02	1.4E+02	1.3E+02	1.2E+02	1.1E+02	1.0E+02	9.2E+01	8.3E+01	7.4E+01	6.6E+01	5.8E+01	5.1E+01	3.9E+01	2.9E+01	2.2E+01	1.6E+01	1.1E+01	8.0E+00	5.7E+00	3.9E+00
K-40	9.7E+04	1.0E+05	1.0E+05	1.0E+05	1.0E+05	1.0E+05	1.0E+05	9.8E+04	9.5E+04	9.1E+04	8.7E+04	8.2E+04	7.7E+04	7.2E+04	6.2E+04	5.3E+04	4.3E+04	3.5E+04	2.8E+04	2.2E+04	1.7E+04	1.3E+04
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	3.9E-11	1.7E-10	7.3E-10	2.9E-09	1.1E-08	3.9E-08	1.3E-07	4.4E-07	1.4E-06	4.2E-06	0.000012	0.000034	0.00024	0.0015	0.0083	0.041	0.19	0.79	3	11
Nb-92	0	0	0	0	0	0	0	0	0	1.1E-11	3.6E-11	1.1E-10	3.2E-10	8.9E-10	6.4E-09	4E-08	2.3E-07	1.1E-06	5.2E-06	0.000022	0.000086	0.00031
Nb-93m	0	0	0	0	0	0	0	2.1E-11	5.9E-11	1.6E-10	4E-10	9.7E-10	2.3E-09	5.2E-09	2.4E-08	9.8E-08	3.6E-07	1.2E-06	3.5E-06	9.6E-06	0.000024	0.000057
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6E-11	1.3E-10	6E-10	2.5E-09	9.8E-09	3.5E-08
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	390000	680000	1100000	1900000	3100000	4900000	7600000	12000000	17000000	26000000	37000000	53000000	75000000	1E+08	1.9E+08	3.4E+08	5.9E+08	9.6E+08	1.5E+09	2.3E+09	3.5E+09	5E+09
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 44. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	2.2E-11	1.4E-10	8E-10	4.2E-09	2.1E-08	9.6E-08	4.1E-07	1.6E-06	6.2E-06	0.000022	0.000075	0.00024	0.00075	0.0022	0.0062	0.017	0.044	0.11	0.27	0.65	1.5
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	4	8	15	28	49	85	140	230	370	570	870	1300	1900	2700	3900	5400	7300	9900	13000	17000	23000	29000
Am-242m	0.23	0.44	0.8	1.4	2.4	4.1	6.6	10	16	24	36	51	73	100	140	190	250	320	410	530	660	820
Am-243	1.5	3	5.8	11	19	34	58	96	150	240	380	570	850	1200	1800	2500	3500	4800	6500	8600	11000	15000
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	5.3E-11	2.7E-10	1.3E-09	5.8E-09	2.4E-08	9.3E-08	3.4E-07	1.2E-06	3.9E-06	0.000012	0.000037	0.00011	0.00029	0.00078	0.002	0.0049	0.012	0.027	0.061	0.13
Bi-207	1600000	2600000	4000000	6000000	8700000	12000000	17000000	22000000	29000000	37000000	46000000	56000000	66000000	78000000	90000000	1E+08	1.1E+08	1.2E+08	1.4E+08	1.5E+08	1.5E+08	1.6E+08
Bi-210m	88000	180000	340000	640000	1100000	2000000	3400000	5700000	9200000	14000000	22000000	34000000	51000000	74000000	1.1E+08	1.5E+08	2.1E+08	2.9E+08	3.9E+08	5.2E+08	6.8E+08	8.9E+08
Bk-247	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	5.0E-03	2.4E-03	1.2E-03	5.6E-04	2.7E-04	1.3E-04	6.0E-05	2.9E-05	1.3E-05	6.3E-06	3.0E-06	1.4E-06	6.6E-07	3.1E-07	1.4E-07	6.7E-08	3.1E-08	1.5E-08	6.8E-09	3.1E-09	1.5E-09	6.7E-10
Cd-113	0.000067	0.00013	0.00026	0.00048	0.00087	0.0015	0.0026	0.0043	0.007	0.011	0.017	0.026	0.038	0.056	0.08	0.11	0.16	0.22	0.29	0.39	0.52	0.67
Cd-113m	170	200	240	270	300	320	330	340	340	320	310	280	260	230	200	180	150	130	100	85	68	54
Cf-249	0	0	0	3E-11	1E-10	3.3E-10	1E-09	2.9E-09	8E-09	2.1E-08	5.3E-08	1.3E-07	3E-07	6.9E-07	1.5E-06	3.2E-06	6.6E-06	0.000013	0.000026	0.000049	0.000091	0.00017
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	1.4E-11	5E-11	1.7E-10	5.6E-10	1.7E-09	5E-09	1.4E-08	3.8E-08	9.6E-08	2.4E-07	5.6E-07	1.3E-06	2.9E-06	6.1E-06	0.000013	0.000026	0.000051	0.000099	0.00019	0.00034
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	10	28	72	180	420	940	2100	4300	8800	17000	33000	61000	110000	190000	340000	560000	930000	1500000	2400000	3700000	5700000	8600000
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	2.2E-06	5.6E-07	1.4E-07	3.6E-08	9.0E-09	2.3E-09	5.7E-10	1.4E-10	3.5E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	1E-10	6.1E-10	3.4E-09	1.7E-08	8.3E-08	3.7E-07	1.5E-06	5.9E-06	0.000021	0.000074	0.00024	0.00076	0.0023	0.0064	0.018	0.046	0.12	0.29	0.69	1.6	3.5	7.7
I-129	2.7E+00	1.9E+00	1.3E+00	8.6E-01	5.7E-01	3.8E-01	2.5E-01	1.7E-01	1.1E-01	7.2E-02	4.7E-02	3.1E-02	2.0E-02	1.3E-02	8.2E-03	5.3E-03	3.4E-03	2.2E-03	1.4E-03	8.7E-04	5.5E-04	3.5E-04
K-40	1.0E+04	7.8E+03	5.8E+03	4.3E+03	3.2E+03	2.3E+03	1.7E+03	1.2E+03	8.7E+02	6.2E+02	4.4E+02	3.1E+02	2.2E+02	1.6E+02	1.1E+02	7.6E+01	5.3E+01	3.6E+01	2.5E+01	1.7E+01	1.2E+01	8.1E+00
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	36	110	330	940	2500	6300	15000	36000	80000	170000	360000	740000	1400000	2800000	5200000	9400000	17000000	29000000	49000000	81000000	1.3E+08	2.1E+08
Nb-92	0.001	0.0033	0.0099	0.028	0.075	0.19	0.47	1.1	2.5	5.5	12	24	47	91	170	320	560	990	1700	2800	4700	7600
Nb-93m	0.00013	0.00026	0.0005	0.00092	0.0016	0.0027	0.0043	0.0065	0.0096	0.014	0.019	0.025	0.032	0.041	0.05	0.059	0.069	0.078	0.087	0.095	0.1	0.11
Nb-94	1.2E-07	3.8E-07	1.1E-06	3.2E-06	8.6E-06	0.000022	0.000054	0.00013	0.00029	0.00063	0.0013	0.0027	0.0054	0.01	0.02	0.036	0.064	0.11	0.19	0.32	0.53	0.86
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	7.1E+09	9.8E+09	1.3E+10	1.7E+10	2.3E+10	2.9E+10	3.6E+10	4.5E+10	5.5E+10	6.6E+10	7.9E+10	9.3E+10	1.1E+11	1.2E+11	1.4E+11	1.6E+11	1.8E+11	2.0E+11	2.2E+11	2.4E+11	2.6E+11	2.8E+11
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 44. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE	610	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	3.3	7.2	15	31	63	120	240	450	840	1500	4800	14000	39000	100000	250000	720000	1900000	4900000	12000000	27000000	57000000
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	37000	46000	57000	71000	86000	100000	130000	150000	180000	210000	280000	370000	470000	590000	730000	930000	1200000	1400000	1600000	1900000	2200000
Am-242m	1000	1200	1500	1800	2100	2400	2800	3200	3700	4200	5300	6500	7900	9300	11000	13000	14000	16000	17000	18000	19000
Am-243	19000	24000	31000	38000	48000	58000	71000	86000	100000	120000	170000	230000	310000	400000	510000	670000	860000	1100000	1300000	1600000	1900000
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0.28	0.59	1.2	2.4	4.6	8.7	16	29	53	93	270	760	2000	4900	12000	32000	83000	200000	460000	1000000	2100000
Bi-207	1.7E+08	1.7E+08	1.7E+08	1.7E+08	1.7E+08	1.7E+08	1.7E+08	1.6E+08	1.6E+08	1.5E+08	1.4E+08	1.2E+08	1E+08	86000000	70000000	54000000	40000000	29000000	21000000	14000000	9800000
Bi-210m	1.1E+09	1.5E+09	1.8E+09	2.3E+09	2.9E+09	3.5E+09	4.3E+09	5.2E+09	6.2E+09	7.4E+09	1E+10	1.4E+10	1.9E+10	2.4E+10	3.1E+10	4.1E+10	5.3E+10	6.6E+10	8.1E+10	9.8E+10	1.2E+11
Bk-247	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	3.1E-10	1.4E-10	6.7E-11	3.1E-11	1.4E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cd-113	0.87	1.1	1.4	1.8	2.2	2.7	3.3	3.9	4.7	5.7	7.9	11	14	18	24	31	40	50	62	74	88
Cd-113m	43	34	26	20	15	11	8.4	6.2	4.6	3.3	1.7	0.89	0.44	0.21	0.1	0.04	0.015	0.0055	0.002	0.00069	0.00024
Cf-249	0.00029	0.00051	0.00088	0.0015	0.0024	0.0039	0.0063	0.0098	0.015	0.023	0.052	0.11	0.22	0.43	0.81	1.7	3.3	6.3	11	20	33
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0.00061	0.0011	0.0019	0.0032	0.0053	0.0087	0.014	0.022	0.035	0.054	0.12	0.27	0.56	1.1	2.1	4.6	9.3	18	34	60	100
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	13000000	19000000	27000000	39000000	54000000	76000000	1E+08	1.4E+08	1.9E+08	2.5E+08	4.4E+08	7.3E+08	1.2E+09	1.8E+09	2.8E+09	4.6E+09	7.2E+09	1.1E+10	1.6E+10	2.3E+10	3.3E+10
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0	0	0	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	16	34	68	130	260	490	900	1600	2900	5100	15000	40000	100000	260000	600000	1600000	4100000	9900000	23000000	49000000	1E+08
I-129	2.2E-04	1.4E-04	8.7E-05	5.5E-05	3.4E-05	2.2E-05	1.3E-05	8.4E-06	5.3E-06	3.3E-06	1.3E-06	4.9E-07	1.9E-07	7.2E-08	2.7E-08	8.2E-09	2.4E-09	7.2E-10	2.1E-10	6.3E-11	1.9E-11
K-40	5.5E+00	3.8E+00	2.6E+00	1.7E+00	1.2E+00	8.0E-01	5.4E-01	3.6E-01	2.5E-01	1.6E-01	7.4E-02	3.3E-02	1.5E-02	6.6E-03	2.9E-03	1.0E-03	3.7E-04	1.3E-04	4.7E-05	1.7E-05	5.8E-06
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	3.3E+08	5.2E+08	7.9E+08	1.2E+09	1.7E+09	2.5E+09	3.7E+09	5.2E+09	7.3E+09	1E+10	1.9E+10	3.4E+10	6E+10	1E+11	1.6E+11	2.8E+11	4.8E+11	7.8E+11	1.2E+12	1.9E+12	2.7E+12
Nb-92	12000	19000	29000	44000	66000	97000	140000	200000	290000	410000	770000	1400000	2500000	4300000	7100000	13000000	22000000	37000000	60000000	93000000	1.4E+08
Nb-93m	0.11	0.11	0.11	0.11	0.11	0.1	0.098	0.092	0.085	0.078	0.063	0.049	0.036	0.026	0.018	0.011	0.0067	0.0038	0.0021	0.0011	0.00057
Nb-94	1.4	2.1	3.3	5	7.5	11	16	23	33	46	87	160	280	480	800	1400	2500	4200	6700	10000	16000
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	1.5E-11	3.7E-11	8.7E-11	2E-10	4.4E-10	9.6E-10	2E-09	4.2E-09	8.5E-09	1.7E-08	6.3E-08	2.2E-07	7E-07	2.1E-06	6.1E-06	0.000021	0.000067	0.0002	0.00056	0.0015	0.0037
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8E-11	1.3E-10	7.9E-10	4.5E-09
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	3.0E+11	3.2E+11	3.4E+11	3.5E+11	3.7E+11	3.8E+11	3.9E+11	4.0E+11	4.0E+11	4.1E+11	4.1E+11	4.1E+11	4.0E+11	3.8E+11	3.6E+11	3.3E+11	2.9E+11	2.6E+11	2.2E+11	1.9E+11	1.6E+11
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 44. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	1	3	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
Po-208	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	-1	0	0	0	0	0	0	0	0	0	0	0	3.1E-10	8.7E-08	6.5E-06	0.00019	0.003	0.028	0.18	0.82	3	9.2	24	53	110	200	330	520	770	1100
Se-79	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7E-10	6.6E-08	1.1E-05	0.00085	0.039	1.1	22	310	3400	29000	200000	1100000	5700000
Sm-151	760	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	60	0	0	0	0	0	0	0	0	0	0	6.1E-08	2.7E-05	0.0023	0.066	0.9	6.9	35	130	380	910	1800	3200	5100	7400	9700	12000	1.4E+04	1.5E+04	1.5E+04
Tb-157	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	155	0	0	0	0	0	0	0	0	0	0	0	0	1.6E-11	3.7E-09	2.8E-07	9.1E-06	0.00016	0.0018	0.014	0.076	0.33	1.2	3.7	9.8	23	49	96	170	300
Te-123	740	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	-1	0	0	0	0	0	0	0	0	0	0	0	0	2.3E-11	7.7E-09	6.5E-07	0.00002	0.00029	0.0024	0.012	0.044	0.12	0.25	0.42	0.6	0.74	0.81	0.8	0.71	0.59
Tm-170	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL r- Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL in years modeled

TABLE 44. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	2.1E-11	2.8E-10	3E-09	2.8E-08	2.3E-07	1.6E-06	9.9E-06	0.000055	0.00028	0.0013	0.0054	0.021	0.076	0.26	0.81	2.4	6.9	18	47
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.4E+03	1.8E+03	2.2E+03	2.6E+03	2.9E+03	3.2E+03	3.4E+03	3.6E+03	3.6E+03	3.6E+03	3.5E+03	3.3E+03	3.1E+03	2.9E+03	2.6E+03	2.4E+03	2.1E+03	1.8E+03	1.6E+03	1.4E+03	1.2E+03	9.8E+02
Se-79	0	0	0	0	0	0	0	0	3.4E-11	2.8E-10	2E-09	1.3E-08	7.6E-08	4.1E-07	0.000002	8.9E-06	0.000037	0.00014	0.00052	0.0018	0.0058	0.018
Si-32	2.4E+07	9.3E+07	3.2E+08	1E+09	2.8E+09	7.5E+09	1.9E+10	4.3E+10	9.4E+10	1.9E+11	3.8E+11	7.2E+11	1.3E+12	2.3E+12	3.9E+12	6.3E+12	1E+13	1.6E+13	2.3E+13	3.4E+13	5E+13	7E+13
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.5E+04	1.4E+04	1.3E+04	1.2E+04	9.9E+03	8.2E+03	6.7E+03	5.3E+03	4.2E+03	3.2E+03	2.4E+03	1.8E+03	1.3E+03	9.4E+02	6.7E+02	4.8E+02	3.3E+02	2.3E+02	1.6E+02	1.1E+02	7.4E+01	5.0E+01
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	470	720	1000	1400	1900	2500	3100	3.8E+03	4.5E+03	5.2E+03	5.9E+03	6.6E+03	7.1E+03	7.5E+03	7.9E+03	8.1E+03	8.2E+03	8.2E+03	8.0E+03	7.8E+03	7.5E+03	7.1E+03
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0.45	0.33	0.22	0.14	0.089	0.053	0.03	0.017	0.0091	0.0048	0.0025	0.0012	0.0006	0.00029	0.00013	0.000062	0.000028	0.000013	5.6E-06	2.4E-06	0.000001	4.4E-07
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 44. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE	235	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	120	270	620	1300	2800	5800	11000	22000	41000	74000	130000	230000	380000	630000	1600000	3900000	8800000	19000000	37000000	71000000	1.3E+08	2.2E+08
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	8.2E+02	6.9E+02	5.7E+02	4.6E+02	3.8E+02	3.1E+02	2.5E+02	2.0E+02	1.6E+02	1.3E+02	1.0E+02	7.9E+01	6.2E+01	4.8E+01	2.9E+01	1.8E+01	1.0E+01	6.1E+00	3.6E+00	2.1E+00	1.2E+00	6.8E-01
Se-79	0.052	0.15	0.39	1	2.5	5.9	14	30	65	140	280	560	1100	2100	7000	22000	63000	170000	430000	1000000	2400000	5200000
Si-32	9.6E+13	1.3E+14	1.7E+14	2.3E+14	3E+14	3.8E+14	4.8E+14	5.9E+14	7.3E+14	8.9E+14	1.1E+15	1.3E+15	1.5E+15	1.8E+15	2.3E+15	3.0E+15	3.8E+15	4.6E+15	5.5E+15	6.5E+15	7.4E+15	8.3E+15
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.3E-11
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	3.3E+01	2.2E+01	1.5E+01	9.7E+00	6.4E+00	4.2E+00	2.7E+00	1.8E+00	1.1E+00	7.3E-01	4.7E-01	3.0E-01	1.9E-01	1.2E-01	4.9E-02	1.9E-02	7.7E-03	3.0E-03	1.2E-03	4.5E-04	1.7E-04	6.7E-05
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	6.7E+03	6.2E+03	5.7E+03	5.3E+03	4.8E+03	4.3E+03	3.8E+03	3.4E+03	3.0E+03	2.6E+03	2.3E+03	2.0E+03	1.7E+03	1.5E+03	1.1E+03	7.8E+02	5.5E+02	3.9E+02	2.7E+02	1.8E+02	1.2E+02	8.2E+01
Te-123	0	0	0	0	0	0	0	0	1.2E-11	3.1E-11	7.7E-11	1.8E-10	4.2E-10	9.5E-10	4.4E-09	1.8E-08	7E-08	2.5E-07	8.1E-07	2.5E-06	0.000007	0.000019
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	1.8E-07	7.5E-08	3.1E-08	1.2E-08	5E-09	2E-09	7.7E-10	3E-10	1.2E-10	4.5E-11	1.7E-11	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 44. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	3.7E+08	6E+08	9.4E+08	1.4E+09	2.1E+09	3E+09	4.1E+09	5.6E+09	7.4E+09	9.6E+09	1.2E+10	1.5E+10	1.9E+10	2.3E+10	2.7E+10	3.2E+10	3.7E+10	4.2E+10	4.8E+10	5.3E+10	5.9E+10	6.4E+10
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.8E-01	2.2E-01	1.2E-01	6.8E-02	3.8E-02	2.1E-02	1.2E-02	6.3E-03	3.5E-03	1.9E-03	1.0E-03	5.6E-04	3.0E-04	1.6E-04	8.9E-05	4.8E-05	2.6E-05	1.4E-05	7.4E-06	4.0E-06	2.1E-06	1.1E-06
Se-79	11000000	22000000	42000000	78000000	1.4E+08	2.5E+08	4.2E+08	6.9E+08	1.1E+09	1.8E+09	2.7E+09	4.1E+09	6.2E+09	9E+09	1.3E+10	1.8E+10	2.5E+10	3.5E+10	4.7E+10	6.3E+10	8.3E+10	1.1E+11
Si-32	9.2E+15	9.9E+15	1.1E+16	1.1E+16	1.1E+16	1.2E+16	1.2E+16	1.2E+16	1.2E+16	1.1E+16	1.1E+16	1.0E+16	9.7E+15	9.0E+15	8.4E+15	7.7E+15	7.0E+15	6.4E+15	5.7E+15	5.1E+15	4.5E+15	4.0E+15
Sm-151	3.8E-10	2.1E-09	1E-08	4.8E-08	2.1E-07	8.3E-07	3.1E-06	0.000011	0.000036	0.00011	0.00034	0.00095	0.0026	0.0067	0.017	0.04	0.094	0.21	0.46	0.96	2	3.9
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.5E-05	9.6E-06	3.6E-06	1.4E-06	5.2E-07	1.9E-07	7.2E-08	2.7E-08	1.0E-08	3.7E-09	1.4E-09	5.0E-10	1.9E-10	6.8E-11	2.5E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	5.5E+01	3.6E+01	2.4E+01	1.5E+01	1.0E+01	6.4E+00	4.1E+00	2.6E+00	1.7E+00	1.1E+00	6.7E-01	4.2E-01	2.6E-01	1.6E-01	1.0E-01	6.3E-02	3.9E-02	2.4E-02	1.5E-02	9.2E-03	5.7E-03	3.5E-03
Te-123	0.000049	0.00012	0.00027	0.00061	0.0013	0.0027	0.0053	0.01	0.019	0.035	0.061	0.11	0.18	0.29	0.47	0.74	1.2	1.8	2.6	3.9	5.6	8
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 44. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION)

NUCLIDE	610	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	7E+10	7.4E+10	7.9E+10	8.3E+10	8.7E+10	9E+10	9.3E+10	9.5E+10	9.6E+10	9.7E+10	9.7E+10	9.4E+10	9E+10	8.4E+10	7.8E+10	6.8E+10	5.9E+10	4.9E+10	4.1E+10	3.3E+10	2.6E+10
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	6.1E-07	3.2E-07	1.7E-07	9.1E-08	4.8E-08	2.6E-08	1.4E-08	7.2E-09	3.8E-09	2.0E-09	5.6E-10	1.6E-10	4.3E-11	1.2E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Se-79	1.4E+11	1.8E+11	2.2E+11	2.8E+11	3.5E+11	4.3E+11	5.2E+11	6.3E+11	7.6E+11	9.1E+11	1.3E+12	1.7E+12	2.3E+12	3E+12	3.8E+12	5E+12	6.4E+12	8.0E+12	9.9E+12	1.2E+13	1.4E+13
Si-32	3.5E+15	3.1E+15	2.7E+15	2.3E+15	2.0E+15	1.7E+15	1.5E+15	1.2E+15	1.0E+15	8.8E+14	6.2E+14	4.3E+14	3.0E+14	2.0E+14	1.4E+14	8.4E+13	5.0E+13	3.0E+13	1.7E+13	1.0E+13	5.8E+12
Sm-151	7.6	14	27	48	85	150	250	420	690	1100	2700	6300	14000	29000	58000	130000	270000	520000	980000	1700000	3000000
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	2.1E-03	1.3E-03	7.9E-04	4.8E-04	2.9E-04	1.8E-04	1.1E-04	6.6E-05	4.0E-05	2.4E-05	8.7E-06	3.2E-06	1.1E-06	4.1E-07	1.5E-07	4.1E-08	1.1E-08	3.2E-09	8.7E-10	2.4E-10	6.5E-11
Te-123	11	16	22	29	40	53	69	90	120	150	240	370	550	810	1200	1700	2600	3600	5000	6800	8900
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 46. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.276 CM/YR TOP SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	YEAR TO EXCEED:	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125
14DCB	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	-1	0	0	0	0	0	0	0	0	0	0	2.6E-16	5.8E-15	7.2E-14	5.8E-13	3.2E-12	1.3E-11	4.3E-11	1.1E-10	2.5E-10	4.7E-10	7.7E-10	1.1E-09	1.5E-09	1.8E-09
246T	-1	0	0	0	0	0	0	0	0	9.8E-17	1.3E-15	9.1E-15	3.6E-14	9.4E-14	1.7E-13	2.4E-13	2.7E-13	2.5E-13	2.0E-13	1.4E-13	8.6E-14	4.8E-14	2.5E-14	1.2E-14	5.2E-15
24D	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	760	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CF	-1	0	0	0	0	0	0	7.8E-16	4.3E-14	8.0E-13	6.8E-12	3.2E-11	9.5E-11	2.0E-10	3.1E-10	3.8E-10	3.9E-10	3.4E-10	2.6E-10	1.8E-10	1.1E-10	6.3E-11	3.3E-11	1.6E-11	7.5E-12
ChlB	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	825	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	-1	0	0	0	0	0	0	0	0	0	0	2.7E-17	8.2E-17	1.6E-16	2.2E-16	2.3E-16	1.9E-16	1.3E-16	7.5E-17	3.7E-17	1.7E-17	0	0	0	0
Cu	900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCA	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mox	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Silvx	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	-1	0	0	0	0	0	0	3.6E-17	4.2E-15	1.5E-13	2.2E-12	1.7E-11	8.0E-11	2.6E-10	5.9E-10	1.1E-09	1.6E-09	1.9E-09	2.1E-09	1.9E-09	1.6E-09	1.3E-09	8.9E-10	5.9E-10	3.6E-10
TetCE	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	3.1E-17	7.1E-17	1.2E-16	1.6E-16	1.8E-16	1.7E-16	1.4E-16	9.6E-17	6.1E-17	3.5E-17	1.9E-17
Tox	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	-1	0	0	0	0	0	3.5E-15	7.2E-13	3.6E-11	6.7E-10	6.0E-09	3.1E-08	1.1E-07	2.6E-07	5.0E-07	7.6E-07	9.8E-07	1.1E-06	1.1E-06	9.4E-07	7.5E-07	5.6E-07	3.8E-07	2.5E-07	1.5E-07
Zn	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates constituent does not exceed GWPL in years modeled

TABLE 46. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.276 CM/YR TOP SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	2.1E-09	2.2E-09	2.1E-09	2.0E-09	1.8E-09	1.5E-09	1.2E-09	9.6E-10	7.3E-10	5.4E-10	3.9E-10	2.7E-10	1.8E-10	1.2E-10	8.0E-11	5.1E-11	3.2E-11	2.0E-11	1.2E-11	7.2E-12	4.2E-12	2.5E-12
246T	2.2E-15	8.6E-16	3.2E-16	1.2E-16	4.1E-17	1.4E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CF	3.3E-12	1.4E-12	5.6E-13	2.2E-13	8.1E-14	2.9E-14	1.0E-14	3.5E-15	1.2E-15	3.8E-16	1.2E-16	3.8E-17	1.2E-17	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	2.1E-10	1.2E-10	6.4E-11	3.3E-11	1.6E-11	7.7E-12	3.5E-12	1.6E-12	6.9E-13	3.0E-13	1.2E-13	5.0E-14	2.0E-14	7.9E-15	3.1E-15	1.2E-15	4.4E-16	1.6E-16	6.0E-17	2.2E-17	0	0
TetCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	8.8E-08	4.9E-08	2.6E-08	1.4E-08	6.7E-09	3.3E-09	1.5E-09	7.1E-10	3.2E-10	1.4E-10	6.0E-11	2.6E-11	1.1E-11	4.4E-12	1.8E-12	7.2E-13	2.9E-13	1.1E-13	4.4E-14	1.7E-14	6.5E-15	2.5E-15
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 46. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.276 CM/YR TOP SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380	390
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	1.4E-12	8.0E-13	4.5E-13	2.5E-13	1.4E-13	7.4E-14	4.0E-14	2.1E-14	1.1E-14	5.9E-15	3.1E-15	1.6E-15	8.2E-16	2.1E-16	5.3E-17	1.3E-17	0	0	0	0	0	0
246T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-17	8.7E-17
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-17	8.7E-17
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-17	8.7E-17
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-17	8.7E-17
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-17	8.7E-17
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-17	8.7E-17
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TetCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	9.3E-16	3.5E-16	1.3E-16	4.8E-17	1.7E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 46. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.276 CM/YR TOP SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
246T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	4.5E-16	2.2E-15	9.7E-15	4.0E-14	1.6E-13	5.7E-13	2.0E-12	6.4E-12	2.0E-11	5.9E-11	1.7E-10	4.5E-10	1.2E-09	3.0E-09	7.2E-09	1.7E-08	3.8E-08	8.5E-08	1.8E-07	3.8E-07	7.7E-07	1.5E-06
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	4.5E-16	2.2E-15	9.7E-15	4.0E-14	1.6E-13	5.7E-13	2.0E-12	6.4E-12	2.0E-11	5.9E-11	1.7E-10	4.5E-10	1.2E-09	3.0E-09	7.2E-09	1.7E-08	3.8E-08	8.5E-08	1.8E-07	3.8E-07	7.7E-07	1.5E-06
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	4.5E-16	2.2E-15	9.7E-15	4.0E-14	1.6E-13	5.7E-13	2.0E-12	6.4E-12	2.0E-11	5.9E-11	1.7E-10	4.5E-10	1.2E-09	3.0E-09	7.2E-09	1.7E-08	3.8E-08	8.5E-08	1.8E-07	3.8E-07	7.7E-07	1.5E-06
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	4.5E-16	2.2E-15	9.7E-15	4.0E-14	1.6E-13	5.7E-13	2.0E-12	6.4E-12	2.0E-11	5.9E-11	1.7E-10	4.5E-10	1.2E-09	3.0E-09	7.2E-09	1.7E-08	3.8E-08	8.5E-08	1.8E-07	3.8E-07	7.7E-07	1.5E-06
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	4.5E-16	2.2E-15	9.7E-15	4.0E-14	1.6E-13	5.7E-13	2.0E-12	6.4E-12	2.0E-11	5.9E-11	1.7E-10	4.5E-10	1.2E-09	3.0E-09	7.2E-09	1.7E-08	3.8E-08	8.5E-08	1.8E-07	3.8E-07	7.7E-07	1.5E-06
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	4.5E-16	2.2E-15	9.7E-15	4.0E-14	1.6E-13	5.7E-13	2.0E-12	6.4E-12	2.0E-11	5.9E-11	1.7E-10	4.5E-10	1.2E-09	3.0E-09	7.2E-09	1.7E-08	3.8E-08	8.5E-08	1.8E-07	3.8E-07	7.7E-07	1.5E-06
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TetCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 46. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.276 CM/YR TOP SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
246T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7E-17
As	3.0E-06	5.6E-06	1.0E-05	1.9E-05	3.4E-05	5.9E-05	1.0E-04	1.7E-04	2.9E-04	7.7E-04	1.9E-03	4.6E-03	1.0E-02	2.3E-02	5.6E-02	1.3E-01	2.9E-01	6.2E-01	1.3E+00	2.4E+00	4.6E+00	8.2E+00
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-17	8.9E-17	4.7E-16	2.3E-15
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	3.0E-06	5.6E-06	1.0E-05	1.9E-05	3.4E-05	5.9E-05	1.0E-04	1.7E-04	2.9E-04	7.7E-04	1.9E-03	4.6E-03	1.0E-02	2.3E-02	5.6E-02	1.3E-01	2.9E-01	6.2E-01	1.3E+00	2.4E+00	4.6E+00	8.2E+00
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	3.0E-06	5.6E-06	1.0E-05	1.9E-05	3.4E-05	5.9E-05	1.0E-04	1.7E-04	2.9E-04	7.7E-04	1.9E-03	4.6E-03	1.0E-02	2.3E-02	5.6E-02	1.3E-01	2.9E-01	6.2E-01	1.3E+00	2.4E+00	4.6E+00	8.2E+00
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	3.0E-06	5.6E-06	1.0E-05	1.9E-05	3.4E-05	5.9E-05	1.0E-04	1.7E-04	2.9E-04	7.7E-04	1.9E-03	4.6E-03	1.0E-02	2.3E-02	5.6E-02	1.3E-01	2.9E-01	6.2E-01	1.3E+00	2.4E+00	4.6E+00	8.2E+00
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	3.0E-06	5.6E-06	1.0E-05	1.9E-05	3.4E-05	5.9E-05	1.0E-04	1.7E-04	2.9E-04	7.7E-04	1.9E-03	4.6E-03	1.0E-02	2.3E-02	5.6E-02	1.3E-01	2.9E-01	6.2E-01	1.3E+00	2.4E+00	4.6E+00	8.2E+00
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	3.0E-06	5.6E-06	1.0E-05	1.9E-05	3.4E-05	5.9E-05	1.0E-04	1.7E-04	2.9E-04	7.7E-04	1.9E-03	4.6E-03	1.0E-02	2.3E-02	5.6E-02	1.3E-01	2.9E-01	6.2E-01	1.3E+00	2.4E+00	4.6E+00	8.2E+00
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TetCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 48. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.286 CM/YR SIDE SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	YEAR TO EXCEED:	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125
14DCB	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	-1	0	0	0	0	0	0	0	0	0	4.6E-17	1.7E-15	3.2E-14	3.6E-13	2.5E-12	1.3E-11	4.8E-11	1.4E-10	3.5E-10	7.1E-10	1.3E-09	2.0E-09	2.7E-09	3.5E-09	4.0E-09
246T	-1	0	0	0	0	0	0	0	1.9E-17	5.4E-16	6.2E-15	3.7E-14	1.3E-13	3.0E-13	5.1E-13	6.6E-13	6.8E-13	6.0E-13	4.4E-13	2.9E-13	1.7E-13	9.1E-14	4.5E-14	2.0E-14	8.7E-15
24D	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	720	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CF	-1	0	0	0	0	0	2.4E-17	4.7E-15	2.1E-13	3.3E-12	2.4E-11	1.0E-10	2.7E-10	5.1E-10	7.3E-10	8.4E-10	8.1E-10	6.7E-10	4.8E-10	3.1E-10	1.9E-10	1.0E-10	5.1E-11	2.4E-11	1.1E-11
ChlB	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	-1	0	0	0	0	0	0	0	0	0	2.5E-17	1.1E-16	3.0E-16	5.4E-16	6.7E-16	6.5E-16	4.9E-16	3.1E-16	1.7E-16	8.0E-17	3.4E-17	1.3E-17	0	0	0
Cu	875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCA	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mox	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-17	1.6E-17	1.6E-17	1.4E-17	1.1E-17	0
pCrs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Silvx	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	-1	0	0	0	0	0	0	2.6E-16	2.4E-14	7.0E-13	8.9E-12	6.0E-11	2.5E-10	7.4E-10	1.6E-09	2.6E-09	3.6E-09	4.2E-09	4.2E-09	3.7E-09	3.0E-09	2.2E-09	1.5E-09	9.6E-10	5.7E-10
TetCE	-1	0	0	0	0	0	0	0	0	0	0	0	1.0E-17	4.4E-17	1.3E-16	2.6E-16	4.1E-16	5.1E-16	5.2E-16	4.5E-16	3.4E-16	2.3E-16	1.4E-16	7.8E-17	4.0E-17
Tox	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	-1	0	0	0	0	1.8E-17	2.3E-14	3.7E-12	1.5E-10	2.4E-09	1.9E-08	8.7E-08	2.7E-07	6.1E-07	1.1E-06	1.5E-06	1.9E-06	2.0E-06	1.8E-06	1.5E-06	1.2E-06	8.3E-07	5.5E-07	3.4E-07	2.0E-07
Zn	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates constituent does not exceed GWPL in years modeled

TABLE 48. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.286 CM/YR SIDE SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	4.3E-09	4.4E-09	4.2E-09	3.8E-09	3.2E-09	2.7E-09	2.1E-09	1.6E-09	1.2E-09	8.6E-10	6.0E-10	4.1E-10	2.7E-10	1.8E-10	1.1E-10	7.1E-11	4.4E-11	2.6E-11	1.6E-11	9.2E-12	5.3E-12	3.1E-12
246T	3.5E-15	1.3E-15	4.9E-16	1.7E-16	5.9E-17	1.9E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CF	4.6E-12	1.9E-12	7.3E-13	2.7E-13	9.9E-14	3.5E-14	1.2E-14	3.9E-15	1.3E-15	4.0E-16	1.3E-16	3.8E-17	1.2E-17	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	3.2E-10	1.8E-10	9.0E-11	4.5E-11	2.1E-11	9.9E-12	4.5E-12	1.9E-12	8.2E-13	3.4E-13	1.4E-13	5.5E-14	2.2E-14	8.3E-15	3.1E-15	1.2E-15	4.3E-16	1.6E-16	5.6E-17	2.0E-17	0	0
TetCE	1.9E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	1.1E-07	6.1E-08	3.1E-08	1.6E-08	7.6E-09	3.6E-09	1.6E-09	7.3E-10	3.2E-10	1.4E-10	5.7E-11	2.4E-11	9.7E-12	3.9E-12	1.6E-12	6.1E-13	2.4E-13	9.1E-14	3.5E-14	1.3E-14	4.9E-15	1.8E-15
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 48. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.286 CM/YR SIDE SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380	390
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	1.7E-12	9.6E-13	5.3E-13	2.9E-13	1.5E-13	8.3E-14	4.4E-14	2.3E-14	1.2E-14	6.2E-15	3.2E-15	1.6E-15	8.1E-16	2.0E-16	5.0E-17	1.2E-17	0	0	0	0	0	0
246T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6E-17	2.1E-16	1.1E-15
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6E-17	2.1E-16	1.1E-15
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6E-17	2.1E-16	1.1E-15
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6E-17	2.1E-16	1.1E-15
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6E-17	2.1E-16	1.1E-15
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6E-17	2.1E-16	1.1E-15
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TetCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	6.8E-16	2.5E-16	9.1E-17	3.3E-17	1.2E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 48. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.286 CM/YR SIDE SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
246T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	5.4E-15	2.4E-14	1.0E-13	4.0E-13	1.5E-12	5.1E-12	1.7E-11	5.2E-11	1.5E-10	4.4E-10	1.2E-09	3.1E-09	7.8E-09	1.9E-08	4.4E-08	9.9E-08	2.2E-07	4.6E-07	9.7E-07	2.0E-06	3.9E-06	7.4E-06
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	5.4E-15	2.4E-14	1.0E-13	4.0E-13	1.5E-12	5.1E-12	1.7E-11	5.2E-11	1.5E-10	4.4E-10	1.2E-09	3.1E-09	7.8E-09	1.9E-08	4.4E-08	9.9E-08	2.2E-07	4.6E-07	9.7E-07	2.0E-06	3.9E-06	7.4E-06
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	5.4E-15	2.4E-14	1.0E-13	4.0E-13	1.5E-12	5.1E-12	1.7E-11	5.2E-11	1.5E-10	4.4E-10	1.2E-09	3.1E-09	7.8E-09	1.9E-08	4.4E-08	9.9E-08	2.2E-07	4.6E-07	9.7E-07	2.0E-06	3.9E-06	7.4E-06
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	5.4E-15	2.4E-14	1.0E-13	4.0E-13	1.5E-12	5.1E-12	1.7E-11	5.2E-11	1.5E-10	4.4E-10	1.2E-09	3.1E-09	7.8E-09	1.9E-08	4.4E-08	9.9E-08	2.2E-07	4.6E-07	9.7E-07	2.0E-06	3.9E-06	7.4E-06
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	5.4E-15	2.4E-14	1.0E-13	4.0E-13	1.5E-12	5.1E-12	1.7E-11	5.2E-11	1.5E-10	4.4E-10	1.2E-09	3.1E-09	7.8E-09	1.9E-08	4.4E-08	9.9E-08	2.2E-07	4.6E-07	9.7E-07	2.0E-06	3.9E-06	7.4E-06
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	5.4E-15	2.4E-14	1.0E-13	4.0E-13	1.5E-12	5.1E-12	1.7E-11	5.2E-11	1.5E-10	4.4E-10	1.2E-09	3.1E-09	7.8E-09	1.9E-08	4.4E-08	9.9E-08	2.2E-07	4.6E-07	9.7E-07	2.0E-06	3.9E-06	7.4E-06
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TetCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 48. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.286 CM/YR SIDE SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
246T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.4E-17	2.3E-16
As	1.4E-05	2.6E-05	4.7E-05	8.3E-05	1.4E-04	2.5E-04	4.2E-04	6.9E-04	1.1E-03	2.8E-03	6.9E-03	1.6E-02	3.4E-02	7.2E-02	1.7E-01	3.9E-01	8.3E-01	1.7E+00	3.3E+00	6.3E+00	1.1E+01	2.0E+01
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.4E-17	2.0E-16	1.1E-15	5.4E-15	2.5E-14
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	1.4E-05	2.6E-05	4.7E-05	8.3E-05	1.4E-04	2.5E-04	4.2E-04	6.9E-04	1.1E-03	2.8E-03	6.9E-03	1.6E-02	3.4E-02	7.2E-02	1.7E-01	3.9E-01	8.3E-01	1.7E+00	3.3E+00	6.3E+00	1.1E+01	2.0E+01
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	1.4E-05	2.6E-05	4.7E-05	8.3E-05	1.4E-04	2.5E-04	4.2E-04	6.9E-04	1.1E-03	2.8E-03	6.9E-03	1.6E-02	3.4E-02	7.2E-02	1.7E-01	3.9E-01	8.3E-01	1.7E+00	3.3E+00	6.3E+00	1.1E+01	2.0E+01
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	1.4E-05	2.6E-05	4.7E-05	8.3E-05	1.4E-04	2.5E-04	4.2E-04	6.9E-04	1.1E-03	2.8E-03	6.9E-03	1.6E-02	3.4E-02	7.2E-02	1.7E-01	3.9E-01	8.3E-01	1.7E+00	3.3E+00	6.3E+00	1.1E+01	2.0E+01
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	1.4E-05	2.6E-05	4.7E-05	8.3E-05	1.4E-04	2.5E-04	4.2E-04	6.9E-04	1.1E-03	2.8E-03	6.9E-03	1.6E-02	3.4E-02	7.2E-02	1.7E-01	3.9E-01	8.3E-01	1.7E+00	3.3E+00	6.3E+00	1.1E+01	2.0E+01
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	1.4E-05	2.6E-05	4.7E-05	8.3E-05	1.4E-04	2.5E-04	4.2E-04	6.9E-04	1.1E-03	2.8E-03	6.9E-03	1.6E-02	3.4E-02	7.2E-02	1.7E-01	3.9E-01	8.3E-01	1.7E+00	3.3E+00	6.3E+00	1.1E+01	2.0E+01
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TetCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 50. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.595 CM/YR SIDE SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	YEAR TO EXCEED:	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
14DCB	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	-1	0	0	0	1.1E-17	4.4E-15	4.7E-13	1.5E-10	8.6E-09	1.6E-07	1.4E-06	6.9E-06	2.2E-05	5.0E-05	8.8E-05	1.3E-04	1.5E-04	1.6E-04	1.5E-04	1.3E-04	1.0E-04	7.6E-05	5.2E-05	3.4E-05	2.1E-05
246T	-1	0	0	1.9E-15	4.1E-13	2.0E-11	3.8E-10	1.1E-08	8.3E-08	2.7E-07	5.0E-07	5.9E-07	5.0E-07	3.3E-07	1.8E-07	8.2E-08	3.3E-08	1.2E-08	3.8E-09	1.1E-09	3.1E-10	8.1E-11	2.0E-11	4.6E-12	1.0E-12
24D	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	370	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	-1	0	0	1.5E-16	3.2E-15	1.9E-14	5.0E-14	6.5E-14	2.8E-14	5.6E-15	6.8E-16	5.6E-17	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	340	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CF	-1	0	1.6E-14	8.8E-12	7.5E-10	1.9E-08	2.1E-07	3.1E-06	1.6E-05	3.8E-05	5.5E-05	5.5E-05	4.1E-05	2.5E-05	1.2E-05	5.3E-06	2.0E-06	6.9E-07	2.2E-07	6.4E-08	1.8E-08	4.6E-09	1.2E-09	2.8E-10	6.5E-11
ChlB	-1	0	0	0	0	0	0	3.1E-17	6.1E-17	4.4E-17	1.6E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	380	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	-1	0	0	6.8E-17	1.4E-14	6.7E-13	1.1E-11	2.6E-10	1.6E-09	4.1E-09	5.7E-09	5.0E-09	3.1E-09	1.5E-09	5.9E-10	2.0E-10	5.8E-11	1.5E-11	3.5E-12	7.5E-13	1.5E-13	2.8E-14	4.9E-15	8.2E-16	1.3E-16
Cu	420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCA	-1	0	1.6E-16	2.4E-14	6.3E-13	5.1E-12	1.8E-11	4.2E-11	3.4E-11	1.4E-11	3.3E-12	5.7E-13	7.3E-14	7.5E-15	6.4E-16	4.8E-17	0	0	0	0	0	0	0	0	0
DCE	-1	0	0	5.0E-17	1.1E-15	7.1E-15	1.9E-14	2.6E-14	1.1E-14	2.3E-15	2.9E-16	2.4E-17	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	-1	0	0	2.8E-15	1.5E-13	2.1E-12	1.1E-11	4.8E-11	6.2E-11	3.6E-11	1.2E-11	2.6E-12	4.3E-13	5.5E-14	5.9E-15	5.3E-16	4.3E-17	0	0	0	0	0	0	0	0
End	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	-1	0	0	0	0	0	0	3.5E-17	1.9E-16	3.6E-16	3.4E-16	1.9E-16	6.9E-17	1.9E-17	0	0	0	0	0	0	0	0	0	0	0
mCrs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	370	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mox	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	-1	0	0	1.0E-16	8.3E-15	1.7E-13	1.3E-12	9.0E-12	1.8E-11	1.5E-11	7.5E-12	2.4E-12	5.5E-13	1.0E-13	1.5E-14	1.9E-15	2.1E-16	2.1E-17	0	0	0	0	0	0	0
Ni	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	-1	0	0	0	0	0	0	2.6E-15	1.8E-13	3.5E-12	2.6E-11	1.0E-10	2.5E-10	4.1E-10	4.9E-10	4.7E-10	3.7E-10	2.5E-10	1.5E-10	7.6E-11	3.6E-11	1.6E-11	6.6E-12	2.5E-12	9.2E-13
pCrs	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	370	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Silvx	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	-1	0	3.0E-16	3.6E-13	6.0E-11	2.6E-09	4.6E-08	1.3E-06	1.1E-05	4.3E-05	9.6E-05	1.4E-04	1.6E-04	1.4E-04	9.8E-05	6.0E-05	3.2E-05	1.5E-05	6.8E-06	2.7E-06	1.0E-06	3.7E-07	1.3E-07	4.1E-08	1.3E-08
TetCE	-1	0	0	0	0	6.7E-16	3.4E-14	3.6E-12	7.5E-11	5.4E-10	1.8E-09	3.6E-09	4.7E-09	4.5E-09	3.4E-09	2.1E-09	1.1E-09	5.0E-10	2.1E-10	7.7E-11	2.7E-11	8.6E-12	2.6E-12	7.3E-13	2.0E-13
Tox	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	-1	0	3.2E-12	1.2E-09	8.1E-08	1.8E-06	1.8E-05	2.6E-04	1.4E-03	3.8E-03	6.5E-03	7.8E-03	7.0E-03	5.2E-03	3.2E-03	1.7E-03	8.2E-04	3.6E-04	1.4E-04	5.4E-05	1.9E-05	6.6E-06	2.2E-06	6.8E-07	2.1E-07
Zn	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates constituent does not exceed GWPL in years modeled

TABLE 50. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.595 CM/YR SIDE SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	1.2E-05	6.8E-06	3.7E-06	1.9E-06	9.6E-07	4.7E-07	2.3E-07	1.1E-07	4.9E-08	2.2E-08	9.8E-09	4.3E-09	1.8E-09	7.8E-10	3.3E-10	1.4E-10	5.6E-11	2.3E-11	9.2E-12	3.7E-12	1.5E-12	5.7E-13	2.3E-13
246T	2.3E-13	4.8E-14	9.7E-15	1.9E-15	3.8E-16	7.2E-17	1.3E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	0	0	0	0	0	0	0	0	0	0	2.9E-17	1.9E-16	1.1E-15	5.9E-15	2.9E-14	1.3E-13	5.3E-13	2.1E-12	7.6E-12	2.6E-11	8.4E-11	2.6E-10	7.5E-10
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	0	0	0	0	0	0	0	0	0	0	2.9E-17	1.9E-16	1.1E-15	5.9E-15	2.9E-14	1.3E-13	5.3E-13	2.1E-12	7.6E-12	2.6E-11	8.4E-11	2.6E-10	7.5E-10
CF	1.5E-11	3.2E-12	7.0E-13	1.5E-13	3.1E-14	6.3E-15	1.3E-15	2.5E-16	5.0E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	0	0	0	0	0	0	0	0	0	0	2.9E-17	1.9E-16	1.1E-15	5.9E-15	2.9E-14	1.3E-13	5.3E-13	2.1E-12	7.6E-12	2.6E-11	8.4E-11	2.6E-10	7.5E-10
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	2.0E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	0	0	0	0	0	0	0	0	0	0	2.9E-17	1.9E-16	1.1E-15	5.9E-15	2.9E-14	1.3E-13	5.3E-13	2.1E-12	7.6E-12	2.6E-11	8.4E-11	2.6E-10	7.5E-10
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	0	0	0	0	0	0	0	0	0	0	2.9E-17	1.9E-16	1.1E-15	5.9E-15	2.9E-14	1.3E-13	5.3E-13	2.1E-12	7.6E-12	2.6E-11	8.4E-11	2.6E-10	7.5E-10
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	3.2E-13	1.1E-13	3.3E-14	1.0E-14	3.0E-15	8.6E-16	2.4E-16	6.5E-17	1.7E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	0	0	0	0	0	0	0	0	0	0	2.9E-17	1.9E-16	1.1E-15	5.9E-15	2.9E-14	1.3E-13	5.3E-13	2.1E-12	7.6E-12	2.6E-11	8.4E-11	2.6E-10	7.5E-10
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	3.9E-09	1.1E-09	3.3E-10	9.1E-11	2.5E-11	6.8E-12	1.8E-12	4.7E-13	1.2E-13	3.1E-14	7.8E-15	2.0E-15	4.9E-16	1.2E-16	2.9E-17	0	0	0	0	0	0	0	0
TetCE	5.1E-14	1.3E-14	3.0E-15	7.0E-16	1.6E-16	3.4E-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	6.3E-08	1.8E-08	5.3E-09	1.5E-09	4.1E-10	1.1E-10	3.0E-11	8.1E-12	2.1E-12	5.6E-13	1.5E-13	3.8E-14	9.6E-15	2.4E-15	6.2E-16	1.6E-16	3.9E-17	0	0	0	0	0	0
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 50. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.595 CM/YR SIDE SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380	390
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	8.8E-14	3.4E-14	1.3E-14	5.0E-15	1.9E-15	7.3E-16	2.8E-16	1.0E-16	3.9E-17	1.5E-17	0	0	0	0	0	0	0	0	0	0	0	0
246T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As	2.1E-09	5.6E-09	1.4E-08	3.6E-08	8.5E-08	2.0E-07	4.4E-07	9.4E-07	2.0E-06	4.1E-06	8.1E-06	1.6E-05	3.0E-05	1.0E-04	3.1E-04	9.1E-04	2.5E-03	6.2E-03	1.5E-02	3.4E-02	7.5E-02	1.6E-01
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	2.1E-09	5.6E-09	1.4E-08	3.6E-08	8.5E-08	2.0E-07	4.4E-07	9.4E-07	2.0E-06	4.1E-06	8.1E-06	1.6E-05	3.0E-05	1.0E-04	3.1E-04	9.1E-04	2.5E-03	6.2E-03	1.5E-02	3.4E-02	7.5E-02	1.6E-01
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	2.1E-09	5.6E-09	1.4E-08	3.6E-08	8.5E-08	2.0E-07	4.4E-07	9.4E-07	2.0E-06	4.1E-06	8.1E-06	1.6E-05	3.0E-05	1.0E-04	3.1E-04	9.1E-04	2.5E-03	6.2E-03	1.5E-02	3.4E-02	7.5E-02	1.6E-01
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	2.1E-09	5.6E-09	1.4E-08	3.6E-08	8.5E-08	2.0E-07	4.4E-07	9.4E-07	2.0E-06	4.1E-06	8.1E-06	1.6E-05	3.0E-05	1.0E-04	3.1E-04	9.1E-04	2.5E-03	6.2E-03	1.5E-02	3.4E-02	7.5E-02	1.6E-01
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	2.1E-09	5.6E-09	1.4E-08	3.6E-08	8.5E-08	2.0E-07	4.4E-07	9.4E-07	2.0E-06	4.1E-06	8.1E-06	1.6E-05	3.0E-05	1.0E-04	3.1E-04	9.1E-04	2.5E-03	6.2E-03	1.5E-02	3.4E-02	7.5E-02	1.6E-01
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	2.1E-09	5.6E-09	1.4E-08	3.6E-08	8.5E-08	2.0E-07	4.4E-07	9.4E-07	2.0E-06	4.1E-06	8.1E-06	1.6E-05	3.0E-05	1.0E-04	3.1E-04	9.1E-04	2.5E-03	6.2E-03	1.5E-02	3.4E-02	7.5E-02	1.6E-01
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TetCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 50. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.595 CM/YR SIDE SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
246T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	0	0	0	0	0	0	3.4E-17	1.4E-16	5.3E-16	1.9E-15	6.6E-15	2.2E-14	6.8E-14	2.0E-13	5.9E-13	1.6E-12	4.3E-12	1.1E-11	2.7E-11	6.6E-11	1.5E-10	3.5E-10
As	3.1E-01	6.0E-01	1.1E+00	2.0E+00	3.5E+00	6.0E+00	1.0E+01	1.6E+01	2.6E+01	4.0E+01	6.0E+01	8.9E+01	1.3E+02	1.9E+02	2.6E+02	3.7E+02	5.0E+02	6.8E+02	9.1E+02	1.2E+03	1.6E+03	2.0E+03
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	0	0	1.2E-17	5.9E-17	2.6E-16	1.1E-15	4.2E-15	1.6E-14	5.4E-14	1.8E-13	5.6E-13	1.7E-12	4.8E-12	1.3E-11	3.5E-11	9.0E-11	2.2E-10	5.3E-10	1.2E-09	2.8E-09	6.1E-09	1.3E-08
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	3.1E-01	6.0E-01	1.1E+00	2.0E+00	3.5E+00	6.0E+00	1.0E+01	1.6E+01	2.6E+01	4.0E+01	6.0E+01	8.9E+01	1.3E+02	1.9E+02	2.6E+02	3.7E+02	5.0E+02	6.8E+02	9.1E+02	1.2E+03	1.6E+03	2.0E+03
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	3.1E-01	6.0E-01	1.1E+00	2.0E+00	3.5E+00	6.0E+00	1.0E+01	1.6E+01	2.6E+01	4.0E+01	6.0E+01	8.9E+01	1.3E+02	1.9E+02	2.6E+02	3.7E+02	5.0E+02	6.8E+02	9.1E+02	1.2E+03	1.6E+03	2.0E+03
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	3.1E-01	6.0E-01	1.1E+00	2.0E+00	3.5E+00	6.0E+00	1.0E+01	1.6E+01	2.6E+01	4.0E+01	6.0E+01	8.9E+01	1.3E+02	1.9E+02	2.6E+02	3.7E+02	5.0E+02	6.8E+02	9.1E+02	1.2E+03	1.6E+03	2.0E+03
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0E-17	1.6E-17	2.4E-17	3.6E-17	5.2E-17	7.3E-17	1.0E-16
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	3.1E-01	6.0E-01	1.1E+00	2.0E+00	3.5E+00	6.0E+00	1.0E+01	1.6E+01	2.6E+01	4.0E+01	6.0E+01	8.9E+01	1.3E+02	1.9E+02	2.6E+02	3.7E+02	5.0E+02	6.8E+02	9.1E+02	1.2E+03	1.6E+03	2.0E+03
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	3.1E-01	6.0E-01	1.1E+00	2.0E+00	3.5E+00	6.0E+00	1.0E+01	1.6E+01	2.6E+01	4.0E+01	6.0E+01	8.9E+01	1.3E+02	1.9E+02	2.6E+02	3.7E+02	5.0E+02	6.8E+02	9.1E+02	1.2E+03	1.6E+03	2.0E+03
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TetCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 50. CONCENTRATIONS (mg/L) AT THE WATER TABLE, VERTICAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH 0.595 CM/YR SIDE SLOPE, METALS AND FORMERLY CHARACTERISTIC WASTE

COMPOUND	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
14DCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
246T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag	7.7E-10	1.7E-09	3.5E-09	7.1E-09	1.4E-08	2.8E-08	5.4E-08	1.0E-07	1.9E-07	6.1E-07	1.8E-06	5.2E-06	1.4E-05	3.6E-05	1.1E-04	3.0E-04	8.0E-04	2.0E-03	4.7E-03	1.1E-02	2.3E-02	4.7E-02
As	2.6E+03	3.3E+03	4.1E+03	5.1E+03	6.2E+03	7.6E+03	9.2E+03	1.1E+04	1.3E+04	1.8E+04	2.5E+04	3.3E+04	4.3E+04	5.5E+04	7.2E+04	9.3E+04	1.2E+05	1.4E+05	1.7E+05	2.0E+05	2.4E+05	2.7E+05
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be	2.7E-08	5.4E-08	1.1E-07	2.1E-07	3.9E-07	7.3E-07	1.3E-06	2.4E-06	4.2E-06	1.2E-05	3.4E-05	9.0E-05	2.2E-04	5.3E-04	1.5E-03	3.8E-03	9.2E-03	2.1E-02	4.6E-02	9.7E-02	2.0E-01	3.8E-01
Benz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd	2.6E+03	3.3E+03	4.1E+03	5.1E+03	6.2E+03	7.6E+03	9.2E+03	1.1E+04	1.3E+04	1.8E+04	2.5E+04	3.3E+04	4.3E+04	5.5E+04	7.2E+04	9.3E+04	1.2E+05	1.4E+05	1.7E+05	2.0E+05	2.4E+05	2.7E+05
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ChlB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr	2.6E+03	3.3E+03	4.1E+03	5.1E+03	6.2E+03	7.6E+03	9.2E+03	1.1E+04	1.3E+04	1.8E+04	2.5E+04	3.3E+04	4.3E+04	5.5E+04	7.2E+04	9.3E+04	1.2E+05	1.4E+05	1.7E+05	2.0E+05	2.4E+05	2.7E+05
Crs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ctet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu	2.6E+03	3.3E+03	4.1E+03	5.1E+03	6.2E+03	7.6E+03	9.2E+03	1.1E+04	1.3E+04	1.8E+04	2.5E+04	3.3E+04	4.3E+04	5.5E+04	7.2E+04	9.3E+04	1.2E+05	1.4E+05	1.7E+05	2.0E+05	2.4E+05	2.7E+05
DCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End	1.4E-16	1.9E-16	2.4E-16	3.1E-16	4.0E-16	5.0E-16	6.1E-16	7.4E-16	8.9E-16	1.2E-15	1.6E-15	2.0E-15	2.4E-15	2.8E-15	3.2E-15	3.5E-15	3.6E-15	3.6E-15	3.5E-15	3.2E-15	2.9E-15	2.5E-15
Hep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCBd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HxCh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo	2.6E+03	3.3E+03	4.1E+03	5.1E+03	6.2E+03	7.6E+03	9.2E+03	1.1E+04	1.3E+04	1.8E+04	2.5E+04	3.3E+04	4.3E+04	5.5E+04	7.2E+04	9.3E+04	1.2E+05	1.4E+05	1.7E+05	2.0E+05	2.4E+05	2.7E+05
Mox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nbenz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
oCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pCrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pyr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se	2.6E+03	3.3E+03	4.1E+03	5.1E+03	6.2E+03	7.6E+03	9.2E+03	1.1E+04	1.3E+04	1.8E+04	2.5E+04	3.3E+04	4.3E+04	5.5E+04	7.2E+04	9.3E+04	1.2E+05	1.4E+05	1.7E+05	2.0E+05	2.4E+05	2.7E+05
Silvx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TetCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 53. CONCENTRATIONS AT THE COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION, 250 FOOT DISTANCE)

SYMBOL	EXCEEDS	1	10	15	20	25	30	35	40	45	50	55	60	65	70	80	90	100	110	120	130	140	150	160	180	190	200	210	220	240	260
Am-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	-1	0	0	0	0	0	0	0	0	0	0	1.1E-10	2.3E-09	3.1E-08	2.8E-07	9.6E-06	1.4E-04	1.1E-03	5.7E-03	2.1E-02	5.5E-02	1.2E-01	2.1E-01	3.2E-01	5.0E-01	5.5E-01	5.5E-01	5.2E-01	4.6E-01	3.2E-01	1.8E-01
Ca-41	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6E-10	4.5E-09	7.5E-08	8.8E-07	5.5E-05	3.1E-04	1.4E-03	5.7E-03	2.0E-02	1.7E-01	1.0E+00
Cl-36	-1	0	0	0	0	0	0	0	0	1.7E-11	1.8E-09	7.0E-08	1.6E-06	2.2E-05	2.3E-04	9.7E-03	1.7E-01	1.5E+00	8.9E+00	3.5E+01	1.0E+02	2.4E+02	4.7E+02	7.7E+02	1.4E+03	1.7E+03	1.8E+03	1.8E+03	1.7E+03	1.3E+03	8.8E+02
Fe-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.0E-11	7.4E-09	2.5E-07	4.6E-06	5.0E-05	3.3E-04	1.5E-03	5.0E-03	2.6E-02	4.4E-02	6.6E-02	8.6E-02	9.8E-02	9.6E-02	6.7E-02
I-129	555	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	655	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-10	9.0E-08	1.1E-06	9.1E-06	6.7E-05	4.6E-04	1.4E-02	2.2E-01
Se-79	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0E-11	6.4E-10	2.1E-08	3.6E-07	4.2E-06	3.5E-05	1.0E-03	4.1E-03	1.3E-02	3.7E-02	9.3E-02	3.9E-01	1.1E+00
Tc-99	530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6E-10	1.5E-08

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates constituent does not exceed GWPL within the 2,000 years modeled
Radionuclide concentrations are reported in pCi/L

TABLE 53. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION, 250 FOOT DISTANCE)

SYMBOL	280	300	305	310	315	320	325	330	335	340	345	350	355
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	9.6E-02	4.6E-02	3.7E-02	3.1E-02	2.5E-02	2.1E-02	1.7E-02	1.3E-02	1.0E-02	8.4E-03	6.5E-03	5.1E-03	4.0E-03
Ca-41	4.3E+00	1.5E+01	1.9E+01	2.6E+01	3.3E+01	4.3E+01	5.3E+01	6.7E+01	8.1E+01	1.0E+02	1.2E+02	1.5E+02	1.8E+02
Cl-36	5.1E+02	2.7E+02	2.2E+02	1.9E+02	1.6E+02	1.3E+02	1.1E+02	9.3E+01	7.6E+01	6.1E+01	4.9E+01	3.9E+01	3.1E+01
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	3.6E-02	1.6E-02	1.3E-02	1.0E-02	7.9E-03	6.1E-03	4.6E-03	3.5E-03	2.6E-03	2.0E-03	1.5E-03	1.1E-03	7.9E-04
I-129	4.3E-11	2.1E-09	5.3E-09	9.0E-09	2.2E-08	5.4E-08	9.3E-08	1.8E-07	4.4E-07	7.6E-07	1.3E-06	3.0E-06	5.2E-06
K-40	0	0	0	0	0	0	0	2.1E-11	8.4E-11	1.6E-10	3.0E-10	1.1E-09	2.7E-09
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.2E+00	1.7E+01	2.6E+01	4.3E+01	6.3E+01	9.7E+01	1.5E+02	2.1E+02	3.2E+02	4.3E+02	6.3E+02	8.7E+02	1.2E+03
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.3E+00	3.9E+00	4.3E+00	4.8E+00	4.9E+00	5.4E+00	5.6E+00	5.9E+00	6.2E+00	6.3E+00	6.4E+00	6.5E+00	6.5E+00
Tc-99	5.3E-07	1.7E-05	3.4E-05	5.9E-05	1.5E-04	2.7E-04	4.6E-04	1.0E-03	1.8E-03	2.9E-03	6.0E-03	1.0E-02	1.6E-02

SYMBOL	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435	440	445
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	3.1E-03	2.4E-03	1.9E-03	1.4E-03	1.1E-03	8.6E-04	6.9E-04	5.3E-04	4.1E-04	3.2E-04	2.5E-04	1.9E-04	1.5E-04	1.1E-04	8.6E-05	6.7E-05	5.2E-05	3.9E-05
Ca-41	2.1E+02	2.5E+02	2.9E+02	3.5E+02	4.1E+02	4.6E+02	5.3E+02	6.0E+02	6.8E+02	7.7E+02	8.5E+02	9.6E+02	1.1E+03	1.2E+03	1.3E+03	1.4E+03	1.5E+03	1.7E+03
Cl-36	2.5E+01	2.0E+01	1.6E+01	1.3E+01	1.0E+01	7.8E+00	6.4E+00	5.0E+00	4.0E+00	3.1E+00	2.5E+00	2.0E+00	1.5E+00	1.2E+00	9.5E-01	7.5E-01	5.8E-01	4.5E-01
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	5.8E-04	4.1E-04	2.9E-04	2.1E-04	1.5E-04	1.0E-04	7.2E-05	5.1E-05	3.5E-05	2.4E-05	1.7E-05	1.1E-05	7.6E-06	5.2E-06	3.5E-06	2.4E-06	1.6E-06	1.0E-06
I-129	8.1E-06	1.7E-05	3.0E-05	4.4E-05	8.4E-05	1.5E-04	2.2E-04	3.7E-04	6.5E-04	9.3E-04	1.4E-03	2.5E-03	3.6E-03	5.2E-03	8.7E-03	1.2E-02	1.7E-02	2.7E-02
K-40	4.4E-09	8.4E-09	2.6E-08	5.3E-08	8.1E-08	1.7E-07	4.3E-07	7.7E-07	1.1E-06	2.6E-06	5.6E-06	9.0E-06	1.3E-05	2.9E-05	5.7E-05	8.2E-05	1.3E-04	2.6E-04
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.7E+03	2.3E+03	3.3E+03	4.1E+03	5.6E+03	7.2E+03	9.2E+03	1.2E+04	1.5E+04	1.9E+04	2.4E+04	3.1E+04	3.7E+04	4.5E+04	5.8E+04	6.9E+04	8.5E+04	1.0E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	6.4E+00	6.4E+00	6.2E+00	6.2E+00	5.9E+00	5.7E+00	5.3E+00	5.2E+00	4.8E+00	4.6E+00	4.2E+00	4.0E+00	3.7E+00	3.4E+00	3.1E+00	2.8E+00	2.6E+00	2.3E+00
Tc-99	3.1E-02	5.0E-02	7.3E-02	1.3E-01	2.1E-01	3.1E-01	5.3E-01	8.2E-01	1.2E+00	1.9E+00	2.8E+00	3.8E+00	6.0E+00	8.7E+00	1.2E+01	1.8E+01	2.5E+01	3.3E+01

TABLE 53. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION, 250 FOOT DISTANCE)

SYMBOL	450	455	460	465	470	475	480	485	490	495	500	505	510	515	520
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	3.0E-05	2.3E-05	1.7E-05	1.3E-05	1.0E-05	7.7E-06	5.7E-06	4.4E-06	3.3E-06	2.5E-06	1.9E-06	1.4E-06	1.1E-06	8.3E-07	6.2E-07
Ca-41	1.8E+03	2.0E+03	2.1E+03	2.2E+03	2.4E+03	2.5E+03	2.7E+03	2.8E+03	3.0E+03	3.1E+03	3.2E+03	3.3E+03	3.5E+03	3.6E+03	3.8E+03
Cl-36	3.5E-01	2.7E-01	2.1E-01	1.7E-01	1.3E-01	1.0E-01	7.7E-02	5.9E-02	4.6E-02	3.6E-02	2.8E-02	2.1E-02	1.6E-02	1.3E-02	9.7E-03
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	6.9E-07	4.6E-07	3.0E-07	2.0E-07	1.3E-07	8.3E-08	5.4E-08	3.5E-08	2.3E-08	1.4E-08	9.3E-09	5.9E-09	3.8E-09	2.4E-09	1.5E-09
I-129	3.9E-02	5.2E-02	7.9E-02	1.1E-01	1.5E-01	2.1E-01	3.1E-01	3.9E-01	5.4E-01	7.9E-01	1.0E+00	1.3E+00	1.9E+00	2.3E+00	3.0E+00
K-40	4.5E-04	6.1E-04	1.0E-03	1.9E-03	2.9E-03	3.9E-03	6.8E-03	1.2E-02	1.6E-02	2.2E-02	3.8E-02	6.0E-02	7.9E-02	1.1E-01	1.9E-01
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.2E+05	1.5E+05	1.7E+05	2.1E+05	2.4E+05	2.9E+05	3.2E+05	3.8E+05	4.5E+05	5.1E+05	5.8E+05	6.7E+05	7.6E+05	8.5E+05	9.7E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.1E+00	1.9E+00	1.7E+00	1.5E+00	1.3E+00	1.2E+00	1.1E+00	9.2E-01	8.1E-01	6.9E-01	6.0E-01	5.3E-01	4.6E-01	3.9E-01	3.4E-01
Tc-99	4.8E+01	6.6E+01	8.6E+01	1.2E+02	1.7E+02	2.1E+02	2.9E+02	3.8E+02	4.8E+02	6.7E+02	8.5E+02	1.0E+03	1.4E+03	1.8E+03	2.1E+03

SYMBOL	525	530	535	540	545	550	555	560	565	570	575	580	585	590	595	600
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	4.7E-07	3.5E-07	2.7E-07	2.0E-07	1.5E-07	1.1E-07	8.6E-08	6.4E-08	4.8E-08	3.6E-08	2.7E-08	2.0E-08	1.5E-08	1.1E-08	8.4E-09	6.3E-09
Ca-41	3.8E+03	3.9E+03	4.1E+03	4.2E+03	4.2E+03	4.3E+03	4.4E+03	4.3E+03	4.5E+03	4.4E+03	4.5E+03	4.5E+03	5.0E+03	5.4E+03	5.2E+03	4.8E+03
Cl-36	7.4E-03	5.8E-03	4.4E-03	3.4E-03	2.6E-03	2.0E-03	1.5E-03	1.2E-03	8.9E-04	6.9E-04	5.2E-04	4.1E-04	3.1E-04	2.4E-04	1.8E-04	1.4E-04
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	9.6E-10	6.2E-10	4.0E-10	2.4E-10	1.3E-10	7.1E-11	3.2E-11	2.1E-11	0	0	0	0	0	0	0	0
I-129	4.2E+00	5.3E+00	6.6E+00	8.8E+00	1.1E+01	1.4E+01	1.8E+01	2.3E+01	2.7E+01	3.5E+01	4.5E+01	5.3E+01	6.4E+01	8.1E+01	9.8E+01	1.2E+02
K-40	2.7E-01	3.5E-01	5.1E-01	7.9E-01	1.1E+00	1.4E+00	2.1E+00	3.0E+00	3.9E+00	5.0E+00	7.4E+00	1.0E+01	1.3E+01	1.7E+01	2.4E+01	3.2E+01
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.1E+06	1.2E+06	1.4E+06	1.5E+06	1.7E+06	1.9E+06	2.1E+06	2.3E+06	2.5E+06	2.8E+06	3.0E+06	3.3E+06	3.6E+06	3.9E+06	4.2E+06	4.6E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.9E-01	2.5E-01	2.1E-01	1.8E-01	1.6E-01	1.3E-01	1.1E-01	9.4E-02	7.9E-02	6.6E-02	5.6E-02	4.6E-02	4.2E-02	3.8E-02	3.1E-02	2.3E-02
Tc-99	2.8E+03	3.6E+03	4.3E+03	5.5E+03	6.8E+03	8.1E+03	1.0E+04	1.3E+04	1.5E+04	1.9E+04	2.3E+04	2.6E+04	3.3E+04	3.9E+04	4.4E+04	5.4E+04

TABLE 53. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION, 250 FOOT DISTANCE)

SYMBOL	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700	705	710	715	720	725	730	735	740	745	750	755
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	4.7E-09	3.5E-09	2.6E-09	1.9E-09	1.4E-09	1.0E-09	7.8E-10	5.7E-10	4.3E-10	3.1E-10	2.2E-10	1.6E-10	1.1E-10	8.0E-11	4.4E-11	2.3E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	4.8E+03	4.9E+03	4.5E+03	4.2E+03	4.3E+03	4.4E+03	4.1E+03	3.9E+03	4.1E+03	4.1E+03	3.7E+03	3.5E+03	3.7E+03	3.6E+03	3.2E+03	3.3E+03	3.4E+03	3.1E+03	2.9E+03	2.9E+03	2.9E+03	2.7E+03	2.5E+03	2.6E+03	2.6E+03	2.3E+03	2.2E+03	2.2E+03	2.1E+03	1.9E+03	1.8E+03
Cl-36	1.1E-04	8.1E-05	6.1E-05	4.7E-05	3.5E-05	2.7E-05	2.0E-05	1.6E-05	1.2E-05	9.0E-06	6.8E-06	5.2E-06	4.0E-06	3.0E-06	2.3E-06	1.7E-06	1.3E-06	9.9E-07	7.5E-07	5.7E-07	4.3E-07	3.2E-07	2.4E-07	1.8E-07	1.4E-07	1.1E-07	8.0E-08	8.1E-08	4.8E-08	3.8E-08	2.9E-08
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.5E+02	1.7E+02	2.0E+02	2.5E+02	3.1E+02	3.5E+02	4.3E+02	5.1E+02	5.8E+02	6.9E+02	8.3E+02	9.4E+02	1.1E+03	1.3E+03	1.5E+03	1.7E+03	2.0E+03	2.3E+03	2.6E+03	3.0E+03	3.4E+03	3.8E+03	4.6E+03	5.1E+03	5.6E+03	6.5E+03	7.4E+03	8.0E+03	9.2E+03	1.0E+04	1.1E+04
K-40	3.8E+01	5.3E+01	7.3E+01	9.1E+01	1.1E+02	1.5E+02	2.0E+02	2.4E+02	3.0E+02	4.0E+02	5.1E+02	6.0E+02	7.6E+02	1.0E+03	1.2E+03	1.4E+03	1.8E+03	2.3E+03	2.8E+03	3.3E+03	4.2E+03	5.2E+03	5.9E+03	7.1E+03	8.9E+03	1.1E+04	1.2E+04	1.5E+04	1.8E+04	2.1E+04	2.4E+04
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	4.9E+06	5.2E+06	5.7E+06	6.0E+06	6.5E+06	7.0E+06	7.3E+06	7.9E+06	8.2E+06	8.9E+06	9.3E+06	9.8E+06	1.0E+07	1.1E+07	1.2E+07	1.2E+07	1.3E+07	1.3E+07	1.4E+07	1.5E+07	1.5E+07	1.6E+07	1.6E+07	1.9E+07	2.2E+07	2.3E+07	2.1E+07	1.9E+07	2.0E+07	2.3E+07	2.3E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.9E-02	1.6E-02	1.3E-02	1.0E-02	8.4E-03	7.1E-03	5.5E-03	4.3E-03	3.7E-03	3.1E-03	2.4E-03	1.9E-03	1.7E-03	1.4E-03	1.0E-03	8.5E-04	7.2E-04	5.8E-04	4.4E-04	3.6E-04	3.1E-04	2.4E-04	1.8E-04	1.5E-04	1.3E-04	9.8E-05	7.5E-05	6.3E-05	5.1E-05	3.9E-05	3.1E-05
Tc-99	6.4E+04	7.2E+04	8.8E+04	1.0E+05	1.1E+05	1.4E+05	1.6E+05	1.8E+05	2.1E+05	2.4E+05	2.7E+05	3.2E+05	3.6E+05	3.9E+05	4.7E+05	5.2E+05	5.7E+05	6.6E+05	7.3E+05	8.2E+05	9.4E+05	1.0E+06	1.2E+06	1.3E+06	1.5E+06	1.6E+06	1.8E+06	2.0E+06	2.1E+06	2.4E+06	2.6E+06

TABLE 53. CONCENTRATIONS AT THE COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION, 250 FOOT DISTANCE)

SYMBOL	760	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835	840	845	850	855	860	865	870	875	880	885	890	895	900	905	910
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.9E+03	1.8E+03	1.6E+03	1.5E+03	1.6E+03	1.5E+03	1.3E+03	1.3E+03	1.3E+03	1.2E+03	1.1E+03	1.1E+03	1.0E+03	9.4E+02	8.7E+02	8.9E+02	8.5E+02	7.5E+02	7.0E+02	7.2E+02	6.6E+02	6.0E+02	5.6E+02	5.7E+02	5.2E+02	4.6E+02	4.4E+02	4.4E+02	4.0E+02	3.6E+02	3.5E+02
Cl-36	2.0E-08	1.5E-08	1.1E-08	8.5E-09	5.9E-09	4.3E-09	3.4E-09	2.6E-09	1.8E-09	1.3E-09	1.0E-09	7.8E-10	5.6E-10	4.0E-10	3.1E-10	2.4E-10	1.8E-10	1.2E-10	9.6E-11	7.3E-11	4.8E-11	3.6E-11	1.7E-11	1.2E-11	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.3E+04	1.4E+04	1.6E+04	1.7E+04	2.0E+04	2.2E+04	2.3E+04	2.6E+04	2.8E+04	3.2E+04	3.5E+04	3.8E+04	4.1E+04	4.5E+04	5.1E+04	5.3E+04	5.9E+04	6.5E+04	6.9E+04	7.6E+04	8.4E+04	8.8E+04	9.5E+04	1.1E+05	1.1E+05	1.2E+05	1.3E+05	1.4E+05	1.4E+05	1.6E+05	1.7E+05
K-40	2.9E+04	3.6E+04	4.0E+04	4.7E+04	5.7E+04	6.6E+04	7.3E+04	8.6E+04	1.0E+05	1.2E+05	1.3E+05	1.6E+05	1.8E+05	2.1E+05	2.2E+05	2.6E+05	3.1E+05	3.3E+05	3.8E+05	4.6E+05	5.1E+05	5.5E+05	6.4E+05	7.4E+05	8.2E+05	8.9E+05	1.0E+06	1.2E+06	1.3E+06	1.4E+06	1.6E+06
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.1E+07	2.0E+07	2.3E+07	2.5E+07	2.4E+07	2.2E+07	2.2E+07	2.5E+07	2.6E+07	2.5E+07	2.3E+07	2.4E+07	2.7E+07	2.8E+07	2.5E+07	2.4E+07	2.6E+07	2.8E+07	2.7E+07	2.5E+07	2.4E+07	2.7E+07	2.9E+07	2.7E+07	2.4E+07	2.5E+07	2.7E+07	2.8E+07	2.6E+07	2.3E+07	2.5E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.6E-05	2.1E-05	1.6E-05	1.3E-05	1.0E-05	8.2E-06	6.2E-06	5.1E-06	4.1E-06	3.2E-06	2.5E-06	2.0E-06	1.6E-06	1.2E-06	9.5E-07	7.7E-07	6.1E-07	4.7E-07	3.6E-07	3.0E-07	2.4E-07	1.8E-07	1.4E-07	1.1E-07	8.8E-08	6.7E-08	5.4E-08	4.4E-08	3.3E-08	2.5E-08	2.0E-08
Tc-99	2.8E+06	3.2E+06	3.3E+06	3.6E+06	4.1E+06	4.3E+06	4.7E+06	5.2E+06	5.5E+06	6.0E+06	6.5E+06	7.0E+06	7.5E+06	8.2E+06	8.7E+06	9.4E+06	1.0E+07	1.1E+07	1.1E+07	1.3E+07	1.3E+07	1.4E+07	1.5E+07	1.6E+07	1.7E+07	1.8E+07	1.9E+07	2.0E+07	2.1E+07	2.3E+07	2.6E+07

TABLE 53. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL TOP SLOPE (0.276 CM/YR INFILTRATION, 250 FOOT DISTANCE)

SYMBOL	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000	1005	1010	1015	1020	1030	1040	1050	1060	1070	1080	1100
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	3.5E+02	3.0E+02	2.8E+02	2.8E+02	2.6E+02	2.4E+02	2.2E+02	2.1E+02	2.0E+02	1.8E+02	1.7E+02	1.7E+02	1.5E+02	1.3E+02	1.3E+02	1.3E+02	1.1E+02	1.0E+02	9.9E+01	9.5E+01	8.3E+01	7.6E+01	7.1E+01	5.8E+01	5.3E+01	4.3E+01	3.9E+01	3.4E+01	2.5E+01
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.8E+05	1.9E+05	2.1E+05	2.1E+05	2.3E+05	2.5E+05	2.6E+05	2.8E+05	3.0E+05	3.2E+05	3.8E+05	4.7E+05	5.4E+05	5.5E+05	5.2E+05	4.5E+05	4.6E+05	5.6E+05	6.4E+05	6.8E+05	6.5E+05	5.9E+05	6.7E+05	8.6E+05	7.8E+05	7.9E+05	1.1E+06	1.0E+06	1.3E+06
K-40	1.8E+06	1.9E+06	2.2E+06	2.6E+06	2.7E+06	2.9E+06	3.4E+06	3.7E+06	4.0E+06	4.4E+06	4.9E+06	5.5E+06	5.7E+06	6.4E+06	7.1E+06	7.8E+06	8.1E+06	9.0E+06	1.0E+07	1.1E+07	1.1E+07	1.3E+07	1.5E+07	1.8E+07	2.0E+07	2.4E+07	2.7E+07	3.3E+07	4.1E+07
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.6E+07	2.6E+07	2.4E+07	2.3E+07	2.5E+07	2.6E+07	2.5E+07	2.2E+07	2.2E+07	2.4E+07	2.5E+07	2.2E+07	2.0E+07	2.1E+07	2.2E+07	2.2E+07	2.0E+07	1.9E+07	2.0E+07	2.1E+07	2.0E+07	1.8E+07	1.9E+07	1.8E+07	1.6E+07	1.7E+07	1.4E+07	1.5E+07	1.3E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.2E-11	6.1E-11	9.1E-11	1.4E-10	7.3E-10
Sr-90	1.6E-08	1.2E-08	9.3E-09	7.6E-09	6.0E-09	4.5E-09	3.5E-09	2.8E-09	2.2E-09	1.6E-09	1.3E-09	1.0E-09	8.0E-10	5.9E-10	4.7E-10	3.8E-10	2.8E-10	2.1E-10	1.6E-10	1.3E-10	9.4E-11	5.8E-11	3.6E-11	1.3E-11	0	0	0	0	0
Tc-99	3.3E+07	3.7E+07	3.7E+07	3.4E+07	3.1E+07	3.2E+07	3.9E+07	4.4E+07	4.4E+07	4.1E+07	3.8E+07	3.9E+07	4.9E+07	5.5E+07	5.5E+07	5.1E+07	4.7E+07	5.1E+07	6.1E+07	6.8E+07	6.8E+07	6.2E+07	6.2E+07	8.2E+07	7.5E+07	7.5E+07	9.7E+07	8.8E+07	1.1E+08

TABLE 54. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	EXCEEDS	1	10	15	20	25	30	35	40	45	50	55	60	65	70	80	90	100	110	120	130	140	150	160	180	190	200	210	220	240	260
Am-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	-1	0	0	0	0	0	0	0	0	6.4E-11	2.2E-09	3.8E-08	4.0E-07	3.2E-06	1.8E-05	2.9E-04	2.5E-03	1.3E-02	4.2E-02	1.0E-01	2.0E-01	3.2E-01	4.4E-01	5.3E-01	5.4E-01	5.0E-01	4.2E-01	3.3E-01	2.6E-01	1.4E-01	6.3E-02
Ca-41	505	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.9E-11	1.9E-09	4.8E-08	7.6E-07	8.1E-06	6.5E-05	1.8E-03	7.6E-03	2.6E-02	7.8E-02	2.1E-01	1.1E+00	4.2E+00
Cl-36	-1	0	0	0	0	0	0	0	2.8E-10	1.8E-08	6.7E-07	1.7E-05	2.7E-04	2.8E-03	2.0E-02	4.4E-01	4.4E+00	2.5E+01	8.6E+01	2.3E+02	4.5E+02	7.7E+02	1.1E+03	1.4E+03	1.8E+03	1.8E+03	1.7E+03	1.4E+03	1.2E+03	6.6E+02	3.4E+02
Fe-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0E-10	5.8E-08	4.7E-06	9.6E-05	8.2E-04	4.1E-03	1.3E-02	3.6E-02	1.2E-01	4.4E-01	5.3E-01	5.0E-01	4.6E-01	5.0E-01	4.4E-01	1.9E-01
I-129	510	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.8E-10
K-40	600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.1E-11	1.4E-09	3.9E-08	1.7E-06	2.0E-05	2.5E-04	2.2E-03	1.3E-02	1.2E-01	1.3E+00
Se-79	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	1500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6E-10	1.1E-08	3.7E-07	6.7E-06	7.2E-05	5.4E-04	3.0E-03	4.2E-02	1.2E-01	2.9E-01	6.0E-01	1.1E+00	2.8E+00	5.5E+00
Tc-99	510	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-10	7.4E-09	1.3E-06

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates constituent does not exceed GWPL within the 2,000 years modeled
Radionuclide concentrations are reported in pCi/L

TABLE 54. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	280	300	305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435	440	445
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	2.7E-02	1.0E-02	8.1E-03	7.2E-03	6.4E-03	3.2E-03	3.4E-03	1.7E-03	2.0E-03	9.9E-04	1.2E-03	5.9E-04	7.2E-04	3.4E-04	4.2E-04	2.0E-04	2.4E-04	1.2E-04	1.4E-04	6.7E-05	8.2E-05	3.9E-05	4.7E-05	2.2E-05	2.7E-05	1.3E-05	1.5E-05	7.5E-06	8.5E-06	4.4E-06	4.7E-06
Ca-41	1.6E+01	5.1E+01	6.8E+01	8.5E+01	9.6E+01	1.3E+02	1.3E+02	2.1E+02	1.8E+02	2.9E+02	2.4E+02	4.1E+02	3.2E+02	5.3E+02	4.2E+02	6.7E+02	5.7E+02	8.2E+02	7.7E+02	9.8E+02	1.0E+03	1.1E+03	1.3E+03	1.2E+03	1.6E+03	1.5E+03	1.9E+03	1.5E+03	2.2E+03	1.6E+03	2.4E+03
Cl-36	1.6E+02	7.6E+01	6.2E+01	5.0E+01	4.0E+01	4.3E+01	2.6E+01	2.0E+01	1.4E+01	1.1E+01	9.4E+00	6.4E+00	6.1E+00	3.6E+00	3.9E+00	2.0E+00	2.4E+00	1.1E+00	1.5E+00	6.9E-01	9.2E-01	4.3E-01	5.6E-01	2.8E-01	3.3E-01	1.7E-01	1.9E-01	1.1E-01	1.1E-01	6.8E-02	5.9E-02
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	7.4E-02	3.2E-02	1.9E-02	1.7E-02	1.1E-02	8.5E-03	6.8E-03	4.0E-03	3.7E-03	2.1E-03	1.7E-03	1.2E-03	7.6E-04	6.1E-04	3.4E-04	2.9E-04	1.7E-04	1.2E-04	8.8E-05	5.0E-05	4.1E-05	2.3E-05	1.8E-05	1.1E-05	6.9E-06	5.0E-06	2.7E-06	2.1E-06	1.2E-06	8.5E-07	5.6E-07
I-129	1.3E-08	1.5E-07	2.6E-07	1.5E-06	1.6E-06	1.5E-06	1.2E-05	1.3E-05	9.4E-06	6.5E-05	8.8E-05	6.1E-05	3.1E-04	5.1E-04	3.6E-04	1.1E-03	2.3E-03	1.7E-03	3.7E-03	9.7E-03	8.0E-03	1.1E-02	3.5E-02	3.2E-02	2.9E-02	1.1E-01	1.1E-01	8.0E-02	3.1E-01	3.6E-01	2.3E-01
K-40	0	0	1.7E-10	2.4E-10	1.8E-10	1.0E-09	6.1E-09	6.5E-09	4.4E-09	5.1E-08	1.3E-07	1.2E-07	9.4E-08	1.2E-06	1.9E-06	1.5E-06	3.0E-06	1.8E-05	2.1E-05	1.4E-05	6.5E-05	1.8E-04	1.6E-04	1.1E-04	8.7E-04	1.4E-03	1.1E-03	1.3E-03	7.4E-03	8.7E-03	6.0E-03
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.6E+01	8.0E+01	1.2E+02	1.2E+02	3.0E+02	2.3E+02	5.9E+02	5.9E+02	9.0E+02	1.3E+03	1.2E+03	2.8E+03	2.1E+03	4.5E+03	4.5E+03	6.0E+03	9.2E+03	7.2E+03	1.6E+04	1.2E+04	2.3E+04	2.4E+04	2.7E+04	4.2E+04	3.0E+04	6.4E+04	4.9E+04	8.5E+04	8.8E+04	9.3E+04	1.4E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	9.6E+00	1.5E+01	1.7E+01	1.7E+01	1.7E+01	1.9E+01	1.6E+01	2.0E+01	1.6E+01	2.0E+01	1.4E+01	1.8E+01	1.3E+01	1.7E+01	1.2E+01	1.5E+01	1.1E+01	1.3E+01	9.8E+00	1.1E+01	9.0E+00	8.5E+00	7.9E+00	6.7E+00	6.7E+00	5.1E+00	5.4E+00	3.9E+00	4.4E+00	2.9E+00	3.4E+00
Tc-99	3.4E-05	2.1E-04	1.1E-03	2.1E-03	1.4E-03	6.9E-03	1.2E-02	8.5E-03	3.6E-02	6.0E-02	4.1E-02	1.7E-01	2.6E-01	1.8E-01	6.7E-01	9.9E-01	6.8E-01	2.4E+00	3.5E+00	2.3E+00	7.9E+00	1.0E+01	7.0E+00	2.3E+01	2.9E+01	1.9E+01	6.4E+01	7.8E+01	5.2E+01	1.7E+02	1.9E+02

TABLE 54. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	450	455	460	465	470	475	480	485	490	495	500	505	510	515	520
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	2.5E-06	2.6E-06	1.4E-06	1.4E-06	8.3E-07	7.9E-07	4.7E-07	4.2E-07	2.6E-07	2.3E-07	1.4E-07	1.2E-07	8.3E-08	6.6E-08	4.7E-08
Ca-41	1.9E+03	2.6E+03	2.1E+03	2.8E+03	2.3E+03	3.0E+03	2.7E+03	3.1E+03	3.1E+03	3.1E+03	3.2E+03	3.0E+03	3.5E+03	3.0E+03	3.7E+03
Cl-36	4.2E-02	3.2E-02	2.6E-02	1.7E-02	1.6E-02	9.1E-03	9.4E-03	4.8E-03	5.6E-03	2.7E-03	3.3E-03	1.5E-03	1.9E-03	8.8E-04	1.1E-03
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	3.1E-07	2.4E-07	1.3E-07	9.5E-08	5.8E-08	3.5E-08	2.5E-08	1.3E-08	9.8E-09	5.3E-09	3.6E-09	2.3E-09	1.3E-09	9.1E-10	5.2E-10
I-129	7.7E-01	1.0E+00	7.1E-01	1.7E+00	2.7E+00	2.0E+00	3.4E+00	6.8E+00	5.2E+00	6.4E+00	1.5E+01	1.3E+01	1.2E+01	3.3E+01	3.0E+01
K-40	1.5E-02	4.6E-02	4.3E-02	2.8E-02	1.3E-01	2.3E-01	1.8E-01	1.6E-01	7.4E-01	9.0E-01	6.3E-01	1.1E+00	3.2E+00	3.1E+00	2.0E+00
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.0E+05	2.0E+05	1.6E+05	2.4E+05	2.5E+05	2.5E+05	3.8E+05	2.7E+05	4.9E+05	4.0E+05	5.6E+05	6.1E+05	5.4E+05	8.5E+05	5.9E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.2E+00	2.6E+00	1.8E+00	1.9E+00	1.3E+00	1.4E+00	1.1E+00	1.0E+00	8.2E-01	7.2E-01	6.4E-01	4.8E-01	4.7E-01	3.3E-01	3.3E-01
Tc-99	1.2E+02	3.8E+02	4.3E+02	2.9E+02	8.5E+02	9.2E+02	6.2E+02	1.8E+03	1.9E+03	1.3E+03	3.6E+03	3.7E+03	2.5E+03	6.9E+03	6.8E+03

SYMBOL	525	530	535	540	545	550	555	560	565	570	575	580	585	590	595	600
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	3.6E-08	2.7E-08	1.9E-08	1.5E-08	1.0E-08	8.3E-09	5.4E-09	4.5E-09	2.8E-09	2.5E-09	1.5E-09	1.4E-09	7.7E-10	7.7E-10	4.1E-10	4.0E-10
Ca-41	2.9E+03	3.9E+03	2.9E+03	3.9E+03	2.9E+03	3.8E+03	2.9E+03	3.7E+03	3.0E+03	3.6E+03	4.3E+03	5.8E+03	3.1E+03	1.3E+03	3.9E+03	4.5E+03
Cl-36	5.3E-04	6.3E-04	3.3E-04	3.4E-04	2.0E-04	1.9E-04	1.2E-04	1.0E-04	7.0E-05	5.4E-05	4.2E-05	2.8E-05	2.5E-05	1.5E-05	1.5E-05	7.6E-06
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	5.0E-10	2.0E-10	5.2E-11	8.4E-11	5.0E-11	1.7E-11	0	1.2E-11	0	0	0	0	0	0	0	0
I-129	2.1E+01	6.2E+01	6.3E+01	4.1E+01	1.1E+02	1.3E+02	8.4E+01	1.8E+02	2.5E+02	1.7E+02	2.9E+02	4.5E+02	3.3E+02	4.2E+02	8.1E+02	6.3E+02
K-40	6.4E+00	1.2E+01	9.4E+00	6.8E+00	2.8E+01	3.6E+01	2.6E+01	3.1E+01	9.8E+01	9.6E+01	6.3E+01	1.4E+02	2.9E+02	2.4E+02	1.6E+02	5.3E+02
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.1E+06	8.5E+05	1.1E+06	1.2E+06	1.1E+06	1.6E+06	1.1E+06	1.9E+06	1.5E+06	1.9E+06	2.1E+06	1.8E+06	2.7E+06	1.9E+06	3.1E+06	2.6E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.3E-01	2.4E-01	1.6E-01	1.7E-01	1.1E-01	1.2E-01	7.5E-02	7.9E-02	5.3E-02	5.2E-02	5.0E-02	5.6E-02	2.6E-02	9.3E-03	2.1E-02	2.1E-02
Tc-99	4.8E+03	1.3E+04	1.2E+04	8.8E+03	2.3E+04	2.1E+04	1.6E+04	3.8E+04	3.5E+04	2.6E+04	6.3E+04	5.7E+04	4.4E+04	9.9E+04	8.7E+04	6.9E+04

TABLE 54. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	2.1E-10	2.2E-10	1.1E-10	1.2E-10	5.3E-11	6.6E-11	2.4E-11	2.9E-11	1.3E-11	1.6E-11	0	0	0	0	0
Ca-41	2.3E+03	9.3E+02	4.1E+03	3.6E+03	1.7E+03	9.8E+02	4.0E+03	2.9E+03	1.2E+03	1.4E+03	3.6E+03	2.2E+03	9.1E+02	1.8E+03	2.9E+03
Cl-36	8.5E-06	4.0E-06	4.8E-06	2.3E-06	2.8E-06	1.3E-06	1.6E-06	7.4E-07	8.7E-07	4.4E-07	4.7E-07	2.6E-07	2.6E-07	1.5E-07	1.4E-07
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	6.1E+02	1.4E+03	1.2E+03	8.8E+02	2.1E+03	2.0E+03	1.3E+03	3.2E+03	3.4E+03	2.2E+03	4.6E+03	5.4E+03	3.6E+03	6.0E+03	8.2E+03
K-40	7.0E+02	5.1E+02	5.1E+02	1.6E+03	1.6E+03	1.0E+03	1.9E+03	3.7E+03	3.2E+03	2.1E+03	5.7E+03	7.9E+03	5.9E+03	5.0E+03	1.5E+04
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.0E+06	3.4E+06	2.6E+06	4.1E+06	2.8E+06	4.4E+06	3.8E+06	4.1E+06	4.8E+06	3.6E+06	5.6E+06	3.9E+06	5.9E+06	5.1E+06	5.3E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	9.2E-03	3.4E-03	1.1E-02	8.2E-03	3.4E-03	1.6E-03	5.0E-03	3.1E-03	1.2E-03	1.0E-03	2.1E-03	1.1E-03	4.1E-04	6.2E-04	8.4E-04
Tc-99	1.5E+05	1.3E+05	1.1E+05	2.3E+05	2.0E+05	1.6E+05	3.3E+05	2.7E+05	2.4E+05	4.9E+05	3.9E+05	3.5E+05	6.9E+05	5.5E+05	5.1E+05

SYMBOL	680	685	690	695	700	705	710	715	720	725	730	735	740	745	750	755
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.5E+03	6.5E+02	2.0E+03	2.3E+03	1.1E+03	4.8E+02	2.1E+03	1.7E+03	7.8E+02	5.0E+02	1.8E+03	1.2E+03	5.3E+02	6.6E+02	1.5E+03	8.8E+02
Cl-36	9.5E-08	7.2E-08	5.4E-08	3.7E-08	3.1E-08	1.9E-08	1.8E-08	9.7E-09	1.1E-08	5.0E-09	6.0E-09	2.9E-09	5.1E-09	2.4E-09	7.2E-10	2.2E-10
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	5.6E+03	7.6E+03	1.2E+04	8.9E+03	9.4E+03	1.7E+04	1.4E+04	1.2E+04	2.4E+04	2.1E+04	1.4E+04	3.3E+04	3.1E+04	2.1E+04	4.2E+04	4.5E+04
K-40	1.5E+04	1.0E+04	1.5E+04	3.2E+04	2.8E+04	1.8E+04	4.1E+04	6.1E+04	4.5E+04	3.5E+04	9.6E+04	1.1E+05	7.2E+04	8.8E+04	1.9E+05	1.7E+05
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	6.3E+06	4.6E+06	7.2E+06	5.0E+06	7.3E+06	6.4E+06	9.5E+06	1.4E+07	8.7E+06	4.0E+06	1.8E+06	1.2E+07	1.2E+07	7.0E+06	3.1E+06	2.9E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	4.0E-04	1.4E-04	3.5E-04	3.2E-04	1.4E-04	5.3E-05	1.7E-04	1.1E-04	4.8E-05	2.5E-05	6.9E-05	4.2E-05	1.6E-05	1.5E-05	2.7E-05	1.5E-05
Tc-99	9.5E+05	7.4E+05	7.2E+05	1.3E+06	9.9E+05	9.9E+05	1.7E+06	1.3E+06	1.3E+06	2.2E+06	1.6E+06	1.8E+06	2.8E+06	2.1E+06	2.3E+06	3.6E+06

TABLE 54. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	760	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	3.7E+02	8.0E+02	1.1E+03	6.1E+02	2.5E+02	8.2E+02	8.3E+02	4.0E+02	1.7E+02	7.4E+02	5.8E+02	2.7E+02	1.9E+02	6.1E+02	4.0E+02	1.7E+02
Cl-36	1.3E-09	7.7E-10	2.5E-10	6.9E-11	3.7E-10	2.7E-10	9.1E-11	2.6E-11	8.0E-11	8.8E-11	3.2E-11	0	1.1E-11	2.2E-11	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	2.8E+04	5.1E+04	6.1E+04	4.0E+04	5.9E+04	8.3E+04	5.9E+04	6.8E+04	1.1E+05	8.2E+04	7.5E+04	1.4E+05	1.1E+05	8.6E+04	1.7E+05	1.5E+05
K-40	1.1E+05	2.2E+05	3.2E+05	2.4E+05	1.7E+05	4.5E+05	5.1E+05	3.6E+05	3.7E+05	8.3E+05	7.6E+05	5.0E+05	8.6E+05	1.3E+06	1.1E+06	7.2E+05
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.4E+07	1.1E+07	5.8E+06	2.5E+06	7.0E+06	1.5E+07	9.9E+06	4.7E+06	2.0E+06	1.2E+07	1.4E+07	7.9E+06	3.5E+06	2.5E+06	1.5E+07	1.2E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	5.2E-06	8.2E-06	1.0E-05	4.7E-06	1.7E-06	4.0E-06	3.6E-06	1.6E-06	5.8E-07	1.8E-06	1.3E-06	4.9E-07	2.8E-07	6.9E-07	4.1E-07	1.6E-07
Tc-99	2.6E+06	3.0E+06	4.6E+06	3.2E+06	3.9E+06	5.7E+06	4.1E+06	5.0E+06	7.0E+06	4.9E+06	6.1E+06	8.4E+06	5.8E+06	7.5E+06	9.9E+06	6.7E+06

SYMBOL	840	845	850	855	860	865	870	875	880	885	890	895	900	905	910
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	2.4E+02	4.6E+02	2.7E+02	1.1E+02	2.6E+02	3.3E+02	1.8E+02	7.2E+01	2.5E+02	2.4E+02	1.1E+02	5.3E+01	2.2E+02	1.6E+02	7.2E+01
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.0E+05	2.1E+05	2.0E+05	1.2E+05	2.3E+05	2.6E+05	1.6E+05	2.7E+05	3.2E+05	2.2E+05	2.8E+05	4.0E+05	2.9E+05	2.9E+05	4.9E+05
K-40	1.7E+06	2.1E+06	1.5E+06	1.3E+06	2.9E+06	2.8E+06	1.8E+06	2.7E+06	4.5E+06	3.7E+06	2.4E+06	5.2E+06	6.4E+06	4.6E+06	3.8E+06
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	6.3E+06	2.7E+06	6.0E+06	1.4E+07	1.0E+07	4.8E+06	2.0E+06	1.0E+07	1.3E+07	7.6E+06	3.4E+06	2.0E+06	1.3E+07	1.1E+07	5.7E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.5E-07	2.6E-07	1.4E-07	4.9E-08	8.2E-08	9.3E-08	4.3E-08	1.6E-08	3.8E-08	3.2E-08	1.3E-08	5.4E-09	1.5E-08	1.0E-08	4.1E-09
Tc-99	9.1E+06	1.2E+07	7.8E+06	1.1E+07	1.4E+07	9.0E+06	1.3E+07	1.5E+07	1.0E+07	1.5E+07	1.8E+07	1.2E+07	3.2E+07	4.1E+07	2.6E+07

TABLE 54. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.286 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	915	920	925	930	935	940	945	950	955	960	965	970	975	980
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	5.8E+01	1.7E+02	1.0E+02	4.6E+01	6.8E+01	1.3E+02	6.9E+01	2.9E+01	7.1E+01	8.6E+01	4.3E+01	1.8E+01	6.4E+01	5.8E+01
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	3.7E+05	3.2E+05	5.8E+05	4.8E+05	3.4E+05	6.6E+05	5.9E+05	4.1E+05	1.4E+06	1.5E+06	9.3E+05	4.8E+05	2.3E+05	1.1E+05
K-40	8.8E+06	8.6E+06	5.6E+06	7.7E+06	1.4E+07	1.1E+07	7.0E+06	1.4E+07	1.8E+07	1.3E+07	1.0E+07	2.3E+07	2.3E+07	1.5E+07
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.4E+06	4.3E+06	1.2E+07	8.7E+06	4.2E+06	1.7E+06	7.4E+06	1.0E+07	6.4E+06	2.9E+06	1.5E+06	9.1E+06	8.6E+06	4.6E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	2.7E-11	4.3E-11	4.3E-11	3.5E-11	2.6E-11
Sr-90	2.6E-09	5.9E-09	3.3E-09	1.2E-09	1.4E-09	2.1E-09	1.0E-09	3.9E-10	6.9E-10	7.3E-10	3.2E-10	1.1E-10	3.0E-10	2.3E-10
Tc-99	1.4E+07	6.4E+06	3.4E+06	3.6E+07	4.9E+07	3.1E+07	1.6E+07	7.5E+06	4.5E+06	4.8E+07	5.9E+07	3.7E+07	1.9E+07	9.0E+06

SYMBOL	985	990	995	1000	1005	1010	1015	1020	1030	1040	1050	1060	1070	1080	1100
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	2.8E+01	1.4E+01	5.2E+01	3.8E+01	1.6E+01	1.5E+01	3.9E+01	2.4E+01	1.7E+01	1.5E+01	1.7E+01	9.6E+00	1.4E+01	5.9E+00	3.6E+00
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.1E+06	1.9E+06	1.4E+06	7.5E+05	3.7E+05	1.7E+05	8.1E+05	2.4E+06	1.2E+06	2.8E+05	2.8E+06	1.8E+06	4.3E+05	2.6E+06	6.6E+05
K-40	1.8E+07	3.2E+07	2.7E+07	1.7E+07	3.1E+07	4.3E+07	3.1E+07	2.2E+07	5.2E+07	3.7E+07	6.0E+07	6.3E+07	6.9E+07	1.0E+08	1.3E+08
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.0E+06	2.7E+06	8.8E+06	6.4E+06	3.1E+06	1.3E+06	4.6E+06	7.5E+06	2.1E+06	5.9E+06	3.3E+06	1.5E+06	4.5E+06	9.4E+05	1.4E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	1.8E-11	3.4E-11	2.4E-10	4.6E-10	5.1E-10	4.4E-10	3.3E-10	2.3E-10	1.6E-09	4.8E-09	3.3E-09	1.6E-09	2.9E-08	3.7E-08	3.4E-08
Sr-90	9.5E-11	3.3E-11	1.2E-10	7.2E-11	2.9E-11	1.1E-11	4.0E-11	2.3E-11	0	0	0	0	0	0	0
Tc-99	6.3E+06	6.2E+07	7.1E+07	4.4E+07	2.2E+07	1.0E+07	8.8E+06	7.4E+07	4.8E+07	1.1E+07	8.6E+07	5.2E+07	1.2E+07	1.0E+08	1.3E+07

TABLE 55. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	EXCEEDS	1	10	15	20	25	30	35	40	45	50	55	60	65	70	80	90	100	110	120	130	140	150	160	180	190	200	210	220	240	260
Am-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	-1	0	0	0	0	2.7E-10	6.2E-08	1.9E-05	2.5E-04	1.8E-03	8.2E-03	2.7E-02	7.2E-02	1.5E-01	2.4E-01	4.6E-01	5.4E-01	4.6E-01	3.1E-01	1.8E-01	8.7E-02	3.9E-02	1.6E-02	6.2E-03	8.1E-04	2.7E-04	9.0E-05	3.0E-05	9.2E-06	8.7E-07	7.9E-08
Ca-41	-1	0	0	0	0	0	0	0	0	0	0	2.6E-11	7.6E-09	2.0E-07	2.4E-06	1.8E-04	4.5E-03	6.0E-02	4.8E-01	2.4E+00	9.6E+00	3.0E+01	7.4E+01	1.6E+02	4.6E+02	6.8E+02	9.5E+02	1.2E+03	1.6E+03	2.5E+03	3.2E+03
Cl-36	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	-1	0	0	0	1.5E-11	1.4E-07	6.3E-05	1.4E-02	2.2E-01	2.0E+00	1.2E+01	4.8E+01	1.5E+02	3.4E+02	6.2E+02	1.4E+03	1.8E+03	1.7E+03	1.3E+03	7.8E+02	4.1E+02	2.0E+02	9.1E+01	3.8E+01	5.9E+00	2.2E+00	7.9E-01	2.8E-01	9.4E-02	1.0E-02	1.1E-03
H-3	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	-1	0	0	0	0	0	0	3.1E-11	2.5E-08	4.1E-06	2.2E-04	4.4E-02	4.6E-01	6.4E+00	1.3E+01	1.6E+02	1.5E+03	6.7E+03	1.5E+04	2.1E+04	2.1E+04	2.0E+04	1.8E+04	1.5E+04	5.3E+03	2.5E+03	1.2E+03	5.9E+02	2.7E+02	3.9E+01	4.9E+00
K-40	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-10	4.6E-10	8.8E-08	9.4E-08	1.4E-06	9.2E-06	8.8E-06	2.5E-04	1.8E-03
Nb-91	510	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.7E-11	4.4E-09	5.9E-09	2.4E-07	1.8E-07	5.3E-06	1.8E-04
Pd-107	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.0E-11	1.5E-08	8.5E-07	1.3E-05	7.0E-05	5.3E-04	5.7E-03	4.1E-02	2.0E-01	1.6E+00	2.8E+00	5.4E+00	1.4E+01	3.4E+01	1.2E+02	1.9E+02
Si-32	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	755	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	-1	0	0	0	0	0	0	0	0	0	0	2.2E-10	4.8E-08	1.2E-06	1.0E-05	5.1E-04	9.6E-03	8.9E-02	4.9E-01	1.8E+00	5.0E+00	1.1E+01	1.9E+01	2.7E+01	4.0E+01	4.1E+01	3.9E+01	3.6E+01	3.3E+01	2.3E+01	1.4E+01

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates constituent does not exceed GWPL within the 2,000 years modeled
Radionuclide concentrations are reported in pCi/L

TABLE 55. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	280	300	305	310	315	320	325	330	335	340	345	350	355	360
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	8.8E-09	5.5E-10	2.9E-10	1.6E-10	9.1E-11	2.2E-11	1.2E-11	0	0	0	0	0	0	0
Ca-41	3.2E+03	2.7E+03	2.1E+03	2.3E+03	2.0E+03	1.9E+03	1.8E+03	1.6E+03	1.6E+03	1.2E+03	1.3E+03	9.7E+02	1.1E+03	7.8E+02
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	1.1E-04	1.1E-05	6.0E-06	3.3E-06	1.9E-06	1.2E-06	5.7E-07	3.0E-07	1.6E-07	8.1E-08	4.6E-08	2.3E-08	1.4E-08	6.6E-09
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	6.6E-01	6.1E-02	3.7E-02	1.8E-02	1.2E-02	5.9E-03	3.3E-03	1.9E-03	9.2E-04	5.8E-04	2.8E-04	1.6E-04	8.9E-05	4.3E-05
K-40	5.0E-03	1.9E-02	4.8E-02	4.2E-02	4.1E-02	1.1E-01	1.0E-01	8.3E-02	2.4E-01	2.2E-01	1.6E-01	4.5E-01	4.6E-01	3.1E-01
Nb-91	2.8E-03	2.3E-02	2.7E-02	1.8E-02	5.1E-02	1.2E-01	1.0E-01	7.4E-02	3.4E-01	4.6E-01	3.4E-01	4.4E-01	1.4E+00	1.4E+00
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	3.3E+02	7.4E+02	5.6E+02	9.7E+02	7.0E+02	1.1E+03	9.7E+02	1.1E+03	1.2E+03	1.0E+03	1.5E+03	1.0E+03	1.6E+03	1.3E+03
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	7.0E+00	2.8E+00	1.9E+00	1.7E+00	1.2E+00	9.8E-01	7.4E-01	5.5E-01	4.5E-01	3.0E-01	2.7E-01	1.7E-01	1.5E-01	9.1E-02

SYMBOL	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435	440	445
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	8.8E+02	6.3E+02	6.9E+02	5.2E+02	5.3E+02	4.3E+02	3.9E+02	3.5E+02	2.9E+02	2.8E+02	2.0E+02	2.1E+02	1.5E+02	1.6E+02	1.1E+02	1.2E+02	8.7E+01
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	4.4E-09	1.9E-09	1.3E-09	5.6E-10	4.1E-10	1.6E-10	1.2E-10	3.8E-11	3.0E-11	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	2.7E-05	1.3E-05	7.5E-06	3.9E-06	2.0E-06	1.1E-06	5.3E-07	3.2E-07	1.6E-07	8.2E-08	4.6E-08	2.2E-08	1.3E-08	6.0E-09	3.3E-09	1.7E-09	8.2E-10
K-40	7.9E-01	8.7E-01	5.7E-01	1.3E+00	1.5E+00	1.0E+00	2.0E+00	2.6E+00	1.7E+00	2.9E+00	4.0E+00	2.8E+00	4.0E+00	6.0E+00	4.3E+00	5.3E+00	8.6E+00
Nb-91	8.9E-01	2.4E+00	4.2E+00	3.3E+00	2.6E+00	8.8E+00	1.0E+01	7.1E+00	1.1E+01	2.5E+01	2.2E+01	1.4E+01	3.9E+01	5.4E+01	4.0E+01	3.7E+01	9.7E+01
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	1.5E+03	1.6E+03	1.3E+03	1.8E+03	1.2E+03	1.8E+03	1.4E+03	1.7E+03	1.6E+03	1.4E+03	1.7E+03	1.2E+03	1.7E+03	1.2E+03	1.5E+03	1.3E+03	1.2E+03
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.6E-11	5.7E-10	9.6E-10
Tc-99	8.4E-02	5.2E-02	4.6E-02	2.9E-02	2.4E-02	1.7E-02	1.3E-02	9.2E-03	6.4E-03	5.1E-03	3.2E-03	2.8E-03	1.6E-03	1.4E-03	8.4E-04	7.4E-04	4.4E-04

TABLE 55. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	450	455	460	465	470	475	480	485	490	495	500	505	510	515	520	525	530	535	540	545	550	555	560	565	570	575	580	585	590	595	600
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	8.9E+01	6.7E+01	6.4E+01	5.2E+01	4.4E+01	4.0E+01	3.1E+01	2.9E+01	2.1E+01	2.1E+01	1.4E+01	1.5E+01	1.0E+01	1.1E+01	7.9E+00	7.6E+00	5.8E+00	5.2E+00	4.3E+00	3.5E+00	3.2E+00	2.4E+00	2.3E+00	1.7E+00	2.4E+00	1.7E+00	7.3E-01	4.7E-01	1.0E+00	6.1E-01	2.6E-01
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	4.8E-10	2.3E-10	1.2E-10	6.1E-11	1.9E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	6.5E+00	6.6E+00	1.2E+01	9.1E+00	8.2E+00	1.6E+01	1.2E+01	1.0E+01	2.0E+01	1.7E+01	1.2E+01	2.4E+01	2.1E+01	1.5E+01	2.9E+01	2.7E+01	1.7E+01	3.3E+01	3.3E+01	2.1E+01	3.6E+01	3.9E+01	2.6E+01	3.9E+01	4.5E+01	3.0E+01	4.2E+01	5.3E+01	3.6E+01	4.4E+01	5.7E+01
Nb-91	9.7E+01	6.4E+01	1.1E+02	1.9E+02	1.6E+02	1.1E+02	2.8E+02	3.3E+02	2.3E+02	2.7E+02	5.5E+02	4.9E+02	3.2E+02	6.4E+02	8.9E+02	6.6E+02	5.3E+02	1.2E+03	1.2E+03	8.3E+02	1.2E+03	1.9E+03	1.6E+03	1.1E+03	2.3E+03	2.8E+03	1.9E+03	1.8E+03	3.8E+03	3.4E+03	2.2E+03
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	1.4E+03	9.5E+02	1.3E+03	9.0E+02	1.2E+03	9.5E+02	9.3E+02	9.5E+02	6.9E+02	9.0E+02	6.0E+02	7.9E+02	6.0E+02	6.3E+02	6.1E+02	4.7E+02	5.7E+02	3.8E+02	4.9E+02	3.6E+02	4.0E+02	3.4E+02	2.8E+02	3.2E+02	2.2E+02	2.8E+02	2.0E+02	2.2E+02	1.9E+02	1.7E+02	1.7E+02
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.0E-09	8.3E-10	6.2E-10	4.3E-10	9.3E-09	7.6E-08	1.4E-07	1.5E-07	1.2E-07	9.2E-08	6.4E-08	4.6E-07	4.6E-06	9.0E-06	9.9E-06	8.5E-06	6.4E-06	4.5E-06	1.4E-05	1.6E-04	3.5E-04	4.0E-04	3.5E-04	2.6E-04	1.9E-04	3.0E-04	3.7E-03	8.5E-03	9.9E-03	8.8E-03	6.7E-03
Tc-99	3.6E-04	2.3E-04	1.8E-04	1.2E-04	8.9E-05	6.5E-05	4.3E-05	3.3E-05	2.1E-05	1.7E-05	1.0E-05	8.7E-06	5.1E-06	4.3E-06	2.5E-06	2.1E-06	1.3E-06	9.7E-07	6.7E-07	4.6E-07	3.3E-07	2.2E-07	1.7E-07	1.0E-07	1.1E-07	6.7E-08	2.6E-08	1.4E-08	2.3E-08	1.2E-08	4.6E-09

TABLE 55. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700	705	710	715	720	725	730	735	740	745	750	755
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	3.4E-01	4.7E-01	2.5E-01	1.0E-01	2.3E-01	2.1E-01	1.0E-01	4.7E-02	1.2E-01	9.1E-02	4.1E-02	3.1E-02	6.2E-02	3.7E-02	1.6E-02	2.2E-02	2.8E-02	1.5E-02	6.0E-03	1.3E-02	1.2E-02	5.7E-03	2.7E-03	7.1E-03	5.0E-03	2.2E-03	1.8E-03	3.5E-03	2.0E-03	8.5E-04	1.3E-03
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	4.0E+01	4.3E+01	6.2E+01	4.5E+01	4.3E+01	6.6E+01	5.0E+01	4.3E+01	6.8E+01	5.4E+01	4.1E+01	7.0E+01	5.8E+01	4.0E+01	7.1E+01	6.2E+01	4.1E+01	7.0E+01	6.4E+01	4.1E+01	6.7E+01	6.4E+01	4.0E+01	6.3E+01	6.5E+01	4.1E+01	5.8E+01	6.4E+01	4.2E+01	5.3E+01	6.2E+01
Nb-91	3.6E+03	5.1E+03	3.9E+03	2.9E+03	6.1E+03	6.3E+03	4.2E+03	4.9E+03	8.5E+03	7.0E+03	4.5E+03	8.4E+03	1.0E+04	7.3E+03	6.2E+03	1.2E+04	1.1E+04	7.4E+03	1.1E+04	1.5E+04	1.2E+04	8.0E+03	1.6E+04	1.7E+04	1.1E+04	1.2E+04	2.0E+04	1.7E+04	1.1E+04	1.8E+04	2.2E+04
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	1.2E+02	1.5E+02	1.0E+02	1.2E+02	9.6E+01	9.1E+01	8.9E+01	6.5E+01	7.8E+01	5.1E+01	6.3E+01	4.7E+01	4.7E+01	4.3E+01	3.3E+01	3.7E+01	2.4E+01	3.0E+01	2.1E+01	3.3E+01	3.1E+01	1.7E+01	7.6E+00	5.9E+00	1.9E+01	1.4E+01	7.2E+00	3.1E+00	7.2E+00	1.1E+01	6.7E+00
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	4.8E-03	4.9E-03	5.6E-02	1.4E-01	1.7E-01	1.6E-01	1.2E-01	8.7E-02	7.0E-02	6.2E-01	1.7E+00	2.2E+00	2.0E+00	1.6E+00	1.1E+00	8.1E-01	5.1E+00	1.6E+01	2.1E+01	2.0E+01	1.6E+01	1.1E+01	7.8E+00	3.4E+01	1.1E+02	1.6E+02	1.5E+02	1.2E+02	8.9E+01	6.1E+01	1.8E+02
Tc-99	4.4E-09	5.1E-09	2.4E-09	8.5E-10	1.4E-09	1.1E-09	4.8E-10	1.8E-10	3.7E-10	2.4E-10	8.7E-11	5.2E-11	7.9E-11	4.4E-11	1.7E-11	1.2E-11	1.7E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 55. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	780	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835	840	845	850	855	860	865	870	875	880	885	890	895	900	905	910
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.5E-03	8.0E-04	3.3E-04	7.6E-04	6.7E-04	3.1E-04	1.6E-04	3.9E-04	2.7E-04	1.2E-04	1.0E-04	1.9E-04	1.1E-04	4.4E-05	7.1E-05	8.1E-05	4.1E-05	1.7E-05	4.0E-05	3.3E-05	1.6E-05	8.2E-06	2.0E-05	1.3E-05	5.7E-06	5.5E-06	8.9E-06	5.0E-06	2.1E-06	3.6E-06	3.9E-06
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	4.1E+01	4.7E+01	5.9E+01	4.0E+01	4.1E+01	5.6E+01	4.0E+01	3.5E+01	5.2E+01	3.8E+01	3.1E+01	4.7E+01	3.7E+01	2.8E+01	4.3E+01	3.5E+01	2.4E+01	3.9E+01	3.3E+01	2.2E+01	3.5E+01	3.2E+01	2.0E+01	3.1E+01	3.0E+01	1.9E+01	2.7E+01	2.6E+01	1.7E+01	2.3E+01	2.4E+01
Nb-91	1.6E+04	1.3E+04	2.4E+04	2.2E+04	1.5E+04	1.9E+04	2.7E+04	2.2E+04	1.4E+04	2.6E+04	2.9E+04	2.0E+04	1.8E+04	3.2E+04	2.7E+04	1.8E+04	2.6E+04	3.4E+04	2.4E+04	1.8E+04	3.3E+04	3.2E+04	2.1E+04	2.4E+04	3.6E+04	2.9E+04	1.8E+04	3.1E+04	3.5E+04	2.4E+04	2.1E+04
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	3.1E+00	1.5E+00	6.1E+00	5.6E+00	2.9E+00	1.2E+00	1.7E+00	4.0E+00	2.7E+00	1.3E+00	5.4E-01	1.8E+00	2.2E+00	1.2E+00	5.4E-01	3.6E-01	1.3E+00	1.0E+00	5.2E-01	2.3E-01	4.5E-01	7.6E-01	4.7E-01	2.2E-01	9.8E-02	3.9E-01	3.7E-01	2.0E-01	8.8E-02	9.5E-02	2.4E-01
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	6.7E+02	9.7E+02	9.5E+02	7.7E+02	5.5E+02	3.8E+02	7.8E+02	3.1E+03	4.7E+03	4.8E+03	3.8E+03	2.8E+03	1.9E+03	3.1E+03	1.3E+04	2.2E+04	2.1E+04	1.8E+04	1.3E+04	9.2E+03	1.1E+04	4.6E+04	7.9E+04	8.3E+04	7.0E+04	5.2E+04	3.6E+04	3.5E+04	1.5E+05	2.6E+05	2.9E+05
Tc-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 55. CONCENTRATIONS AT THE COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR CLASS A SOUTH CELL SIDE SLOPE (0.595 CM/YR INFILTRATION, 90 FOOT DISTANCE)

SYMBOL	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000	1005	1010	1015	1020	1030	1040	1050	1060	1070	1080	1100
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.9E-06	8.0E-07	2.0E-06	1.6E-06	7.3E-07	4.2E-07	9.8E-07	6.3E-07	2.7E-07	2.8E-07	4.5E-07	2.4E-07	9.9E-08	1.8E-07	1.8E-07	9.1E-08	3.8E-08	9.7E-08	7.4E-08	3.4E-08	2.1E-08	4.7E-08	1.3E-08	2.1E-08	4.5E-09	8.8E-09	1.8E-09	3.4E-09	1.4E-09
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	1.6E+01	1.9E+01	2.2E+01	1.5E+01	2.4E+01	3.4E+01	2.4E+01	1.3E+01	6.2E+00	2.9E+00	9.7E+00	2.3E+01	1.8E+01	1.0E+01	5.2E+00	2.4E+00	4.8E+00	1.6E+01	1.4E+01	8.7E+00	4.3E+00	2.0E+00	1.1E+01	7.2E+00	1.7E+00	7.4E+00	5.7E+00	1.4E+00	4.4E+00
Nb-91	3.5E+04	3.1E+04	2.0E+04	2.8E+04	3.6E+04	2.7E+04	1.8E+04	3.3E+04	3.3E+04	2.2E+04	2.3E+04	3.5E+04	2.9E+04	1.8E+04	3.0E+04	3.4E+04	2.3E+04	1.9E+04	3.3E+04	3.0E+04	1.9E+04	2.4E+04	2.5E+04	2.8E+04	1.9E+04	2.9E+04	1.5E+04	2.6E+04	4.1E+04
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	1.3E-11
Re-187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	1.8E-01	8.3E-02	3.5E-02	1.0E-01	1.4E-01	7.5E-02	3.4E-02	2.0E-02	7.5E-02	6.1E-02	3.1E-02	1.3E-02	2.3E-02	4.3E-02	2.8E-02	1.2E-02	5.5E-03	2.1E-02	2.2E-02	1.1E-02	5.1E-03	4.6E-03	9.8E-03	2.0E-03	7.2E-03	1.9E-03	3.8E-03	1.7E-03	1.4E-03
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.4E+05	1.8E+05	1.3E+05	1.1E+05	4.1E+05	7.9E+05	8.8E+05	7.6E+05	5.8E+05	4.1E+05	3.1E+05	1.0E+06	2.1E+06	2.5E+06	2.1E+06	1.6E+06	1.1E+06	8.5E+05	2.3E+06	5.1E+06	6.2E+06	5.5E+06	3.1E+06	4.9E+06	1.5E+07	1.0E+07	5.0E+06	2.5E+07	1.7E+07
Tc-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Whetstone Associates

ATTACHMENT 1
ENERGY*SOLUTIONS*
CLASS A SOUTH CELL
HELP INFILTRATION MODEL
OUTPUT FILES

Prepared for

Energy*Solutions,* LLC
423 West 300 South, Suite 200
Salt Lake City, UT 84101

Prepared by

Whetstone Associates, Inc.
714 S. Oak Street
P.O. Box 1156
La Veta, Colorado 81055-1156
719-742-5155

Document 4101L.071207

December 2007

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******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**              HELP MODEL VERSION 3.06   (17 AUGUST 1996)                  **
**              DEVELOPED BY ENVIRONMENTAL LABORATORY                       **
**              USAE WATERWAYS EXPERIMENT STATION                           **
**              FOR USEPA RISK REDUCTION ENGINEERING LABORATORY             **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************
PRECIPITATION DATA FILE:    C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D4
TEMPERATURE DATA FILE:      C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D7
SOLAR RADIATION DATA FILE:  C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D13
EVAPOTRANSPIRATION DATA:    C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D11
SOIL AND DESIGN DATA FILE:  C:\PROJECTS\4101L\LLRW2007\HELP07\T6\11E2-T6.D10
OUTPUT DATA FILE:           C:\PROJECTS\4101L\LLRW2007\HELP07\T6\11E2-T6.OUT
TIME:  13: 4     DATE:  11/26/2007
******************************************************************************
     TITLE:  11.e(2) Cell Top Slope, 6 in Filter below Sacrificial Soil
******************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
            WERE SPECIFIED BY THE USER.

                              LAYER  1
                              --------
                 TYPE 1 - VERTICAL PERCOLATION LAYER
                    MATERIAL TEXTURE NUMBER   0
      THICKNESS                  =     18.00   INCHES
      POROSITY                   =      0.1900 VOL/VOL
      FIELD CAPACITY             =      0.0240 VOL/VOL
      WILTING POINT              =      0.0070 VOL/VOL
      INITIAL SOIL WATER CONTENT =      0.0146 VOL/VOL
      EFFECTIVE SAT. HYD. COND.  =   42.0000000000     CM/SEC

                              LAYER  2
                              --------
                  TYPE 2 - LATERAL DRAINAGE LAYER
                    MATERIAL TEXTURE NUMBER   0
      THICKNESS                  =      6.00   INCHES
      POROSITY                   =      0.1900 VOL/VOL
      FIELD CAPACITY             =      0.0240 VOL/VOL
      WILTING POINT              =      0.0070 VOL/VOL
      INITIAL SOIL WATER CONTENT =      0.0240 VOL/VOL
      EFFECTIVE SAT. HYD. COND.  =   42.0000000000     CM/SEC
      SLOPE                      =      2.10   PERCENT
      DRAINAGE LENGTH            =    740.0    FEET

                              LAYER  3
                              --------
                    TYPE 3 - BARRIER SOIL LINER
                    MATERIAL TEXTURE NUMBER   0
      THICKNESS                  =     12.00   INCHES
      POROSITY                   =      0.3100 VOL/VOL
      FIELD CAPACITY             =      0.2000 VOL/VOL
      WILTING POINT              =      0.0250 VOL/VOL
      INITIAL SOIL WATER CONTENT =      0.3100 VOL/VOL
      EFFECTIVE SAT. HYD. COND.  =  0.400000019000E-02 CM/SEC

                              LAYER  4
                              --------
                  TYPE 2 - LATERAL DRAINAGE LAYER
                    MATERIAL TEXTURE NUMBER   0
      THICKNESS                  =      6.00   INCHES
      POROSITY                   =      0.2800 VOL/VOL
      FIELD CAPACITY             =      0.0320 VOL/VOL
      WILTING POINT              =      0.0130 VOL/VOL
      INITIAL SOIL WATER CONTENT =      0.0320 VOL/VOL
      EFFECTIVE SAT. HYD. COND.  =   3.50000000000     CM/SEC
      SLOPE                      =      2.10   PERCENT
      DRAINAGE LENGTH            =    740.0    FEET

                              LAYER  5
                              --------
                    TYPE 3 - BARRIER SOIL LINER
                    MATERIAL TEXTURE NUMBER   0
      THICKNESS                  =     12.00   INCHES
      POROSITY                   =      0.4300 VOL/VOL
      FIELD CAPACITY             =      0.3900 VOL/VOL
      WILTING POINT              =      0.2800 VOL/VOL
      INITIAL SOIL WATER CONTENT =      0.4300 VOL/VOL
      EFFECTIVE SAT. HYD. COND.  =  0.500000006000E-07 CM/SEC

                              LAYER  6
                              --------
                 TYPE 1 - VERTICAL PERCOLATION LAYER
```

```
                    MATERIAL TEXTURE NUMBER   0
        THICKNESS                     =     12.00   INCHES
        POROSITY                      =      0.4300 VOL/VOL
        FIELD CAPACITY                =      0.3900 VOL/VOL
        WILTING POINT                 =      0.2800 VOL/VOL
        INITIAL SOIL WATER CONTENT    =      0.3900 VOL/VOL
        EFFECTIVE SAT. HYD. COND.     =  0.999999997000E-06 CM/SEC

                              LAYER  7
                              --------

                TYPE 1 - VERTICAL PERCOLATION LAYER
                    MATERIAL TEXTURE NUMBER   0
        THICKNESS                     =    100.00   INCHES
        POROSITY                      =      0.4370 VOL/VOL
        FIELD CAPACITY                =      0.0620 VOL/VOL
        WILTING POINT                 =      0.0240 VOL/VOL
        INITIAL SOIL WATER CONTENT    =      0.1106 VOL/VOL
        EFFECTIVE SAT. HYD. COND.     =  0.500000024000E-03 CM/SEC

                              LAYER  8
                              --------

                    TYPE 3 - BARRIER SOIL LINER
                    MATERIAL TEXTURE NUMBER   0
        THICKNESS                     =     24.00   INCHES
        POROSITY                      =      0.4300 VOL/VOL
        FIELD CAPACITY                =      0.3900 VOL/VOL
        WILTING POINT                 =      0.2800 VOL/VOL
        INITIAL SOIL WATER CONTENT    =      0.4300 VOL/VOL
        EFFECTIVE SAT. HYD. COND.     =  0.999999997000E-06 CM/SEC

               GENERAL DESIGN AND EVAPORATIVE ZONE DATA
               ----------------------------------------
      NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
               SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
               GROUND CONDITIONS, A SURFACE SLOPE OF  2.% AND
               A SLOPE LENGTH OF  740. FEET.
     SCS RUNOFF CURVE NUMBER              =     68.10
     FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
     AREA PROJECTED ON HORIZONTAL PLANE   =      1.699  ACRES
     EVAPORATIVE ZONE DEPTH               =     18.0    INCHES
     INITIAL WATER IN EVAPORATIVE ZONE    =      0.263  INCHES
     UPPER LIMIT OF EVAPORATIVE STORAGE   =      3.420  INCHES
     LOWER LIMIT OF EVAPORATIVE STORAGE   =      0.126  INCHES
     INITIAL SNOW WATER                   =      0.000  INCHES
     INITIAL WATER IN LAYER MATERIALS     =     35.539  INCHES
     TOTAL INITIAL WATER                  =     35.539  INCHES
     TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
                 EVAPOTRANSPIRATION AND WEATHER DATA
                 -----------------------------------
      NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
               SALT LAKE CITY        UTAH
          STATION LATITUDE                         = 40.69 DEGREES
          MAXIMUM LEAF AREA INDEX                  =  0.00
          START OF GROWING SEASON (JULIAN DATE)    =   117
          END OF GROWING SEASON (JULIAN DATE)      =   289
          EVAPORATIVE ZONE DEPTH                   = 18.0  INCHES
          AVERAGE ANNUAL WIND SPEED                =  5.75 MPH
          AVERAGE 1ST QUARTER RELATIVE HUMIDITY    = 50.50 %
          AVERAGE 2ND QUARTER RELATIVE HUMIDITY    = 28.60 %
          AVERAGE 3RD QUARTER RELATIVE HUMIDITY    = 22.70 %
          AVERAGE 4TH QUARTER RELATIVE HUMIDITY    = 47.90 %
      NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
               COEFFICIENTS FOR    SALT LAKE CITY       UTAH
               NORMAL MEAN MONTHLY PRECIPITATION (INCHES)
   JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
   -------     -------     -------     -------     -------     -------
    0.79        0.92        0.85        1.25        0.94        0.90
    0.34        0.32        0.34        0.75        0.58        0.60
      NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
               COEFFICIENTS FOR    SALT LAKE CITY       UTAH
          NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)
   JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
   -------     -------     -------     -------     -------     -------
   30.40       32.00       41.70       49.10       60.10       69.60
   78.40       77.00       65.50       50.90       36.70       28.90
      NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
               COEFFICIENTS FOR    SALT LAKE CITY       UTAH
                 AND STATION LATITUDE  =  40.69 DEGREES

*******************************************************************************
      AVERAGE MONTHLY VALUES IN INCHES FOR YEARS     1 THROUGH  100
-------------------------------------------------------------------------------

                     JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                     -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS             0.73     0.97     0.90     1.17     0.93     1.03
```

	0.32	0.32	0.33	0.81	0.58	0.63
STD. DEVIATIONS	0.37	0.45	0.42	0.49	0.54	0.73
	0.27	0.26	0.27	0.58	0.32	0.26

RUNOFF

TOTALS	0.007	0.034	0.011	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.023	0.082	0.039	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.002

EVAPOTRANSPIRATION

TOTALS	0.428	0.550	0.616	0.687	0.514	0.561
	0.203	0.203	0.202	0.351	0.376	0.452
STD. DEVIATIONS	0.168	0.206	0.240	0.266	0.293	0.369
	0.117	0.130	0.152	0.234	0.167	0.153

LATERAL DRAINAGE COLLECTED FROM LAYER 2

TOTALS	0.0017	0.0111	0.0228	0.0016	0.0014	0.0016
	0.0003	0.0002	0.0002	0.0016	0.0003	0.0001
STD. DEVIATIONS	0.0063	0.0299	0.0408	0.0019	0.0018	0.0022
	0.0007	0.0005	0.0005	0.0023	0.0006	0.0002

PERCOLATION/LEAKAGE THROUGH LAYER 3

TOTALS	0.1059	0.2922	0.6439	0.5006	0.3915	0.4818
	0.1287	0.1124	0.1225	0.4646	0.1826	0.0562
STD. DEVIATIONS	0.2249	0.4293	0.4397	0.3027	0.3182	0.4083
	0.1722	0.1471	0.1513	0.4097	0.2013	0.0970

LATERAL DRAINAGE COLLECTED FROM LAYER 4

TOTALS	0.0994	0.2872	0.6305	0.4879	0.3769	0.4684
	0.1280	0.1037	0.1129	0.4521	0.1752	0.0522
STD. DEVIATIONS	0.2105	0.4260	0.4279	0.2958	0.3126	0.4007
	0.1679	0.1404	0.1445	0.4036	0.1972	0.0920

PERCOLATION/LEAKAGE THROUGH LAYER 5

TOTALS	0.0024	0.0039	0.0113	0.0157	0.0126	0.0137
	0.0060	0.0076	0.0080	0.0124	0.0096	0.0052
STD. DEVIATIONS	0.0044	0.0052	0.0053	0.0051	0.0063	0.0068
	0.0056	0.0071	0.0074	0.0076	0.0074	0.0071

PERCOLATION/LEAKAGE THROUGH LAYER 8

TOTALS	0.0129	0.0074	0.0100	0.0106	0.0096	0.0092
	0.0073	0.0082	0.0082	0.0093	0.0084	0.0074
STD. DEVIATIONS	0.0578	0.0021	0.0021	0.0020	0.0025	0.0024
	0.0024	0.0026	0.0025	0.0024	0.0024	0.0023

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	0.0002	0.0008	0.0016	0.0013	0.0011	0.0013
	0.0003	0.0003	0.0003	0.0012	0.0004	0.0001
STD. DEVIATIONS	0.0005	0.0013	0.0013	0.0009	0.0010	0.0011
	0.0005	0.0004	0.0004	0.0012	0.0005	0.0002

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.0057	0.0181	0.0361	0.0289	0.0216	0.0277
	0.0073	0.0059	0.0067	0.0259	0.0104	0.0030
STD. DEVIATIONS	0.0121	0.0267	0.0245	0.0175	0.0179	0.0237
	0.0096	0.0081	0.0086	0.0231	0.0117	0.0053

DAILY AVERAGE HEAD ON TOP OF LAYER 8

AVERAGES	0.0043	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
STD. DEVIATIONS	0.0418	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.72	(1.548)	53776.4	100.00
RUNOFF	0.052	(0.1033)	320.48	0.596
EVAPOTRANSPIRATION	5.142	(0.7760)	31712.11	58.970
LATERAL DRAINAGE COLLECTED FROM LAYER 2	0.04270	(0.04713)	263.370	0.48975
PERCOLATION/LEAKAGE THROUGH LAYER 3	3.48291	(0.92390)	21480.375	39.94387
AVERAGE HEAD ON TOP OF LAYER 3	0.001	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	3.37429	(0.91561)	20810.504	38.69821
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.10862	(0.01924)	669.873	1.24566
AVERAGE HEAD ON TOP OF LAYER 5	0.016	(0.005)		
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.10866	(0.05436)	670.118	1.24612
AVERAGE HEAD ON TOP OF LAYER 8	0.000	(0.003)		
CHANGE IN WATER STORAGE	0.000	(0.2561)	-0.20	0.000

PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	1.16	7154.149
RUNOFF	0.277	1706.2565
DRAINAGE COLLECTED FROM LAYER 2	0.24876	1534.22034
PERCOLATION/LEAKAGE THROUGH LAYER 3	1.645048	10145.61720
AVERAGE HEAD ON TOP OF LAYER 3	0.164	
MAXIMUM HEAD ON TOP OF LAYER 3	0.074	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	0.0 FEET	
DRAINAGE COLLECTED FROM LAYER 4	0.94491	5827.62305
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.001880	11.59433
AVERAGE HEAD ON TOP OF LAYER 5	1.679	
MAXIMUM HEAD ON TOP OF LAYER 5	3.171	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	40.9 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.036168	223.06197
AVERAGE HEAD ON TOP OF LAYER 8	1.519	
SNOW WATER	1.19	7366.7827
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.1176	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0070	

*** Maximum heads are computed using McEnroe's equations. ***
Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.2636	0.0146
2	0.1440	0.0240
3	3.7200	0.3100
4	0.1920	0.0320
5	5.1600	0.4300
6	4.6800	0.3900
7	11.0560	0.1106
8	10.3200	0.4300
SNOW WATER	0.000	

```
****************************************************************************
****************************************************************************
**                                                                        **
**                                                                        **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE             **
**               HELP MODEL VERSION 3.06   (17 AUGUST 1996)               **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                 **
**                    USAE WATERWAYS EXPERIMENT STATION                   **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY            **
**                                                                        **
**                                                                        **
****************************************************************************
****************************************************************************
PRECIPITATION DATA FILE:     C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D4
TEMPERATURE DATA FILE:       C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D7
SOLAR RADIATION DATA FILE:   C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D13
EVAPOTRANSPIRATION DATA:     C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D11
SOIL AND DESIGN DATA FILE:   C:\PROJECTS\4101L\LLRW2007\HELP07\S6\11E2S12.D10
OUTPUT DATA FILE:            C:\PROJECTS\4101L\LLRW2007\HELP07\S6\11E2S12.OUT
TIME:  17:40     DATE:  11/26/2007

****************************************************************************
     TITLE:  11.e(2) - Side Slope,12"Filter below S.Soil, No Run On
****************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.

                                  LAYER  1
                                  --------
                    TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                     =      18.00    INCHES
          POROSITY                      =       0.1700 VOL/VOL
          FIELD CAPACITY                =       0.0070 VOL/VOL
          WILTING POINT                 =       0.0030 VOL/VOL
          INITIAL SOIL WATER CONTENT    =       0.0120 VOL/VOL
          EFFECTIVE SAT. HYD. COND.     =    80.0000000000       CM/SEC

                                  LAYER  2
                                  --------
                      TYPE 2 - LATERAL DRAINAGE LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                     =       6.00    INCHES
          POROSITY                      =       0.1900 VOL/VOL
          FIELD CAPACITY                =       0.0240 VOL/VOL
          WILTING POINT                 =       0.0070 VOL/VOL
          INITIAL SOIL WATER CONTENT    =       0.0240 VOL/VOL
          EFFECTIVE SAT. HYD. COND.     =    42.0000000000       CM/SEC
          SLOPE                         =      20.00    PERCENT
          DRAINAGE LENGTH               =     150.0     FEET

                                  LAYER  3
                                  --------
                        TYPE 3 - BARRIER SOIL LINER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                     =      12.00    INCHES
          POROSITY                      =       0.3100 VOL/VOL
          FIELD CAPACITY                =       0.2000 VOL/VOL
          WILTING POINT                 =       0.0250 VOL/VOL
          INITIAL SOIL WATER CONTENT    =       0.3100 VOL/VOL
          EFFECTIVE SAT. HYD. COND.     =   0.400000019000E-02 CM/SEC

                                  LAYER  4
                                  --------
                      TYPE 2 - LATERAL DRAINAGE LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                     =      12.00    INCHES
          POROSITY                      =       0.2800 VOL/VOL
          FIELD CAPACITY                =       0.0320 VOL/VOL
          WILTING POINT                 =       0.0130 VOL/VOL
          INITIAL SOIL WATER CONTENT    =       0.0320 VOL/VOL
          EFFECTIVE SAT. HYD. COND.     =     3.50000000000      CM/SEC
          SLOPE                         =      20.00    PERCENT
          DRAINAGE LENGTH               =     150.0     FEET

                                  LAYER  5
                                  --------
                        TYPE 3 - BARRIER SOIL LINER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                     =      12.00    INCHES
          POROSITY                      =       0.4300 VOL/VOL
          FIELD CAPACITY                =       0.3900 VOL/VOL
          WILTING POINT                 =       0.2800 VOL/VOL
          INITIAL SOIL WATER CONTENT    =       0.4300 VOL/VOL
          EFFECTIVE SAT. HYD. COND.     =   0.500000006000E-07 CM/SEC

                                  LAYER  6
                                  --------
```

```
              TYPE 1 - VERTICAL PERCOLATION LAYER
                  MATERIAL TEXTURE NUMBER   0
     THICKNESS                    =     12.00   INCHES
     POROSITY                     =      0.4300 VOL/VOL
     FIELD CAPACITY               =      0.3900 VOL/VOL
     WILTING POINT                =      0.2800 VOL/VOL
     INITIAL SOIL WATER CONTENT   =      0.3900 VOL/VOL
     EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

                             LAYER  7
                             --------
              TYPE 1 - VERTICAL PERCOLATION LAYER
                  MATERIAL TEXTURE NUMBER   0
     THICKNESS                    =    100.00   INCHES
     POROSITY                     =      0.4370 VOL/VOL
     FIELD CAPACITY               =      0.0620 VOL/VOL
     WILTING POINT                =      0.0240 VOL/VOL
     INITIAL SOIL WATER CONTENT   =      0.1040 VOL/VOL
     EFFECTIVE SAT. HYD. COND.    =  0.500000024000E-03 CM/SEC

                             LAYER  8
                             --------
                  TYPE 3 - BARRIER SOIL LINER
                  MATERIAL TEXTURE NUMBER   0
     THICKNESS                    =     24.00   INCHES
     POROSITY                     =      0.4300 VOL/VOL
     FIELD CAPACITY               =      0.3900 VOL/VOL
     WILTING POINT                =      0.2800 VOL/VOL
     INITIAL SOIL WATER CONTENT   =      0.4300 VOL/VOL
     EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

            GENERAL DESIGN AND EVAPORATIVE ZONE DATA
            ----------------------------------------
   NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
          SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
          GROUND CONDITIONS, A SURFACE SLOPE OF 20.% AND
          A SLOPE LENGTH OF  150. FEET.
  SCS RUNOFF CURVE NUMBER            =     73.10
  FRACTION OF AREA ALLOWING RUNOFF   =    100.0    PERCENT
  AREA PROJECTED ON HORIZONTAL PLANE =      0.344  ACRES
  EVAPORATIVE ZONE DEPTH             =     18.0    INCHES
  INITIAL WATER IN EVAPORATIVE ZONE  =      0.216  INCHES
  UPPER LIMIT OF EVAPORATIVE STORAGE =      3.060  INCHES
  LOWER LIMIT OF EVAPORATIVE STORAGE =      0.054  INCHES
  INITIAL SNOW WATER                 =      0.000  INCHES
  INITIAL WATER IN LAYER MATERIALS   =     35.024  INCHES
  TOTAL INITIAL WATER                =     35.024  INCHES
  TOTAL SUBSURFACE INFLOW            =      0.00   INCHES/YEAR
             EVAPOTRANSPIRATION AND WEATHER DATA
             -----------------------------------
   NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
          SALT LAKE CITY      UTAH
       STATION LATITUDE                     = 40.69 DEGREES
       MAXIMUM LEAF AREA INDEX              =  0.00
       START OF GROWING SEASON (JULIAN DATE) =   117
       END OF GROWING SEASON (JULIAN DATE)   =   289
       EVAPORATIVE ZONE DEPTH               = 18.0  INCHES
       AVERAGE ANNUAL WIND SPEED            =  5.75 MPH
       AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 50.50 %
       AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 28.60 %
       AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 22.70 %
       AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 47.90 %
   NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
          COEFFICIENTS FOR    SALT LAKE CITY      UTAH
          NORMAL MEAN MONTHLY PRECIPITATION (INCHES)
JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
-------     -------     -------     -------     -------     -------
  0.79        0.92        0.85        1.25        0.94        0.90
  0.34        0.32        0.34        0.75        0.58        0.60
   NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
          COEFFICIENTS FOR    SALT LAKE CITY      UTAH
       NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)
JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
-------     -------     -------     -------     -------     -------
 30.40       32.00       41.70       49.10       60.10       69.60
 78.40       77.00       65.50       50.90       36.70       28.90
   NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
          COEFFICIENTS FOR    SALT LAKE CITY      UTAH
            AND STATION LATITUDE  =  40.69 DEGREES

*******************************************************************************

       AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH  100
-------------------------------------------------------------------------------

                      JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                      -------  -------  -------  -------  -------  -------
 PRECIPITATION
```

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------------
  TOTALS                  0.73     0.97     0.90     1.17     0.93     1.03
                          0.32     0.32     0.33     0.81     0.58     0.63

  STD. DEVIATIONS         0.37     0.45     0.42     0.49     0.54     0.73
                          0.27     0.26     0.27     0.58     0.32     0.26

RUNOFF
------
  TOTALS                  0.008    0.038    0.012    0.000    0.000    0.000
                          0.000    0.000    0.000    0.000    0.000    0.000

  STD. DEVIATIONS         0.025    0.090    0.042    0.000    0.000    0.000
                          0.000    0.000    0.000    0.000    0.000    0.002

EVAPOTRANSPIRATION
------------------
  TOTALS                  0.419    0.525    0.546    0.705    0.537    0.589
                          0.206    0.194    0.193    0.343    0.363    0.437

  STD. DEVIATIONS         0.166    0.193    0.243    0.291    0.316    0.406
                          0.130    0.146    0.154    0.234    0.170    0.148

LATERAL DRAINAGE COLLECTED FROM LAYER  2
----------------------------------------
  TOTALS                  0.0490   0.1244   0.2286   0.0356   0.0289   0.0404
                          0.0067   0.0042   0.0044   0.0429   0.0096   0.0027

  STD. DEVIATIONS         0.1416   0.2584   0.3009   0.0416   0.0400   0.0613
                          0.0144   0.0093   0.0108   0.0627   0.0203   0.0165

PERCOLATION/LEAKAGE THROUGH LAYER  3
------------------------------------
  TOTALS                  0.0705   0.1995   0.4743   0.4500   0.3441   0.4111
                          0.1259   0.1162   0.1256   0.4273   0.1999   0.0813

  STD. DEVIATIONS         0.1435   0.3066   0.3479   0.2479   0.2604   0.3174
                          0.1335   0.1184   0.1390   0.3499   0.1775   0.0968

LATERAL DRAINAGE COLLECTED FROM LAYER  4
----------------------------------------
  TOTALS                  0.0694   0.1979   0.4689   0.4424   0.3376   0.4046
                          0.1204   0.1096   0.1194   0.4211   0.1938   0.0776

  STD. DEVIATIONS         0.1428   0.3054   0.3482   0.2476   0.2595   0.3167
                          0.1323   0.1169   0.1378   0.3493   0.1769   0.0944

PERCOLATION/LEAKAGE THROUGH LAYER  5
------------------------------------
  TOTALS                  0.0010   0.0016   0.0054   0.0076   0.0065   0.0065
                          0.0055   0.0066   0.0062   0.0062   0.0061   0.0036

  STD. DEVIATIONS         0.0019   0.0021   0.0026   0.0024   0.0028   0.0028
                          0.0030   0.0030   0.0029   0.0028   0.0028   0.0032

PERCOLATION/LEAKAGE THROUGH LAYER  8
------------------------------------
  TOTALS                  0.0074   0.0028   0.0054   0.0064   0.0056   0.0055
                          0.0049   0.0056   0.0052   0.0053   0.0052   0.0037

  STD. DEVIATIONS         0.0502   0.0016   0.0015   0.0015   0.0016   0.0015
                          0.0016   0.0017   0.0015   0.0018   0.0015   0.0019

-------------------------------------------------------------------------------
              AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------

DAILY AVERAGE HEAD ON TOP OF LAYER  3
-------------------------------------
  AVERAGES                0.0003   0.0008   0.0014   0.0012   0.0009   0.0011
                          0.0003   0.0003   0.0003   0.0011   0.0005   0.0002

  STD. DEVIATIONS         0.0008   0.0014   0.0013   0.0007   0.0007   0.0009
                          0.0004   0.0003   0.0004   0.0010   0.0005   0.0003

DAILY AVERAGE HEAD ON TOP OF LAYER  5
-------------------------------------
  AVERAGES                0.0004   0.0012   0.0025   0.0025   0.0018   0.0023
                          0.0007   0.0006   0.0007   0.0023   0.0011   0.0004

  STD. DEVIATIONS         0.0008   0.0018   0.0019   0.0014   0.0014   0.0018
                          0.0007   0.0006   0.0008   0.0019   0.0010   0.0005

DAILY AVERAGE HEAD ON TOP OF LAYER  8
-------------------------------------
  AVERAGES                0.0032   0.0000   0.0001   0.0001   0.0001   0.0001
                          0.0001   0.0001   0.0001   0.0001   0.0001   0.0000
```

```
   STD. DEVIATIONS        0.0315   0.0000   0.0000   0.0000   0.0000   0.0000
                          0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

*******************************************************************************
*******************************************************************************
     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH  100
-------------------------------------------------------------------------------
                                     INCHES             CU. FEET       PERCENT
                               -------------------   -------------   ---------
 PRECIPITATION                   8.72     (   1.548)    10900.9      100.00
 RUNOFF                          0.058    ( 0.1140)        72.68       0.667
 EVAPOTRANSPIRATION              5.058    ( 0.8082)      6323.94      58.013
 LATERAL DRAINAGE COLLECTED      0.57740 ( 0.36167)      721.845     6.62190
   FROM LAYER  2
 PERCOLATION/LEAKAGE THROUGH     3.02551 ( 0.82101)     3782.407    34.69818
   LAYER  3
 AVERAGE HEAD ON TOP             0.001 (     0.000)
   OF LAYER  3
 LATERAL DRAINAGE COLLECTED      2.96269 ( 0.81994)     3703.875   33.97776
   FROM LAYER  4
 PERCOLATION/LEAKAGE THROUGH     0.06282 ( 0.00820)       78.532     0.72041
   LAYER  5
 AVERAGE HEAD ON TOP             0.001 (     0.000)
   OF LAYER  5
 PERCOLATION/LEAKAGE THROUGH     0.06283 ( 0.04960)       78.542     0.72051
   LAYER  8
 AVERAGE HEAD ON TOP             0.000 (     0.003)
   OF LAYER  8
 CHANGE IN WATER STORAGE         0.000    ( 0.2321)         0.00       0.000

*******************************************************************************
*******************************************************************************
                PEAK DAILY VALUES FOR YEARS    1 THROUGH  100
   ------------------------------------------------------------------------
                                                   (INCHES)      (CU. FT.)
                                                  ----------   -------------
      PRECIPITATION                                  1.16         1450.199
      RUNOFF                                         0.298         372.4357
      DRAINAGE COLLECTED FROM LAYER  2               1.61500      2019.02710
      PERCOLATION/LEAKAGE THROUGH LAYER  3           1.371039     1714.03430
      AVERAGE HEAD ON TOP OF LAYER  3                0.153
      MAXIMUM HEAD ON TOP OF LAYER  3                0.010
      LOCATION OF MAXIMUM HEAD IN LAYER  2
            (DISTANCE FROM DRAIN)                    0.0 FEET
      DRAINAGE COLLECTED FROM LAYER  4               1.37083      1713.77600
      PERCOLATION/LEAKAGE THROUGH LAYER  5           0.001432        1.79010
      AVERAGE HEAD ON TOP OF LAYER  5                0.230
      MAXIMUM HEAD ON TOP OF LAYER  5                0.100
      LOCATION OF MAXIMUM HEAD IN LAYER  4
            (DISTANCE FROM DRAIN)                    4.8 FEET
      PERCOLATION/LEAKAGE THROUGH LAYER  8           0.035869       44.84264
      AVERAGE HEAD ON TOP OF LAYER  8                1.308
      SNOW WATER                                     1.19         1493.3019
      MAXIMUM VEG. SOIL WATER (VOL/VOL)                      0.1063
      MINIMUM VEG. SOIL WATER (VOL/VOL)                      0.0030

       ***  Maximum heads are computed using McEnroe's equations.  ***
            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.

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*******************************************************************************

                 FINAL WATER STORAGE AT END OF YEAR  100
    ----------------------------------------------------------------------
                    LAYER          (INCHES)       (VOL/VOL)
                    -----          --------       ---------
                      1             0.2168         0.0120
                      2             0.1440         0.0240
                      3             3.7200         0.3100
                      4             0.3840         0.0320
                      5             5.1600         0.4300
                      6             4.6800         0.3900
                      7            10.3991         0.1040
                      8            10.3200         0.4300
                  SNOW WATER        0.000

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******************************************************************************
**                                                                          **
**                                                                          **
**             HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE                **
**               HELP MODEL VERSION 3.06    (17 AUGUST 1996)                **
**                 DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                   USAE WATERWAYS EXPERIMENT STATION                      **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************
PRECIPITATION DATA FILE:     C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D4
TEMPERATURE DATA FILE:       C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D7
SOLAR RADIATION DATA FILE:  C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D13
EVAPOTRANSPIRATION DATA:     C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D11
SOIL AND DESIGN DATA FILE:  C:\PROJECTS\4101L\LLRW2007\HELP07\S6\11E2S12d.D10
OUTPUT DATA FILE:            C:\PROJECTS\4101L\LLRW2007\HELP07\S6\11E2S12d.OUT
TIME:  18:14      DATE:  11/26/2007

******************************************************************************
     TITLE:  11.e(2) - Side Slope,12"Filter below S.Soil,Run On, 4th Iter
******************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
            WERE SPECIFIED BY THE USER.

                                 LAYER  1
                                 --------
                    TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER   0
           THICKNESS                  =     18.00    INCHES
           POROSITY                   =      0.1700 VOL/VOL
           FIELD CAPACITY             =      0.0070 VOL/VOL
           WILTING POINT              =      0.0030 VOL/VOL
           INITIAL SOIL WATER CONTENT =      0.0120 VOL/VOL
           EFFECTIVE SAT. HYD. COND.  =   80.0000000000      CM/SEC

                                 LAYER  2
                                 --------
                      TYPE 2 - LATERAL DRAINAGE LAYER
                        MATERIAL TEXTURE NUMBER   0
           THICKNESS                  =      6.00    INCHES
           POROSITY                   =      0.1900 VOL/VOL
           FIELD CAPACITY             =      0.0240 VOL/VOL
           WILTING POINT              =      0.0070 VOL/VOL
           INITIAL SOIL WATER CONTENT =      0.0240 VOL/VOL
           EFFECTIVE SAT. HYD. COND.  =   42.0000000000      CM/SEC
           SLOPE                      =     20.00    PERCENT
           DRAINAGE LENGTH            =    953.0     FEET

                                 LAYER  3
                                 --------
                        TYPE 3 - BARRIER SOIL LINER
                        MATERIAL TEXTURE NUMBER   0
           THICKNESS                  =     12.00    INCHES
           POROSITY                   =      0.3100 VOL/VOL
           FIELD CAPACITY             =      0.2000 VOL/VOL
           WILTING POINT              =      0.0250 VOL/VOL
           INITIAL SOIL WATER CONTENT =      0.3100 VOL/VOL
           EFFECTIVE SAT. HYD. COND.  =  0.400000019000E-02 CM/SEC

                                 LAYER  4
                                 --------
                      TYPE 2 - LATERAL DRAINAGE LAYER
                        MATERIAL TEXTURE NUMBER   0
           THICKNESS                  =     12.00    INCHES
           POROSITY                   =      0.2800 VOL/VOL
           FIELD CAPACITY             =      0.0320 VOL/VOL
           WILTING POINT              =      0.0130 VOL/VOL
           INITIAL SOIL WATER CONTENT =      0.0320 VOL/VOL
           EFFECTIVE SAT. HYD. COND.  =   3.50000000000      CM/SEC
           SLOPE                      =     20.00    PERCENT
           DRAINAGE LENGTH            =    953.0     FEET

                                 LAYER  5
                                 --------
                        TYPE 3 - BARRIER SOIL LINER
                        MATERIAL TEXTURE NUMBER   0
           THICKNESS                  =     12.00    INCHES
           POROSITY                   =      0.4300 VOL/VOL
           FIELD CAPACITY             =      0.3900 VOL/VOL
           WILTING POINT              =      0.2800 VOL/VOL
           INITIAL SOIL WATER CONTENT =      0.4300 VOL/VOL
           EFFECTIVE SAT. HYD. COND.  =  0.500000006000E-07 CM/SEC

                                 LAYER  6
```

```
                  --------
       TYPE 1 - VERTICAL PERCOLATION LAYER
           MATERIAL TEXTURE NUMBER   0
THICKNESS                  =      12.00   INCHES
POROSITY                   =       0.4300 VOL/VOL
FIELD CAPACITY             =       0.3900 VOL/VOL
WILTING POINT              =       0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT =       0.3900 VOL/VOL
EFFECTIVE SAT. HYD. COND.  =  0.999999997000E-06 CM/SEC

                   LAYER  7
                  --------
       TYPE 1 - VERTICAL PERCOLATION LAYER
           MATERIAL TEXTURE NUMBER   0
THICKNESS                  =     100.00   INCHES
POROSITY                   =       0.4370 VOL/VOL
FIELD CAPACITY             =       0.0620 VOL/VOL
WILTING POINT              =       0.0240 VOL/VOL
INITIAL SOIL WATER CONTENT =       0.1204 VOL/VOL
EFFECTIVE SAT. HYD. COND.  =  0.500000024000E-03 CM/SEC

                   LAYER  8
                  --------
           TYPE 3 - BARRIER SOIL LINER
           MATERIAL TEXTURE NUMBER   0
THICKNESS                  =      24.00   INCHES
POROSITY                   =       0.4300 VOL/VOL
FIELD CAPACITY             =       0.3900 VOL/VOL
WILTING POINT              =       0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT =       0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.  =  0.999999997000E-06 CM/SEC

          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------
  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
         SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
         GROUND CONDITIONS, A SURFACE SLOPE OF 20.% AND
         A SLOPE LENGTH OF  150. FEET.
 SCS RUNOFF CURVE NUMBER            =      73.10
 FRACTION OF AREA ALLOWING RUNOFF   =     100.0    PERCENT
 AREA PROJECTED ON HORIZONTAL PLANE =       0.344  ACRES
 EVAPORATIVE ZONE DEPTH             =      18.0    INCHES
 INITIAL WATER IN EVAPORATIVE ZONE  =       0.216  INCHES
 UPPER LIMIT OF EVAPORATIVE STORAGE =       3.060  INCHES
 LOWER LIMIT OF EVAPORATIVE STORAGE =       0.054  INCHES
 INITIAL SNOW WATER                 =       0.000  INCHES
 INITIAL WATER IN LAYER MATERIALS   =      36.664  INCHES
 TOTAL INITIAL WATER                =      36.664  INCHES
 TOTAL SUBSURFACE INFLOW            =       0.00   INCHES/YEAR
           EVAPOTRANSPIRATION AND WEATHER DATA
           -----------------------------------
  NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
         SALT LAKE CITY        UTAH
    STATION LATITUDE                        =  40.69 DEGREES
    MAXIMUM LEAF AREA INDEX                 =   0.00
    START OF GROWING SEASON (JULIAN DATE)   =    117
    END OF GROWING SEASON (JULIAN DATE)     =    289
    EVAPORATIVE ZONE DEPTH                  =  18.0  INCHES
    AVERAGE ANNUAL WIND SPEED               =   5.75 MPH
    AVERAGE 1ST QUARTER RELATIVE HUMIDITY   =  50.50 %
    AVERAGE 2ND QUARTER RELATIVE HUMIDITY   =  28.60 %
    AVERAGE 3RD QUARTER RELATIVE HUMIDITY   =  22.70 %
    AVERAGE 4TH QUARTER RELATIVE HUMIDITY   =  47.90 %
  NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
         COEFFICIENTS FOR    SALT LAKE CITY      UTAH
         NORMAL MEAN MONTHLY PRECIPITATION (INCHES)
JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
-------     -------     -------     -------     -------     -------
  0.79        0.92        0.85        1.25        0.94        0.90
  0.34        0.32        0.34        0.75        0.58        0.60
  NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
         COEFFICIENTS FOR    SALT LAKE CITY      UTAH
    NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)
JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
-------     -------     -------     -------     -------     -------
 30.40       32.00       41.70       49.10       60.10       69.60
 78.40       77.00       65.50       50.90       36.70       28.90
  NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
         COEFFICIENTS FOR    SALT LAKE CITY      UTAH
           AND STATION LATITUDE  =  40.69 DEGREES

*******************************************************************************

  AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH  100
-------------------------------------------------------------------------------

                     JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
```

```
                                  -------  -------  -------  -------  -------  -------
 PRECIPITATION
 -------------
   TOTALS                          0.73     0.97     0.90     1.17     0.93     1.03
                                   0.32     0.32     0.33     0.81     0.58     0.63

   STD. DEVIATIONS                 0.37     0.45     0.42     0.49     0.54     0.73
                                   0.27     0.26     0.27     0.58     0.32     0.26

 RUNOFF
 ------
   TOTALS                         0.008    0.038    0.012    0.000    0.000    0.000
                                  0.000    0.000    0.000    0.000    0.000    0.000

   STD. DEVIATIONS                0.025    0.090    0.042    0.000    0.000    0.000
                                  0.000    0.000    0.000    0.000    0.000    0.002

 EVAPOTRANSPIRATION
 ------------------
   TOTALS                         0.419    0.525    0.546    0.705    0.537    0.589
                                  0.206    0.194    0.193    0.343    0.363    0.437

   STD. DEVIATIONS                0.166    0.193    0.243    0.291    0.316    0.406
                                  0.130    0.146    0.154    0.234    0.170    0.148

 LATERAL DRAINAGE COLLECTED FROM LAYER  2
 ----------------------------------------
   TOTALS                        0.0230   0.0605   0.1048   0.0065   0.0053   0.0076
                                 0.0012   0.0007   0.0008   0.0080   0.0017   0.0008

   STD. DEVIATIONS               0.0785   0.1418   0.1681   0.0080   0.0076   0.0121
                                 0.0027   0.0017   0.0019   0.0124   0.0038   0.0057

 PERCOLATION/LEAKAGE THROUGH LAYER  3
 ------------------------------------
   TOTALS                        0.0965   0.2633   0.5981   0.4791   0.3677   0.4440
                                 0.1313   0.1196   0.1292   0.4621   0.2078   0.0833

   STD. DEVIATIONS               0.1901   0.3766   0.3962   0.2771   0.2889   0.3622
                                 0.1430   0.1250   0.1469   0.3938   0.1917   0.1001

 LATERAL DRAINAGE COLLECTED FROM LAYER  4
 ----------------------------------------
   TOTALS                        0.0920   0.2565   0.5777   0.4500   0.3438   0.4196
                                 0.1126   0.0969   0.1078   0.4377   0.1838   0.0693

   STD. DEVIATIONS               0.1860   0.3717   0.3958   0.2763   0.2859   0.3603
                                 0.1393   0.1202   0.1413   0.3896   0.1892   0.0913

 PERCOLATION/LEAKAGE THROUGH LAYER  5
 ------------------------------------
   TOTALS                        0.0041   0.0064   0.0203   0.0293   0.0239   0.0244
                                 0.0192   0.0227   0.0212   0.0243   0.0242   0.0142

   STD. DEVIATIONS               0.0070   0.0083   0.0083   0.0072   0.0090   0.0086
                                 0.0096   0.0092   0.0096   0.0107   0.0092   0.0114

 PERCOLATION/LEAKAGE THROUGH LAYER  8
 ------------------------------------
   TOTALS                        0.0161   0.0132   0.0239   0.0267   0.0223   0.0214
                                 0.0180   0.0206   0.0189   0.0205   0.0197   0.0128

   STD. DEVIATIONS               0.0696   0.0063   0.0054   0.0057   0.0060   0.0061
                                 0.0065   0.0061   0.0064   0.0077   0.0064   0.0077

-------------------------------------------------------------------------------
               AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------

 DAILY AVERAGE HEAD ON TOP OF LAYER  3
 -------------------------------------
   AVERAGES                      0.0003   0.0008   0.0014   0.0012   0.0009   0.0011
                                 0.0003   0.0003   0.0003   0.0011   0.0005   0.0002

   STD. DEVIATIONS               0.0008   0.0014   0.0013   0.0007   0.0007   0.0009
                                 0.0004   0.0003   0.0004   0.0010   0.0005   0.0003

 DAILY AVERAGE HEAD ON TOP OF LAYER  5
 -------------------------------------
   AVERAGES                      0.0008   0.0023   0.0047   0.0038   0.0028   0.0035
                                 0.0009   0.0008   0.0009   0.0035   0.0015   0.0006

   STD. DEVIATIONS               0.0015   0.0033   0.0032   0.0023   0.0023   0.0030
                                 0.0011   0.0010   0.0012   0.0032   0.0016   0.0007

 DAILY AVERAGE HEAD ON TOP OF LAYER  8
 -------------------------------------
   AVERAGES                      0.0061   0.0002   0.0003   0.0003   0.0002   0.0002
                                 0.0002   0.0002   0.0002   0.0002   0.0002   0.0001

   STD. DEVIATIONS               0.0598   0.0001   0.0001   0.0001   0.0001   0.0001
                                 0.0001   0.0001   0.0001   0.0001   0.0001   0.0001

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.72	(1.548)	10900.9	100.00
RUNOFF	0.058	(0.1140)	72.68	0.667
EVAPOTRANSPIRATION	5.058	(0.8082)	6323.94	58.013
LATERAL DRAINAGE COLLECTED FROM LAYER 2	0.22096	(0.20421)	276.244	2.53415
PERCOLATION/LEAKAGE THROUGH LAYER 3	3.38194	(0.88125)	4228.007	38.78593
AVERAGE HEAD ON TOP OF LAYER 3	0.001	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	3.14772	(0.87490)	3935.190	36.09975
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.23422	(0.02764)	292.818	2.68618
AVERAGE HEAD ON TOP OF LAYER 5	0.002	(0.001)		
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.23418	(0.06667)	292.767	2.68572
AVERAGE HEAD ON TOP OF LAYER 8	0.001	(0.005)		
CHANGE IN WATER STORAGE	0.000	(0.2390)	0.06	0.001

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	1.16	1450.199
RUNOFF	0.298	372.4357
DRAINAGE COLLECTED FROM LAYER 2	0.97104	1213.97290
PERCOLATION/LEAKAGE THROUGH LAYER 3	1.433739	1792.42053
AVERAGE HEAD ON TOP OF LAYER 3	0.153	
MAXIMUM HEAD ON TOP OF LAYER 3	0.056	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	0.0 FEET	
DRAINAGE COLLECTED FROM LAYER 4	1.34344	1679.52881
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.001732	2.16551
AVERAGE HEAD ON TOP OF LAYER 5	0.336	
MAXIMUM HEAD ON TOP OF LAYER 5	0.722	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	0.0 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.036612	45.77120
AVERAGE HEAD ON TOP OF LAYER 8	1.832	
SNOW WATER	1.19	1493.3019
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.1063	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0030	

*** Maximum heads are computed using McEnroe's equations. ***
Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.2168	0.0120
2	0.1440	0.0240
3	3.7200	0.3100
4	0.3840	0.0320
5	5.1600	0.4300
6	4.6800	0.3900
7	12.0440	0.1204
8	10.3200	0.4300
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**             HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE                **
**                HELP MODEL VERSION 3.06   (17 AUGUST 1996)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**            FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************
PRECIPITATION DATA FILE:     C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D4
TEMPERATURE DATA FILE:       C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D7
SOLAR RADIATION DATA FILE:   C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D13
EVAPOTRANSPIRATION DATA:     C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D11
SOIL AND DESIGN DATA FILE:   C:\PROJECTS\4101L\LLRW2007\HELP07\S6\11E2S18.D10
OUTPUT DATA FILE:            C:\PROJECTS\4101L\LLRW2007\HELP07\S6\11E2S18.OUT
TIME:  18:39     DATE:  11/26/2007

******************************************************************************
     TITLE:  11.e(2) - Side Slope, 18"Filter below S.Soil, No Run On
******************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
            WERE SPECIFIED BY THE USER.

                               LAYER  1
                               --------
                    TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =     18.00   INCHES
          POROSITY                   =      0.1700 VOL/VOL
          FIELD CAPACITY             =      0.0070 VOL/VOL
          WILTING POINT              =      0.0030 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.0120 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =   80.0000000000     CM/SEC

                               LAYER  2
                               --------
                      TYPE 2 - LATERAL DRAINAGE LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =      6.00   INCHES
          POROSITY                   =      0.1900 VOL/VOL
          FIELD CAPACITY             =      0.0240 VOL/VOL
          WILTING POINT              =      0.0070 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.0240 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =   42.0000000000     CM/SEC
          SLOPE                      =     20.00   PERCENT
          DRAINAGE LENGTH            =    150.0    FEET

                               LAYER  3
                               --------
                        TYPE 3 - BARRIER SOIL LINER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =     12.00   INCHES
          POROSITY                   =      0.3100 VOL/VOL
          FIELD CAPACITY             =      0.2000 VOL/VOL
          WILTING POINT              =      0.0250 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.3100 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.400000019000E-02 CM/SEC

                               LAYER  4
                               --------
                      TYPE 2 - LATERAL DRAINAGE LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =     18.00   INCHES
          POROSITY                   =      0.2800 VOL/VOL
          FIELD CAPACITY             =      0.0320 VOL/VOL
          WILTING POINT              =      0.0130 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.0320 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =   3.50000000000     CM/SEC
          SLOPE                      =     20.00   PERCENT
          DRAINAGE LENGTH            =    150.0    FEET

                               LAYER  5
                               --------
                        TYPE 3 - BARRIER SOIL LINER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =     12.00   INCHES
          POROSITY                   =      0.4300 VOL/VOL
          FIELD CAPACITY             =      0.3900 VOL/VOL
          WILTING POINT              =      0.2800 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.4300 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.500000006000E-07 CM/SEC

                               LAYER  6
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                        --------
              TYPE 1 - VERTICAL PERCOLATION LAYER
                  MATERIAL TEXTURE NUMBER   0
        THICKNESS                  =      12.00   INCHES
        POROSITY                   =       0.4300 VOL/VOL
        FIELD CAPACITY             =       0.3900 VOL/VOL
        WILTING POINT              =       0.2800 VOL/VOL
        INITIAL SOIL WATER CONTENT =       0.3900 VOL/VOL
        EFFECTIVE SAT. HYD. COND.  =  0.999999997000E-06 CM/SEC

                        LAYER  7
                        --------
              TYPE 1 - VERTICAL PERCOLATION LAYER
                  MATERIAL TEXTURE NUMBER   0
        THICKNESS                  =     100.00   INCHES
        POROSITY                   =       0.4370 VOL/VOL
        FIELD CAPACITY             =       0.0620 VOL/VOL
        WILTING POINT              =       0.0240 VOL/VOL
        INITIAL SOIL WATER CONTENT =       0.0941 VOL/VOL
        EFFECTIVE SAT. HYD. COND.  =  0.500000024000E-03 CM/SEC

                        LAYER  8
                        --------
                  TYPE 3 - BARRIER SOIL LINER
                  MATERIAL TEXTURE NUMBER   0
        THICKNESS                  =      24.00   INCHES
        POROSITY                   =       0.4300 VOL/VOL
        FIELD CAPACITY             =       0.3900 VOL/VOL
        WILTING POINT              =       0.2800 VOL/VOL
        INITIAL SOIL WATER CONTENT =       0.4300 VOL/VOL
        EFFECTIVE SAT. HYD. COND.  =  0.999999997000E-06 CM/SEC

             GENERAL DESIGN AND EVAPORATIVE ZONE DATA
             ----------------------------------------
      NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
             SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
             GROUND CONDITIONS, A SURFACE SLOPE OF 20.% AND
             A SLOPE LENGTH OF  150. FEET.
    SCS RUNOFF CURVE NUMBER            =    73.10
    FRACTION OF AREA ALLOWING RUNOFF   =   100.0    PERCENT
    AREA PROJECTED ON HORIZONTAL PLANE =    0.344  ACRES
    EVAPORATIVE ZONE DEPTH             =    18.0    INCHES
    INITIAL WATER IN EVAPORATIVE ZONE  =    0.216  INCHES
    UPPER LIMIT OF EVAPORATIVE STORAGE =    3.060  INCHES
    LOWER LIMIT OF EVAPORATIVE STORAGE =    0.054  INCHES
    INITIAL SNOW WATER                 =    0.000  INCHES
    INITIAL WATER IN LAYER MATERIALS   =   34.226  INCHES
    TOTAL INITIAL WATER                =   34.226  INCHES
    TOTAL SUBSURFACE INFLOW            =    0.00    INCHES/YEAR
              EVAPOTRANSPIRATION AND WEATHER DATA
              -----------------------------------
      NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
             SALT LAKE CITY       UTAH
         STATION LATITUDE                      =  40.69 DEGREES
         MAXIMUM LEAF AREA INDEX               =   0.00
         START OF GROWING SEASON (JULIAN DATE) =    117
         END OF GROWING SEASON (JULIAN DATE)   =    289
         EVAPORATIVE ZONE DEPTH                =  18.0  INCHES
         AVERAGE ANNUAL WIND SPEED             =   5.75 MPH
         AVERAGE 1ST QUARTER RELATIVE HUMIDITY =  50.50 %
         AVERAGE 2ND QUARTER RELATIVE HUMIDITY =  28.60 %
         AVERAGE 3RD QUARTER RELATIVE HUMIDITY =  22.70 %
         AVERAGE 4TH QUARTER RELATIVE HUMIDITY =  47.90 %
      NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
             COEFFICIENTS FOR     SALT LAKE CITY      UTAH
             NORMAL MEAN MONTHLY PRECIPITATION (INCHES)
   JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
   -------     -------     -------     -------     -------     -------
     0.79        0.92        0.85        1.25        0.94        0.90
     0.34        0.32        0.34        0.75        0.58        0.60
      NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
             COEFFICIENTS FOR     SALT LAKE CITY      UTAH
         NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)
   JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
   -------     -------     -------     -------     -------     -------
    30.40       32.00       41.70       49.10       60.10       69.60
    78.40       77.00       65.50       50.90       36.70       28.90
      NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
             COEFFICIENTS FOR     SALT LAKE CITY      UTAH
               AND STATION LATITUDE  =  40.69 DEGREES

*******************************************************************************

      AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH  100
-------------------------------------------------------------------------------
```

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.73	0.97	0.90	1.17	0.93	1.03
	0.32	0.32	0.33	0.81	0.58	0.63
STD. DEVIATIONS	0.37	0.45	0.42	0.49	0.54	0.73
	0.27	0.26	0.27	0.58	0.32	0.26
RUNOFF						
TOTALS	0.008	0.038	0.012	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.025	0.090	0.042	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.002
EVAPOTRANSPIRATION						
TOTALS	0.419	0.525	0.546	0.705	0.537	0.589
	0.206	0.194	0.193	0.343	0.363	0.437
STD. DEVIATIONS	0.166	0.193	0.243	0.291	0.316	0.406
	0.130	0.146	0.154	0.234	0.170	0.148
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0490	0.1244	0.2286	0.0356	0.0289	0.0404
	0.0067	0.0042	0.0044	0.0429	0.0096	0.0027
STD. DEVIATIONS	0.1416	0.2584	0.3009	0.0416	0.0400	0.0613
	0.0144	0.0093	0.0108	0.0627	0.0203	0.0165
PERCOLATION/LEAKAGE THROUGH LAYER 3						
TOTALS	0.0705	0.1995	0.4743	0.4500	0.3441	0.4111
	0.1259	0.1162	0.1256	0.4273	0.1999	0.0813
STD. DEVIATIONS	0.1435	0.3066	0.3479	0.2479	0.2604	0.3174
	0.1335	0.1184	0.1390	0.3499	0.1775	0.0968
LATERAL DRAINAGE COLLECTED FROM LAYER 4						
TOTALS	0.0701	0.1989	0.4723	0.4473	0.3418	0.4088
	0.1239	0.1137	0.1233	0.4249	0.1975	0.0799
STD. DEVIATIONS	0.1432	0.3061	0.3480	0.2481	0.2602	0.3173
	0.1332	0.1180	0.1386	0.3497	0.1773	0.0960
PERCOLATION/LEAKAGE THROUGH LAYER 5						
TOTALS	0.0004	0.0006	0.0020	0.0027	0.0022	0.0023
	0.0020	0.0024	0.0023	0.0024	0.0024	0.0014
STD. DEVIATIONS	0.0007	0.0008	0.0008	0.0006	0.0007	0.0007
	0.0009	0.0009	0.0009	0.0009	0.0009	0.0011
PERCOLATION/LEAKAGE THROUGH LAYER 8						
TOTALS	0.0042	0.0005	0.0016	0.0023	0.0019	0.0019
	0.0016	0.0021	0.0019	0.0019	0.0019	0.0012
STD. DEVIATIONS	0.0385	0.0007	0.0007	0.0006	0.0007	0.0007
	0.0007	0.0008	0.0008	0.0008	0.0007	0.0009

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3						
AVERAGES	0.0003	0.0008	0.0014	0.0012	0.0009	0.0011
	0.0003	0.0003	0.0003	0.0011	0.0005	0.0002
STD. DEVIATIONS	0.0008	0.0014	0.0013	0.0007	0.0007	0.0009
	0.0004	0.0003	0.0004	0.0010	0.0005	0.0003
DAILY AVERAGE HEAD ON TOP OF LAYER 5						
AVERAGES	0.0006	0.0018	0.0039	0.0038	0.0028	0.0035
	0.0010	0.0009	0.0011	0.0035	0.0017	0.0007
STD. DEVIATIONS	0.0012	0.0027	0.0028	0.0021	0.0021	0.0027
	0.0011	0.0010	0.0012	0.0028	0.0015	0.0008
DAILY AVERAGE HEAD ON TOP OF LAYER 8						
AVERAGES	0.0019	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0187	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH  100
-------------------------------------------------------------------------------
                                     INCHES            CU. FEET        PERCENT
                               -------------------   -------------   ---------
PRECIPITATION                   8.72     (   1.548)     10900.9       100.00
RUNOFF                          0.058    (  0.1140)        72.68        0.667
EVAPOTRANSPIRATION              5.058    (  0.8082)      6323.94       58.013
LATERAL DRAINAGE COLLECTED      0.57740 (  0.36167)      721.845      6.62190
  FROM LAYER  2
PERCOLATION/LEAKAGE THROUGH     3.02551 (  0.82101)     3782.407     34.69818
  LAYER  3
AVERAGE HEAD ON TOP             0.001 (    0.000)
  OF LAYER  3
LATERAL DRAINAGE COLLECTED      3.00244 (  0.82074)     3753.563    34.43359
  FROM LAYER  4
PERCOLATION/LEAKAGE THROUGH     0.02307 (  0.00265)       28.844      0.26460
  LAYER  5
AVERAGE HEAD ON TOP             0.002 (    0.001)
  OF LAYER  5
PERCOLATION/LEAKAGE THROUGH     0.02307 (  0.03860)       28.837      0.26454
  LAYER  8
AVERAGE HEAD ON TOP             0.000 (    0.002)
  OF LAYER  8
CHANGE IN WATER STORAGE         0.000    (  0.2301)         0.02        0.000

*******************************************************************************
*******************************************************************************
                PEAK DAILY VALUES FOR YEARS    1 THROUGH  100
   ------------------------------------------------------------------------
                                                  (INCHES)      (CU. FT.)
                                                 ----------   -------------
     PRECIPITATION                                 1.16          1450.199
     RUNOFF                                        0.298          372.4357
     DRAINAGE COLLECTED FROM LAYER  2              1.61500       2019.02710
     PERCOLATION/LEAKAGE THROUGH LAYER  3          1.371039      1714.03430
     AVERAGE HEAD ON TOP OF LAYER  3               0.153
     MAXIMUM HEAD ON TOP OF LAYER  3               0.010
     LOCATION OF MAXIMUM HEAD IN LAYER  2
           (DISTANCE FROM DRAIN)                   0.0 FEET
     DRAINAGE COLLECTED FROM LAYER  4              1.37090       1713.85889
     PERCOLATION/LEAKAGE THROUGH LAYER  5          0.001166         1.45824
     AVERAGE HEAD ON TOP OF LAYER  5               0.346
     MAXIMUM HEAD ON TOP OF LAYER  5               0.110
     LOCATION OF MAXIMUM HEAD IN LAYER  4
           (DISTANCE FROM DRAIN)                   0.0 FEET
     PERCOLATION/LEAKAGE THROUGH LAYER  8          0.035421        44.28211
     AVERAGE HEAD ON TOP OF LAYER  8               0.992
     SNOW WATER                                    1.19          1493.3019
     MAXIMUM VEG. SOIL WATER (VOL/VOL)                     0.1063
     MINIMUM VEG. SOIL WATER (VOL/VOL)                     0.0030

      ***  Maximum heads are computed using McEnroe's equations.  ***
           Reference:  Maximum Saturated Depth over Landfill Liner
                       by Bruce M. McEnroe, University of Kansas
                       ASCE Journal of Environmental Engineering
                       Vol. 119, No. 2, March 1993, pp. 262-270.

*******************************************************************************
*******************************************************************************
                  FINAL WATER STORAGE AT END OF YEAR  100
    ----------------------------------------------------------------------
                   LAYER        (INCHES)        (VOL/VOL)
                   -----        --------        ---------
                     1            0.2168          0.0120
                     2            0.1440          0.0240
                     3            3.7200          0.3100
                     4            0.5760          0.0320
                     5            5.1600          0.4300
                     6            4.6800          0.3900
                     7            9.4105          0.0941
                     8           10.3200          0.4300
                 SNOW WATER       0.000

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**                                                                         **
**                                                                         **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE              **
**                HELP MODEL VERSION 3.06   (17 AUGUST 1996)               **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                  **
**                    USAE WATERWAYS EXPERIMENT STATION                    **
**              FOR USEPA RISK REDUCTION ENGINEERING LABORATORY            **
**                                                                         **
**                                                                         **
*****************************************************************************
*****************************************************************************
PRECIPITATION DATA FILE:    C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D4
TEMPERATURE DATA FILE:      C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D7
SOLAR RADIATION DATA FILE:  C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D13
EVAPOTRANSPIRATION DATA:    C:\PROJECTS\4101L\LLRW2007\HELP07\M100.D11
SOIL AND DESIGN DATA FILE:  C:\PROJECTS\4101L\LLRW2007\HELP07\S6\11E2S18c.D10
OUTPUT DATA FILE:           C:\PROJECTS\4101L\LLRW2007\HELP07\S6\11E2S18c.OUT
TIME:  19:14      DATE:  11/26/2007

*****************************************************************************
     TITLE:  11.e(2) -Side Slope, 18"Filter below S.Soil,Run On, 3rd Iter
*****************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.

                                  LAYER  1
                                  --------
                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER   0
           THICKNESS                  =     18.00   INCHES
           POROSITY                   =      0.1700 VOL/VOL
           FIELD CAPACITY             =      0.0070 VOL/VOL
           WILTING POINT              =      0.0030 VOL/VOL
           INITIAL SOIL WATER CONTENT =      0.0120 VOL/VOL
           EFFECTIVE SAT. HYD. COND.  =   80.0000000000      CM/SEC

                                  LAYER  2
                                  --------
                       TYPE 2 - LATERAL DRAINAGE LAYER
                         MATERIAL TEXTURE NUMBER   0
           THICKNESS                  =      6.00   INCHES
           POROSITY                   =      0.1900 VOL/VOL
           FIELD CAPACITY             =      0.0240 VOL/VOL
           WILTING POINT              =      0.0070 VOL/VOL
           INITIAL SOIL WATER CONTENT =      0.0240 VOL/VOL
           EFFECTIVE SAT. HYD. COND.  =   42.0000000000      CM/SEC
           SLOPE                      =     20.00   PERCENT
           DRAINAGE LENGTH            =    924.0    FEET

                                  LAYER  3
                                  --------
                         TYPE 3 - BARRIER SOIL LINER
                         MATERIAL TEXTURE NUMBER   0
           THICKNESS                  =     12.00   INCHES
           POROSITY                   =      0.3100 VOL/VOL
           FIELD CAPACITY             =      0.2000 VOL/VOL
           WILTING POINT              =      0.0250 VOL/VOL
           INITIAL SOIL WATER CONTENT =      0.3100 VOL/VOL
           EFFECTIVE SAT. HYD. COND.  =  0.400000019000E-02 CM/SEC

                                  LAYER  4
                                  --------
                       TYPE 2 - LATERAL DRAINAGE LAYER
                         MATERIAL TEXTURE NUMBER   0
           THICKNESS                  =     18.00   INCHES
           POROSITY                   =      0.2800 VOL/VOL
           FIELD CAPACITY             =      0.0320 VOL/VOL
           WILTING POINT              =      0.0130 VOL/VOL
           INITIAL SOIL WATER CONTENT =      0.0320 VOL/VOL
           EFFECTIVE SAT. HYD. COND.  =   3.50000000000      CM/SEC
           SLOPE                      =     20.00   PERCENT
           DRAINAGE LENGTH            =    924.0    FEET

                                  LAYER  5
                                  --------
                         TYPE 3 - BARRIER SOIL LINER
                         MATERIAL TEXTURE NUMBER   0
           THICKNESS                  =     12.00   INCHES
           POROSITY                   =      0.4300 VOL/VOL
           FIELD CAPACITY             =      0.3900 VOL/VOL
           WILTING POINT              =      0.2800 VOL/VOL
           INITIAL SOIL WATER CONTENT =      0.4300 VOL/VOL
           EFFECTIVE SAT. HYD. COND.  =  0.500000006000E-07 CM/SEC

                                  LAYER  6
```

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                  --------
         TYPE 1 - VERTICAL PERCOLATION LAYER
             MATERIAL TEXTURE NUMBER   0
THICKNESS                 =     12.00   INCHES
POROSITY                  =      0.4300 VOL/VOL
FIELD CAPACITY            =      0.3900 VOL/VOL
WILTING POINT             =      0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT =     0.3900 VOL/VOL
EFFECTIVE SAT. HYD. COND.  = 0.999999997000E-06 CM/SEC

                       LAYER  7
                       --------
         TYPE 1 - VERTICAL PERCOLATION LAYER
             MATERIAL TEXTURE NUMBER   0
THICKNESS                 =    100.00   INCHES
POROSITY                  =      0.4370 VOL/VOL
FIELD CAPACITY            =      0.0620 VOL/VOL
WILTING POINT             =      0.0240 VOL/VOL
INITIAL SOIL WATER CONTENT =     0.1114 VOL/VOL
EFFECTIVE SAT. HYD. COND.  = 0.500000024000E-03 CM/SEC

                       LAYER  8
                       --------
             TYPE 3 - BARRIER SOIL LINER
             MATERIAL TEXTURE NUMBER   0
THICKNESS                 =     24.00   INCHES
POROSITY                  =      0.4300 VOL/VOL
FIELD CAPACITY            =      0.3900 VOL/VOL
WILTING POINT             =      0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT =     0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.  = 0.999999997000E-06 CM/SEC

        GENERAL DESIGN AND EVAPORATIVE ZONE DATA
        ----------------------------------------
  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
         SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
         GROUND CONDITIONS, A SURFACE SLOPE OF 20.% AND
         A SLOPE LENGTH OF  150. FEET.
 SCS RUNOFF CURVE NUMBER            =     73.10
 FRACTION OF AREA ALLOWING RUNOFF   =    100.0    PERCENT
 AREA PROJECTED ON HORIZONTAL PLANE =      0.344  ACRES
 EVAPORATIVE ZONE DEPTH             =     18.0    INCHES
 INITIAL WATER IN EVAPORATIVE ZONE  =      0.216  INCHES
 UPPER LIMIT OF EVAPORATIVE STORAGE =      3.060  INCHES
 LOWER LIMIT OF EVAPORATIVE STORAGE =      0.054  INCHES
 INITIAL SNOW WATER                 =      0.000  INCHES
 INITIAL WATER IN LAYER MATERIALS   =     35.956  INCHES
 TOTAL INITIAL WATER                =     35.956  INCHES
 TOTAL SUBSURFACE INFLOW            =      0.00   INCHES/YEAR
           EVAPOTRANSPIRATION AND WEATHER DATA
           -----------------------------------
  NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
         SALT LAKE CITY       UTAH
    STATION LATITUDE                        =  40.69 DEGREES
    MAXIMUM LEAF AREA INDEX                 =   0.00
    START OF GROWING SEASON (JULIAN DATE)   =    117
    END OF GROWING SEASON (JULIAN DATE)     =    289
    EVAPORATIVE ZONE DEPTH                  =  18.0  INCHES
    AVERAGE ANNUAL WIND SPEED               =   5.75 MPH
    AVERAGE 1ST QUARTER RELATIVE HUMIDITY   =  50.50 %
    AVERAGE 2ND QUARTER RELATIVE HUMIDITY   =  28.60 %
    AVERAGE 3RD QUARTER RELATIVE HUMIDITY   =  22.70 %
    AVERAGE 4TH QUARTER RELATIVE HUMIDITY   =  47.90 %
  NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
         COEFFICIENTS FOR    SALT LAKE CITY      UTAH
         NORMAL MEAN MONTHLY PRECIPITATION (INCHES)
JAN/JUL    FEB/AUG    MAR/SEP    APR/OCT    MAY/NOV    JUN/DEC
-------    -------    -------    -------    -------    -------
  0.79       0.92       0.85       1.25       0.94       0.90
  0.34       0.32       0.34       0.75       0.58       0.60
  NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
         COEFFICIENTS FOR    SALT LAKE CITY      UTAH
    NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)
JAN/JUL    FEB/AUG    MAR/SEP    APR/OCT    MAY/NOV    JUN/DEC
-------    -------    -------    -------    -------    -------
 30.40      32.00      41.70      49.10      60.10      69.60
 78.40      77.00      65.50      50.90      36.70      28.90
  NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
         COEFFICIENTS FOR    SALT LAKE CITY      UTAH
           AND STATION LATITUDE  =  40.69 DEGREES

******************************************************************************

  AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH  100
------------------------------------------------------------------------------

                       JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
```

PRECIPITATION						
TOTALS	0.73	0.97	0.90	1.17	0.93	1.03
	0.32	0.32	0.33	0.81	0.58	0.63
STD. DEVIATIONS	0.37	0.45	0.42	0.49	0.54	0.73
	0.27	0.26	0.27	0.58	0.32	0.26
RUNOFF						
TOTALS	0.008	0.038	0.012	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.025	0.090	0.042	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.002
EVAPOTRANSPIRATION						
TOTALS	0.419	0.525	0.546	0.705	0.537	0.589
	0.206	0.194	0.193	0.343	0.363	0.437
STD. DEVIATIONS	0.166	0.193	0.243	0.291	0.316	0.406
	0.130	0.146	0.154	0.234	0.170	0.148
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0234	0.0616	0.1067	0.0067	0.0055	0.0078
	0.0012	0.0008	0.0008	0.0083	0.0018	0.0008
STD. DEVIATIONS	0.0797	0.1441	0.1707	0.0082	0.0079	0.0125
	0.0028	0.0017	0.0020	0.0127	0.0039	0.0058
PERCOLATION/LEAKAGE THROUGH LAYER 3						
TOTALS	0.0961	0.2623	0.5961	0.4789	0.3675	0.4437
	0.1313	0.1196	0.1292	0.4619	0.2078	0.0832
STD. DEVIATIONS	0.1892	0.3753	0.3953	0.2769	0.2886	0.3619
	0.1429	0.1250	0.1468	0.3935	0.1916	0.1000
LATERAL DRAINAGE COLLECTED FROM LAYER 4						
TOTALS	0.0941	0.2591	0.5864	0.4652	0.3562	0.4321
	0.1220	0.1084	0.1187	0.4501	0.1962	0.0765
STD. DEVIATIONS	0.1877	0.3730	0.3957	0.2767	0.2873	0.3611
	0.1413	0.1228	0.1445	0.3919	0.1905	0.0960
PERCOLATION/LEAKAGE THROUGH LAYER 5						
TOTALS	0.0019	0.0031	0.0098	0.0137	0.0113	0.0116
	0.0093	0.0112	0.0105	0.0118	0.0116	0.0068
STD. DEVIATIONS	0.0033	0.0040	0.0038	0.0031	0.0040	0.0037
	0.0043	0.0042	0.0044	0.0046	0.0042	0.0052
PERCOLATION/LEAKAGE THROUGH LAYER 8						
TOTALS	0.0089	0.0046	0.0102	0.0125	0.0105	0.0104
	0.0090	0.0106	0.0097	0.0102	0.0099	0.0061
STD. DEVIATIONS	0.0591	0.0034	0.0030	0.0030	0.0033	0.0031
	0.0035	0.0035	0.0034	0.0039	0.0034	0.0042

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3						
AVERAGES	0.0003	0.0008	0.0014	0.0012	0.0009	0.0011
	0.0003	0.0003	0.0003	0.0011	0.0005	0.0002
STD. DEVIATIONS	0.0008	0.0014	0.0013	0.0007	0.0007	0.0009
	0.0004	0.0003	0.0004	0.0010	0.0005	0.0003
DAILY AVERAGE HEAD ON TOP OF LAYER 5						
AVERAGES	0.0008	0.0023	0.0048	0.0040	0.0030	0.0037
	0.0011	0.0010	0.0011	0.0038	0.0017	0.0007
STD. DEVIATIONS	0.0015	0.0033	0.0032	0.0023	0.0023	0.0030
	0.0012	0.0010	0.0012	0.0032	0.0016	0.0008
DAILY AVERAGE HEAD ON TOP OF LAYER 8						
AVERAGES	0.0044	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
STD. DEVIATIONS	0.0432	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.72	(1.548)	10900.9	100.00
RUNOFF	0.058	(0.1140)	72.68	0.667
EVAPOTRANSPIRATION	5.058	(0.8082)	6323.94	58.013
LATERAL DRAINAGE COLLECTED FROM LAYER 2	0.22533	(0.20729)	281.707	2.58426
PERCOLATION/LEAKAGE THROUGH LAYER 3	3.37757	(0.88080)	4222.544	38.73581
AVERAGE HEAD ON TOP OF LAYER 3	0.001	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	3.26493	(0.87838)	4081.719	37.44394
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.11265	(0.01263)	140.826	1.29188
AVERAGE HEAD ON TOP OF LAYER 5	0.002	(0.001)		
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.11269	(0.05837)	140.879	1.29236
AVERAGE HEAD ON TOP OF LAYER 8	0.000	(0.004)		
CHANGE IN WATER STORAGE	0.000	(0.2344)	-0.04	0.000

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	1.16	1450.199
RUNOFF	0.298	372.4357
DRAINAGE COLLECTED FROM LAYER 2	0.98523	1231.70959
PERCOLATION/LEAKAGE THROUGH LAYER 3	1.431567	1789.70496
AVERAGE HEAD ON TOP OF LAYER 3	0.153	
MAXIMUM HEAD ON TOP OF LAYER 3	0.228	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	0.0 FEET	
DRAINAGE COLLECTED FROM LAYER 4	1.43070	1788.62268
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.001701	2.12659
AVERAGE HEAD ON TOP OF LAYER 5	0.361	
MAXIMUM HEAD ON TOP OF LAYER 5	0.650	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	22.1 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.036204	45.26162
AVERAGE HEAD ON TOP OF LAYER 8	1.545	
SNOW WATER	1.19	1493.3019
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.1063	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0030	

*** Maximum heads are computed using McEnroe's equations. ***
Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.2168	0.0120
2	0.1440	0.0240
3	3.7200	0.3100
4	0.5760	0.0320
5	5.1600	0.4300
6	4.6800	0.3900
7	11.1358	0.1114
8	10.3200	0.4300
SNOW WATER	0.000	

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ATTACHMENT 2
ENERGY*SOLUTIONS*
CLASS A SOUTH CELL
UNSAT-H MODEL INPUT & OUTPUT FILES

Prepared for

Energy*Solutions,* LLC
423 West 300 South, Suite 200
Salt Lake City, UT 84101

Prepared by

Whetstone Associates, Inc.
714 S. Oak Street
P.O. Box 1156
La Veta, Colorado 81055-1156
719-742-5155

Document 4101L.071207

December 2007

UNSAT-H INPUT FILES

CAS-T27e.lis.doc	Class A South Cell Top Slope, 0.276 cm/yr
CAS-S28c.lis.doc	Class A South Cell Side Slope, 0.286 cm/yr
CAS-S59c.lis.doc	Class A South Cell Side Slope, 0.595 cm/yr

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--------------------------------------------------------------------------------
                              Program DATAINH
                               Version2.05
--------------------------------------------------------------------------------

 Input Filename: C:\Projects\4101L\CAS2007\Unsat07\CAS-T27e.inp
 Date Processed: 06 Dec 2007
 Time Processed: 12:10:38.32

--------------------------------------------------------------------------------
 Title:
 CAS-T27e.INP: Class A South disposal cell Unsat flow, frost-prot. top slope, 0.2
--------------------------------------------------------------------------------
 Options chosen include:

 IPLANT =   0        LOWER  =   2        NGRAV  =   1        ISWDIF =   1
 IHEAT  =   0        UPPERH =   0        LOWERH =   0
 NPRINT =   0        DAYEND = 365        NDAYS  = 365        NYEARS =  50
 IRAIN  =   0        ICONVH =   0
 NSURPE =   0        NFHOUR =   2        ITOPBC =   0        ET_OPT =   0
 ICLOUD =   0
 KOPT   =   4        KEST   =   3        IVAPOR =   0        SH_OPT =   0
 INMAX  =   3        INHMAX =   2
 HIRRI  =   0.00     HDRY   =  1.000E+04 HTOP   =   0.00     DHMAX  =   0.00
 DMAXBA = 5.000E-04 DELMAX =  0.150      DELMIN =  1.500E-08 STOPHR =   24.0
 OUTTIM = 0.150
 TORT   = 0.660      TSOIL  =   288.     VAPDIF =  0.240     QHTOP  =   0.00
 TGRAD  =   0.00     TSMEAN =   288.     TSAMP  =   10.0     QHLEAK =   0.00
 WTF    = 0.500      RFACT  =   1.05     RAINIF =  1.000E-05 DHFACT =   0.00
 MATN   =   5        NPT    = 137

--------------------------------------------------------------------------------
 KOPT = 4:  van Genuchten functions for soil hydraulic properties

 THETA vs H, MAT   1,   Radon Barrier2 Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.43200
        THTR =  0.10000                         ALPHA =  3.00000E-03
           N =   1.1720                             M =  0.14676
    K vs H, MAT   1,   Radon Barrier2 Hydraulic Conductivity
      AIRINK =   0.0000                            SK =  1.80000E-04
           A =  3.00000E-03                         N =   1.1720
           M =  0.14676                        KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   2,   Radon Barrier2 Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.43200
        THTR =  0.10000                         ALPHA =  3.00000E-03
           N =   1.1720                             M =  0.14676
    K vs H, MAT   2,   Radon Barrier2 Hydraulic Conductivity
      AIRINK =   0.0000                            SK =  3.60000E-03
           A =  3.00000E-03                         N =   1.1720
           M =  0.14676                        KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   3,   Waste Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.35000
        THTR =  2.00000E-02                     ALPHA =  0.11500
           N =   2.0130                             M =  0.50323
    K vs H, MAT   3,   Waste Hydraulic Conductivity
      AIRINK =   0.0000                            SK =   1.8000
           A =  0.11500                             N =   2.0130
           M =  0.50323                        KMODEL =   2.0000
        EPIT =  0.50000

 THETA vs H, MAT   4,   Clay Liner Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.43200
        THTR =  0.10000                         ALPHA =  3.00000E-03
           N =   1.1720                             M =  0.14676
    K vs H, MAT   4,   Clay Liner Hydraulic Conductivity
      AIRINK =   0.0000                            SK =  3.60000E-03
           A =  3.00000E-03                         N =   1.1720
           M =  0.14676                        KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   5,   Unit 3 Silty Sand Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.34000
        THTR =  2.00000E-02                     ALPHA =  5.50000E-02
           N =   2.5180                             M =  0.60286
    K vs H, MAT   5,   Unit 3 Silty Sand Hydraulic Conductivity
      AIRINK =   0.0000                            SK =   2.1920
           A =  5.50000E-02                         N =   2.5180
           M =  0.60286                        KMODEL =   2.0000
        EPIT =  0.50000

 Surface node hydraulic properties

 HIRRI =       0.0     , THETA = 0.4320, K =   1.8000E-04, C =  -1.9786E-08
```

HDRY = 1.00E+04, THETA = 0.2845, K = 9.2973E-11, C = -3.1149E-06
NDAY = 0

NODE	Z	MAT	HEAD	CONDUCTIVITY	CAPACITY	THETA	TEMP
1	0.00	1	4.2000E+01	1.6187E-05	-1.0888E-04	0.4279	288.1
2	0.10	1	4.2100E+01	1.6157E-05	-1.0889E-04	0.4279	288.1
3	0.30	1	4.2300E+01	1.6098E-05	-1.0893E-04	0.4279	288.1
4	0.60	1	4.2600E+01	1.6010E-05	-1.0897E-04	0.4278	288.1
5	1.10	1	4.3100E+01	1.5865E-05	-1.0905E-04	0.4278	288.1
6	2.00	1	4.3900E+01	1.5638E-05	-1.0917E-04	0.4277	288.1
7	3.30	1	4.5300E+01	1.5253E-05	-1.0936E-04	0.4275	288.1
8	5.60	1	4.7800E+01	1.4603E-05	-1.0966E-04	0.4273	288.1
9	6.90	1	4.9300E+01	1.4235E-05	-1.0981E-04	0.4271	288.1
10	7.80	1	5.0400E+01	1.3974E-05	-1.0991E-04	0.4270	288.1
11	8.30	1	5.1000E+01	1.3836E-05	-1.0996E-04	0.4269	288.1
12	8.60	1	5.1400E+01	1.3744E-05	-1.0999E-04	0.4269	288.1
13	8.80	1	5.1700E+01	1.3676E-05	-1.1001E-04	0.4268	288.1
14	8.90	1	5.1800E+01	1.3654E-05	-1.1002E-04	0.4268	288.1
15	9.00	1	5.1900E+01	1.3631E-05	-1.1003E-04	0.4268	288.1
16	9.20	1	5.2200E+01	1.3564E-05	-1.1005E-04	0.4268	288.1
17	9.50	1	5.2600E+01	1.3476E-05	-1.1008E-04	0.4267	288.1
18	10.00	1	5.3200E+01	1.3345E-05	-1.1012E-04	0.4267	288.1
19	10.90	1	5.4500E+01	1.3068E-05	-1.1020E-04	0.4265	288.1
20	13.10	1	5.7600E+01	1.2443E-05	-1.1035E-04	0.4262	288.1
21	16.40	1	6.3000E+01	1.1461E-05	-1.1047E-04	0.4256	288.1
22	21.50	1	7.2800E+01	9.9590E-06	-1.1034E-04	0.4245	288.1
23	24.80	1	8.0400E+01	8.9897E-06	-1.1000E-04	0.4237	288.1
24	27.00	1	8.6100E+01	8.3519E-06	-1.0963E-04	0.4231	288.1
25	28.50	1	9.0400E+01	7.9137E-06	-1.0930E-04	0.4226	288.1
26	29.40	1	9.3100E+01	7.6555E-06	-1.0908E-04	0.4223	288.1
27	29.90	1	9.4700E+01	7.5083E-06	-1.0894E-04	0.4221	288.1
28	30.20	1	9.5600E+01	7.4272E-06	-1.0885E-04	0.4220	288.1
29	30.40	1	9.6300E+01	7.3651E-06	-1.0879E-04	0.4219	288.1
30	30.50	1	9.6600E+01	7.3386E-06	-1.0876E-04	0.4219	288.1
31	30.60	2	9.6600E+01	1.4677E-04	-1.0876E-04	0.4219	288.1
32	30.80	2	9.6400E+01	1.4712E-04	-1.0878E-04	0.4219	288.1
33	31.10	2	9.6200E+01	1.4748E-04	-1.0880E-04	0.4219	288.1
34	31.60	2	9.5800E+01	1.4819E-04	-1.0884E-04	0.4220	288.1
35	32.30	2	9.5300E+01	1.4908E-04	-1.0888E-04	0.4220	288.1
36	33.30	2	9.4500E+01	1.5053E-04	-1.0895E-04	0.4221	288.1
37	34.80	2	9.3300E+01	1.5274E-04	-1.0906E-04	0.4223	288.1
38	37.00	2	9.1500E+01	1.5614E-04	-1.0921E-04	0.4225	288.1
39	39.70	2	8.9400E+01	1.6025E-04	-1.0938E-04	0.4227	288.1
40	42.70	2	8.6900E+01	1.6535E-04	-1.0958E-04	0.4230	288.1
41	45.70	2	8.4500E+01	1.7048E-04	-1.0975E-04	0.4232	288.1
42	48.70	2	8.2000E+01	1.7607E-04	-1.0991E-04	0.4235	288.1
43	51.70	2	7.9600E+01	1.8170E-04	-1.1005E-04	0.4238	288.1
44	54.50	2	7.7200E+01	1.8760E-04	-1.1017E-04	0.4240	288.1
45	56.70	2	7.5400E+01	1.9221E-04	-1.1025E-04	0.4242	288.1
46	58.20	2	7.4100E+01	1.9565E-04	-1.1030E-04	0.4244	288.1
47	59.20	2	7.3300E+01	1.9781E-04	-1.1033E-04	0.4245	288.1
48	59.90	2	7.2700E+01	1.9945E-04	-1.1035E-04	0.4245	288.1
49	60.40	2	7.2300E+01	2.0056E-04	-1.1036E-04	0.4246	288.1
50	60.70	2	7.2000E+01	2.0140E-04	-1.1037E-04	0.4246	288.1
51	60.90	2	7.1900E+01	2.0168E-04	-1.1037E-04	0.4246	288.1
52	61.00	2	7.1800E+01	2.0196E-04	-1.1037E-04	0.4246	288.1
53	61.10	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
54	61.30	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
55	61.60	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
56	62.10	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
57	63.00	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
58	64.50	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
59	67.50	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
60	72.50	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
61	82.50	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
62	102.50	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
63	132.50	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
64	177.50	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
65	242.50	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
66	342.50	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
67	502.50	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
68	746.80	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
69	991.10	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
70	1151.10	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
71	1251.10	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
72	1316.10	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
73	1361.10	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
74	1391.10	3	7.2900E+01	2.9033E-05	-5.2119E-04	0.0580	288.1
75	1411.10	3	7.8100E+01	2.1312E-05	-4.5490E-04	0.0555	288.1
76	1421.10	3	8.6600E+01	1.3396E-05	-3.7073E-04	0.0520	288.1
77	1426.10	3	9.6500E+01	8.2290E-06	-2.9900E-04	0.0487	288.1
78	1429.10	3	1.0800E+02	4.9537E-06	-2.3893E-04	0.0456	288.1
79	1430.60	3	1.1900E+02	3.1978E-06	-1.9688E-04	0.0432	288.1
80	1431.50	3	1.2800E+02	2.3008E-06	-1.7018E-04	0.0416	288.1
81	1432.00	3	1.3500E+02	1.8089E-06	-1.5299E-04	0.0405	288.1
82	1432.30	3	1.4000E+02	1.5347E-06	-1.4225E-04	0.0397	288.1
83	1432.50	3	1.4500E+02	1.3096E-06	-1.3260E-04	0.0390	288.1

84	1432.60	3	1.4700E+02	1.2310E-06	-1.2901E-04	0.0388	288.1
85	1432.70	4	1.4700E+02	8.5697E-05	-1.0259E-04	0.4166	288.1
86	1432.90	4	1.4700E+02	8.5697E-05	-1.0259E-04	0.4166	288.1
87	1433.20	4	1.4700E+02	8.5697E-05	-1.0259E-04	0.4166	288.1
88	1433.70	4	1.4600E+02	8.6527E-05	-1.0273E-04	0.4167	288.1
89	1434.40	4	1.4600E+02	8.6527E-05	-1.0273E-04	0.4167	288.1
90	1435.40	4	1.4500E+02	8.7368E-05	-1.0287E-04	0.4168	288.1
91	1436.90	4	1.4400E+02	8.8220E-05	-1.0301E-04	0.4169	288.1
92	1439.10	4	1.4300E+02	8.9084E-05	-1.0315E-04	0.4170	288.1
93	1443.10	4	1.4000E+02	9.1746E-05	-1.0356E-04	0.4173	288.1
94	1450.10	4	1.3600E+02	9.5470E-05	-1.0410E-04	0.4177	288.1
95	1463.10	4	1.2700E+02	1.0465E-04	-1.0529E-04	0.4186	288.1
96	1476.10	4	1.1700E+02	1.1637E-04	-1.0655E-04	0.4197	288.1
97	1483.10	4	1.1200E+02	1.2293E-04	-1.0714E-04	0.4202	288.1
98	1487.10	4	1.0900E+02	1.2712E-04	-1.0748E-04	0.4206	288.1
99	1489.30	4	1.0800E+02	1.2856E-04	-1.0759E-04	0.4207	288.1
100	1490.80	4	1.0600E+02	1.3151E-04	-1.0781E-04	0.4209	288.1
101	1491.80	4	1.0600E+02	1.3151E-04	-1.0781E-04	0.4209	288.1
102	1492.50	4	1.0500E+02	1.3302E-04	-1.0792E-04	0.4210	288.1
103	1493.00	4	1.0500E+02	1.3302E-04	-1.0792E-04	0.4210	288.1
104	1493.30	4	1.0500E+02	1.3302E-04	-1.0792E-04	0.4210	288.1
105	1493.50	4	1.0400E+02	1.3456E-04	-1.0802E-04	0.4211	288.1
106	1493.60	4	1.0400E+02	1.3456E-04	-1.0802E-04	0.4211	288.1
107	1493.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
108	1493.90	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
109	1494.20	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
110	1494.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
111	1495.40	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
112	1496.40	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
113	1497.90	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
114	1499.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
115	1503.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
116	1509.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
117	1519.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
118	1533.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
119	1553.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
120	1582.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
121	1625.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
122	1690.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
123	1733.70	5	8.5400E+01	9.8042E-05	-5.2617E-04	0.0502	288.1
124	1762.70	5	5.9800E+01	7.3209E-04	-1.2329E-03	0.0710	288.1
125	1782.70	5	4.0100E+01	6.3749E-03	-2.9702E-03	0.1092	288.1
126	1796.70	5	2.6100E+01	5.1182E-02	-6.2522E-03	0.1708	288.1
127	1806.70	5	1.6100E+01	3.0268E-01	-9.1739E-03	0.2495	288.1
128	1812.70	5	1.0100E+01	8.3868E-01	-7.8793E-03	0.3028	288.1
129	1816.70	5	6.1000E+00	1.4341E+00	-4.6094E-03	0.3283	288.1
130	1818.50	5	4.3000E+00	1.7214E+00	-2.8711E-03	0.3350	288.1
131	1820.00	5	2.8000E+00	1.9394E+00	-1.5389E-03	0.3383	288.1
132	1821.00	5	1.8000E+00	2.0614E+00	-7.9452E-04	0.3394	288.1
133	1821.70	5	1.1000E+00	2.1299E+00	-3.7748E-04	0.3398	288.1
134	1822.20	5	6.0000E-01	2.1672E+00	-1.5058E-04	0.3400	288.1
135	1822.50	5	3.0000E-01	2.1834E+00	-5.2590E-05	0.3400	288.1
136	1822.70	5	1.0000E-01	2.1904E+00	-9.9232E-06	0.3400	288.1
137	1822.80	5	0.0000E+00	2.1920E+00	-1.5572E-08	0.3400	288.1

Total Initial Storage = 154.6400 cm

NSURPE = 0: There will be no surface evaporation

IRAIN = 0
NWATER (number of days of rain/irrigation) =365

Rainfall/Irrigation Details

Day	Time (hr)	Amount (cm)	Application Type	Efficiency	Changes In Rate/Head
1	0.000	0.0008	1	1.000	2
	24.000	0.0000			
2	0.000	0.0008	1	1.000	2
	24.000	0.0000			
3	0.000	0.0008	1	1.000	2
	24.000	0.0000			
•					
•					
•					
362	0.000	0.0008	1	1.000	2
	24.000	0.0000			
363	0.000	0.0008	1	1.000	2
	24.000	0.0000			
364	0.000	0.0008	1	1.000	2
	24.000	0.0000			
365	0.000	0.0008	1	1.000	2
	24.000	0.0000			

Total Water Applied = 0.2737 cm

```
--------------------------------------------------------------------------------
                             Program DATAINH
                               Version2.05
--------------------------------------------------------------------------------

 Input Filename: C:\Projects\4101L\CAS2007\Unsat07\CAS-28c.inp
 Date Processed: 06 Dec 2007
 Time Processed: 12:42:17.76

--------------------------------------------------------------------------------
 Title:
 CAS-28c.INP: Class A South cell Unsat flow, frost-protected side slope, 0.286 cm
--------------------------------------------------------------------------------

 Options chosen include:

 IPLANT =   0        LOWER  =   2        NGRAV  =   1        ISWDIF =   1
 IHEAT  =   0        UPPERH =   0        LOWERH =   0
 NPRINT =   0        DAYEND = 365        NDAYS  = 365        NYEARS =  50
 IRAIN  =   0        ICONVH =   0
 NSURPE =   0        NFHOUR =   2        ITOPBC =   0        ET_OPT =   0
 ICLOUD =   0
 KOPT   =   4        KEST   =   3        IVAPOR =   0        SH_OPT =   0
 INMAX  =   3        INHMAX =   2
 HIRRI  =   0.00     HDRY   =  1.000E+04 HTOP   =   0.00     DHMAX  =   0.00
 DMAXBA =  5.000E-04 DELMAX =  0.150     DELMIN =  1.500E-08 STOPHR =   24.0
 OUTTIM =  0.150
 TORT   =  0.660     TSOIL  =   288.     VAPDIF =  0.240     QHTOP  =   0.00
 TGRAD  =   0.00     TSMEAN =   288.     TSAMP  =   10.0     QHLEAK =   0.00
 WTF    =  0.500     RFACT  =   1.05     RAINIF =  1.000E-05 DHFACT =   0.00
 MATN   =   5        NPT    = 132

--------------------------------------------------------------------------------
 KOPT = 4:  van Genuchten functions for soil hydraulic properties

 THETA vs H, MAT   1,   Radon Barrier2 Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.43200
        THTR =  0.10000                         ALPHA =  3.00000E-03
           N =   1.1720                             M =  0.14676
     K vs H, MAT   1,   Radon Barrier2 Hydraulic Conductivity
      AIRINK =   0.0000                            SK =  1.80000E-04
           A =  3.00000E-03                         N =   1.1720
           M =  0.14676                        KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   2,   Radon Barrier2 Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.43200
        THTR =  0.10000                         ALPHA =  3.00000E-03
           N =   1.1720                             M =  0.14676
     K vs H, MAT   2,   Radon Barrier2 Hydraulic Conductivity
      AIRINK =   0.0000                            SK =  3.60000E-03
           A =  3.00000E-03                         N =   1.1720
           M =  0.14676                        KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   3,   Waste Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.35000
        THTR =  2.00000E-02                     ALPHA =  0.11500
           N =   2.0130                             M =  0.50323
     K vs H, MAT   3,   Waste Hydraulic Conductivity
      AIRINK =   0.0000                            SK =   1.8000
           A =  0.11500                             N =   2.0130
           M =  0.50323                        KMODEL =   2.0000
        EPIT =  0.50000

 THETA vs H, MAT   4,   Clay Liner Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.43200
        THTR =  0.10000                         ALPHA =  3.00000E-03
           N =   1.1720                             M =  0.14676
     K vs H, MAT   4,   Clay Liner Hydraulic Conductivity
      AIRINK =   0.0000                            SK =  3.60000E-03
           A =  3.00000E-03                         N =   1.1720
           M =  0.14676                        KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   5,   Unit 3 Silty Sand Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.34000
        THTR =  2.00000E-02                     ALPHA =  5.50000E-02
           N =   2.5180                             M =  0.60286
     K vs H, MAT   5,   Unit 3 Silty Sand Hydraulic Conductivity
      AIRINK =   0.0000                            SK =   2.1920
           A =  5.50000E-02                         N =   2.5180
           M =  0.60286                        KMODEL =   2.0000
        EPIT =  0.50000

 Surface node hydraulic properties
```

HIRRI = 0.0 , THETA = 0.4320, K = 1.8000E-04, C = -1.9786E-08
HDRY = 1.00E+04, THETA = 0.2845, K = 9.2973E-11, C = -3.1149E-06
NDAY = 0

NODE	Z	MAT	HEAD	CONDUCTIVITY	CAPACITY	THETA	TEMP
1	0.00	1	4.0000E+01	1.6801E-05	-1.0853E-04	0.4281	288.1
2	0.10	1	4.0100E+01	1.6769E-05	-1.0855E-04	0.4281	288.1
3	0.30	1	4.0200E+01	1.6738E-05	-1.0857E-04	0.4281	288.1
4	0.60	1	4.0500E+01	1.6644E-05	-1.0862E-04	0.4281	288.1
5	1.10	1	4.1000E+01	1.6489E-05	-1.0871E-04	0.4280	288.1
6	2.00	1	4.1900E+01	1.6217E-05	-1.0886E-04	0.4279	288.1
7	3.30	1	4.3200E+01	1.5836E-05	-1.0907E-04	0.4278	288.1
8	5.60	1	4.5800E+01	1.5119E-05	-1.0942E-04	0.4275	288.1
9	6.90	1	4.7300E+01	1.4730E-05	-1.0960E-04	0.4273	288.1
10	7.80	1	4.8400E+01	1.4454E-05	-1.0972E-04	0.4272	288.1
11	8.30	1	4.9000E+01	1.4307E-05	-1.0978E-04	0.4271	288.1
12	8.60	1	4.9400E+01	1.4211E-05	-1.0982E-04	0.4271	288.1
13	8.80	1	4.9700E+01	1.4139E-05	-1.0985E-04	0.4271	288.1
14	8.90	1	4.9800E+01	1.4116E-05	-1.0986E-04	0.4271	288.1
15	9.00	1	4.9900E+01	1.4092E-05	-1.0986E-04	0.4270	288.1
16	9.20	1	5.0200E+01	1.4021E-05	-1.0989E-04	0.4270	288.1
17	9.50	1	5.0600E+01	1.3928E-05	-1.0993E-04	0.4270	288.1
18	10.00	1	5.1300E+01	1.3767E-05	-1.0998E-04	0.4269	288.1
19	10.90	1	5.2500E+01	1.3498E-05	-1.1007E-04	0.4268	288.1
20	13.10	1	5.5800E+01	1.2800E-05	-1.1027E-04	0.4264	288.1
21	16.40	1	6.1200E+01	1.1774E-05	-1.1045E-04	0.4258	288.1
22	21.50	1	7.1200E+01	1.0183E-05	-1.1039E-04	0.4247	288.1
23	24.80	1	7.9000E+01	9.1574E-06	-1.1008E-04	0.4238	288.1
24	27.00	1	8.5000E+01	8.4697E-06	-1.0971E-04	0.4232	288.1
25	28.50	1	8.9400E+01	8.0126E-06	-1.0938E-04	0.4227	288.1
26	29.40	1	9.2200E+01	7.7402E-06	-1.0915E-04	0.4224	288.1
27	29.90	1	9.3800E+01	7.5906E-06	-1.0902E-04	0.4222	288.1
28	30.20	1	9.4800E+01	7.4992E-06	-1.0893E-04	0.4221	288.1
29	30.40	1	9.5500E+01	7.4362E-06	-1.0886E-04	0.4220	288.1
30	30.50	1	9.5800E+01	7.4094E-06	-1.0884E-04	0.4220	288.1
31	30.60	2	9.5800E+01	1.4819E-04	-1.0884E-04	0.4220	288.1
32	30.80	2	9.5600E+01	1.4854E-04	-1.0885E-04	0.4220	288.1
33	31.10	2	9.5400E+01	1.4890E-04	-1.0887E-04	0.4220	288.1
34	31.60	2	9.5000E+01	1.4962E-04	-1.0891E-04	0.4221	288.1
35	32.30	2	9.4500E+01	1.5053E-04	-1.0895E-04	0.4221	288.1
36	33.30	2	9.3700E+01	1.5200E-04	-1.0902E-04	0.4222	288.1
37	34.80	2	9.2500E+01	1.5424E-04	-1.0913E-04	0.4224	288.1
38	37.00	2	9.0800E+01	1.5749E-04	-1.0927E-04	0.4225	288.1
39	39.70	2	8.8600E+01	1.6186E-04	-1.0945E-04	0.4228	288.1
40	42.70	2	8.6200E+01	1.6683E-04	-1.0963E-04	0.4230	288.1
41	45.70	2	8.3800E+01	1.7202E-04	-1.0979E-04	0.4233	288.1
42	48.70	2	8.1300E+01	1.7769E-04	-1.0995E-04	0.4236	288.1
43	51.70	2	7.8900E+01	1.8339E-04	-1.1008E-04	0.4238	288.1
44	54.50	2	7.6600E+01	1.8912E-04	-1.1020E-04	0.4241	288.1
45	56.70	2	7.4700E+01	1.9405E-04	-1.1028E-04	0.4243	288.1
46	58.20	2	7.3500E+01	1.9727E-04	-1.1032E-04	0.4244	288.1
47	59.20	2	7.2700E+01	1.9945E-04	-1.1035E-04	0.4245	288.1
48	59.90	2	7.2100E+01	2.0112E-04	-1.1037E-04	0.4246	288.1
49	60.40	2	7.1700E+01	2.0224E-04	-1.1038E-04	0.4246	288.1
50	60.70	2	7.1400E+01	2.0309E-04	-1.1039E-04	0.4247	288.1
51	60.90	2	7.1200E+01	2.0366E-04	-1.1039E-04	0.4247	288.1
52	61.00	2	7.1100E+01	2.0394E-04	-1.1039E-04	0.4247	288.1
53	61.10	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
54	61.30	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
55	61.60	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
56	62.10	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
57	63.00	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
58	64.50	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
59	67.50	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
60	72.50	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
61	82.50	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
62	102.50	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
63	132.50	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
64	182.50	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
65	272.50	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
66	413.40	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
67	503.40	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
68	553.40	3	7.1100E+01	3.2477E-05	-5.4751E-04	0.0590	288.1
69	583.40	3	7.2300E+01	3.0129E-05	-5.2975E-04	0.0583	288.1
70	603.40	3	7.7300E+01	2.2320E-05	-4.6425E-04	0.0559	288.1
71	613.40	3	8.5700E+01	1.4040E-05	-3.7849E-04	0.0523	288.1
72	618.40	3	9.5500E+01	8.6243E-06	-3.0526E-04	0.0490	288.1
73	621.40	3	1.0700E+02	5.1660E-06	-2.4340E-04	0.0459	288.1
74	622.90	3	1.1700E+02	3.4521E-06	-2.0366E-04	0.0436	288.1
75	623.80	3	1.2700E+02	2.3837E-06	-1.7287E-04	0.0418	288.1
76	624.30	3	1.3400E+02	1.8707E-06	-1.5528E-04	0.0406	288.1
77	624.60	3	1.3900E+02	1.5853E-06	-1.4431E-04	0.0399	288.1
78	624.80	3	1.4300E+02	1.3945E-06	-1.3634E-04	0.0393	288.1
79	624.90	3	1.4600E+02	1.2696E-06	-1.3079E-04	0.0389	288.1
80	625.00	4	1.4600E+02	8.6527E-05	-1.0273E-04	0.4167	288.1
81	625.20	4	1.4600E+02	8.6527E-05	-1.0273E-04	0.4167	288.1

82	625.50	4	1.4600E+02	8.6527E-05	-1.0273E-04	0.4167	288.1
83	626.00	4	1.4500E+02	8.7368E-05	-1.0287E-04	0.4168	288.1
84	626.70	4	1.4500E+02	8.7368E-05	-1.0287E-04	0.4168	288.1
85	627.70	4	1.4400E+02	8.8220E-05	-1.0301E-04	0.4169	288.1
86	629.20	4	1.4300E+02	8.9084E-05	-1.0315E-04	0.4170	288.1
87	631.40	4	1.4200E+02	8.9959E-05	-1.0329E-04	0.4171	288.1
88	635.40	4	1.3900E+02	9.2658E-05	-1.0370E-04	0.4174	288.1
89	642.40	4	1.3500E+02	9.6434E-05	-1.0424E-04	0.4178	288.1
90	655.40	4	1.2600E+02	1.0575E-04	-1.0542E-04	0.4188	288.1
91	668.40	4	1.1700E+02	1.1637E-04	-1.0655E-04	0.4197	288.1
92	675.40	4	1.1200E+02	1.2293E-04	-1.0714E-04	0.4202	288.1
93	679.40	4	1.0900E+02	1.2712E-04	-1.0748E-04	0.4206	288.1
94	681.60	4	1.0700E+02	1.3002E-04	-1.0770E-04	0.4208	288.1
95	683.10	4	1.0600E+02	1.3151E-04	-1.0781E-04	0.4209	288.1
96	684.10	4	1.0500E+02	1.3302E-04	-1.0792E-04	0.4210	288.1
97	684.80	4	1.0400E+02	1.3456E-04	-1.0802E-04	0.4211	288.1
98	685.30	4	1.0400E+02	1.3456E-04	-1.0802E-04	0.4211	288.1
99	685.60	4	1.0400E+02	1.3456E-04	-1.0802E-04	0.4211	288.1
100	685.80	4	1.0400E+02	1.3456E-04	-1.0802E-04	0.4211	288.1
101	685.90	4	1.0400E+02	1.3456E-04	-1.0802E-04	0.4211	288.1
102	686.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
103	686.20	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
104	686.50	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
105	687.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
106	687.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
107	688.70	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
108	690.20	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
109	692.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
110	696.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
111	702.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
112	712.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
113	726.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
114	746.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
115	775.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
116	818.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
117	883.00	5	1.0400E+02	3.1767E-05	-3.2441E-04	0.0425	288.1
118	926.00	5	8.5300E+01	9.8698E-05	-5.2767E-04	0.0503	288.1
119	955.00	5	5.9800E+01	7.3209E-04	-1.2329E-03	0.0710	288.1
120	975.00	5	4.0100E+01	6.3749E-03	-2.9702E-03	0.1092	288.1
121	989.00	5	2.6100E+01	5.1182E-02	-6.2522E-03	0.1708	288.1
122	999.00	5	1.6100E+01	3.0268E-01	-9.1739E-03	0.2495	288.1
123	1005.00	5	1.0100E+01	8.3868E-01	-7.8793E-03	0.3028	288.1
124	1009.00	5	6.1000E+00	1.4341E+00	-4.6094E-03	0.3283	288.1
125	1010.80	5	4.3000E+00	1.7214E+00	-2.8711E-03	0.3350	288.1
126	1012.30	5	2.8000E+00	1.9394E+00	-1.5389E-03	0.3383	288.1
127	1013.30	5	1.8000E+00	2.0614E+00	-7.9452E-04	0.3394	288.1
128	1014.00	5	1.1000E+00	2.1299E+00	-3.7748E-04	0.3398	288.1
129	1014.50	5	6.0000E-01	2.1672E+00	-1.5058E-04	0.3400	288.1
130	1014.80	5	3.0000E-01	2.1834E+00	-5.2590E-05	0.3400	288.1
131	1015.00	5	1.0000E-01	2.1904E+00	-9.9232E-06	0.3400	288.1
132	1015.10	5	0.0000E+00	2.1920E+00	-1.5572E-08	0.3400	288.1

Total Initial Storage = 107.4569 cm

NSURPE = 0: There will be no surface evaporation
IRAIN = 0
NWATER (number of days of rain/irrigation) =365

Rainfall/Irrigation Details

Day	Time (hr)	Amount (cm)	Application Type	Efficiency	Changes In Rate/Head
1	0.000	0.0008	1	1.000	2
	24.000	0.0000			
2	0.000	0.0008	1	1.000	2
	24.000	0.0000			
3	0.000	0.0008	1	1.000	2
	24.000	0.0000			
•					
•					
•					
361	0.000	0.0008	1	1.000	2
	24.000	0.0000			
362	0.000	0.0008	1	1.000	2
	24.000	0.0000			
363	0.000	0.0008	1	1.000	2
	24.000	0.0000			
364	0.000	0.0008	1	1.000	2
	24.000	0.0000			
365	0.000	0.0008	1	1.000	2
	24.000	0.0000			

Total Water Applied = 0.2847 cm

```
----------------------------------------------------------------------------
                              Program DATAINH
                               Version2.05
----------------------------------------------------------------------------

 Input Filename: C:\Projects\4101L\CAS2007\Unsat07\CAS-59c.inp
 Date Processed: 06 Dec 2007
 Time Processed: 12:44:53.68

----------------------------------------------------------------------------
 Title:
 CAS-59c.INP: Class A South cell Unsat flow, frost-prot. side slope, 12"filter, 0
----------------------------------------------------------------------------
 Options chosen include:
 IPLANT =   0        LOWER  =   2        NGRAV  =   1        ISWDIF =   1
 IHEAT  =   0        UPPERH =   0        LOWERH =   0
 NPRINT =   0        DAYEND = 365        NDAYS  = 365        NYEARS =  50
 IRAIN  =   0        ICONVH =   0
 NSURPE =   0        NFHOUR =   2        ITOPBC =   0        ET_OPT =   0
 ICLOUD =   0
 KOPT   =   4        KEST   =   3        IVAPOR =   0        SH_OPT =   0
 INMAX  =   3        INHMAX =   2
 HIRRI  =   0.00     HDRY   =  1.000E+04 HTOP   =   0.00     DHMAX  =   0.00
 DMAXBA =  5.000E-04 DELMAX =  0.150     DELMIN =  1.500E-08 STOPHR =   24.0
 OUTTIM =  0.150
 TORT   =  0.660     TSOIL  =   288.     VAPDIF =  0.240     QHTOP  =   0.00
 TGRAD  =   0.00     TSMEAN =   288.     TSAMP  =   10.0     QHLEAK =   0.00
 WTF    =  0.500     RFACT  =   1.05     RAINIF =  1.000E-05 DHFACT =   0.00
 MATN   =   5        NPT    = 132

----------------------------------------------------------------------------
 KOPT = 4:  van Genuchten functions for soil hydraulic properties

 THETA vs H, MAT   1,   Radon Barrier2 Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.43200
        THTR =  0.10000                         ALPHA =  3.00000E-03
           N =   1.1720                             M =  0.14676
     K vs H, MAT   1,   Radon Barrier2 Hydraulic Conductivity
      AIRINK =   0.0000                            SK =  1.80000E-04
           A =  3.00000E-03                         N =   1.1720
           M =  0.14676                        KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   2,   Radon Barrier2 Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.43200
        THTR =  0.10000                         ALPHA =  3.00000E-03
           N =   1.1720                             M =  0.14676
     K vs H, MAT   2,   Radon Barrier2 Hydraulic Conductivity
      AIRINK =   0.0000                            SK =  3.60000E-03
           A =  3.00000E-03                         N =   1.1720
           M =  0.14676                        KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   3,   Waste Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.35000
        THTR =  2.00000E-02                     ALPHA =  0.11500
           N =   2.0130                             M =  0.50323
     K vs H, MAT   3,   Waste Hydraulic Conductivity
      AIRINK =   0.0000                            SK =   1.8000
           A =  0.11500                             N =   2.0130
           M =  0.50323                        KMODEL =   2.0000
        EPIT =  0.50000

 THETA vs H, MAT   4,   Clay Liner Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.43200
        THTR =  0.10000                         ALPHA =  3.00000E-03
           N =   1.1720                             M =  0.14676
     K vs H, MAT   4,   Clay Liner Hydraulic Conductivity
      AIRINK =   0.0000                            SK =  3.60000E-03
           A =  3.00000E-03                         N =   1.1720
           M =  0.14676                        KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   5,   Unit 3 Silty Sand Moisture Characteristics
      AIRINT =   0.0000                          THET =  0.34000
        THTR =  2.00000E-02                     ALPHA =  5.50000E-02
           N =   2.5180                             M =  0.60286
     K vs H, MAT   5,   Unit 3 Silty Sand Hydraulic Conductivity
      AIRINK =   0.0000                            SK =   2.1920
           A =  5.50000E-02                         N =   2.5180
           M =  0.60286                        KMODEL =   2.0000
        EPIT =  0.50000

 Surface node hydraulic properties

 HIRRI =      0.0    , THETA = 0.4320, K =   1.8000E-04, C =  -1.9786E-08
 HDRY  =     1.00E+04, THETA = 0.2845, K =   9.2973E-11, C =  -3.1149E-06
```

NDAY = 0

NODE	Z	MAT	HEAD	CONDUCTIVITY	CAPACITY	THETA	TEMP
1	0.00	1	7.0600E+00	4.2128E-05	-8.7185E-05	0.4315	288.1
2	0.10	1	7.1200E+00	4.1997E-05	-8.7301E-05	0.4315	288.1
3	0.30	1	7.2400E+00	4.1737E-05	-8.7531E-05	0.4315	288.1
4	0.60	1	7.4300E+00	4.1335E-05	-8.7887E-05	0.4314	288.1
5	1.10	1	7.7600E+00	4.0660E-05	-8.8486E-05	0.4314	288.1
6	2.00	1	8.3900E+00	3.9450E-05	-8.9563E-05	0.4314	288.1
7	3.30	1	9.3800E+00	3.7725E-05	-9.1106E-05	0.4313	288.1
8	5.60	1	1.1400E+01	3.4726E-05	-9.3799E-05	0.4311	288.1
9	6.90	1	1.2700E+01	3.3079E-05	-9.5281E-05	0.4310	288.1
10	7.80	1	1.3700E+01	3.1929E-05	-9.6313E-05	0.4309	288.1
11	8.30	1	1.4200E+01	3.1388E-05	-9.6798E-05	0.4308	288.1
12	8.60	1	1.4600E+01	3.0970E-05	-9.7173E-05	0.4308	288.1
13	8.80	1	1.4800E+01	3.0765E-05	-9.7356E-05	0.4308	288.1
14	8.90	1	1.5000E+01	3.0563E-05	-9.7536E-05	0.4307	288.1
15	9.00	1	1.5100E+01	3.0464E-05	-9.7625E-05	0.4307	288.1
16	9.20	1	1.5300E+01	3.0266E-05	-9.7801E-05	0.4307	288.1
17	9.50	1	1.5700E+01	2.9880E-05	-9.8145E-05	0.4307	288.1
18	10.00	1	1.6400E+01	2.9229E-05	-9.8723E-05	0.4306	288.1
19	10.90	1	1.7600E+01	2.8182E-05	-9.9649E-05	0.4305	288.1
20	13.10	1	2.0900E+01	2.5668E-05	-1.0183E-04	0.4301	288.1
21	16.40	1	2.7100E+01	2.1982E-05	-1.0488E-04	0.4295	288.1
22	21.50	1	4.0000E+01	1.6801E-05	-1.0853E-04	0.4281	288.1
23	24.80	1	5.1500E+01	1.3722E-05	-1.1000E-04	0.4269	288.1
24	27.00	1	6.1000E+01	1.1810E-05	-1.1044E-04	0.4258	288.1
25	28.50	1	6.8600E+01	1.0564E-05	-1.1045E-04	0.4250	288.1
26	29.40	1	7.3700E+01	9.8362E-06	-1.1031E-04	0.4244	288.1
27	29.90	1	7.6700E+01	9.4431E-06	-1.1019E-04	0.4241	288.1
28	30.20	1	7.8600E+01	9.2061E-06	-1.1010E-04	0.4239	288.1
29	30.40	1	7.9900E+01	9.0490E-06	-1.1003E-04	0.4237	288.1
30	30.50	1	8.0600E+01	8.9661E-06	-1.0999E-04	0.4237	288.1
31	30.60	2	8.0600E+01	1.7932E-04	-1.0999E-04	0.4237	288.1
32	30.80	2	8.0500E+01	1.7956E-04	-1.1000E-04	0.4237	288.1
33	31.10	2	8.0300E+01	1.8003E-04	-1.1001E-04	0.4237	288.1
34	31.60	2	8.0000E+01	1.8074E-04	-1.1002E-04	0.4237	288.1
35	32.30	2	7.9600E+01	1.8170E-04	-1.1005E-04	0.4238	288.1
36	33.30	2	7.9000E+01	1.8315E-04	-1.1008E-04	0.4238	288.1
37	34.80	2	7.8000E+01	1.8560E-04	-1.1013E-04	0.4239	288.1
38	37.00	2	7.6600E+01	1.8912E-04	-1.1020E-04	0.4241	288.1
39	39.70	2	7.4900E+01	1.9352E-04	-1.1027E-04	0.4243	288.1
40	42.70	2	7.2900E+01	1.9890E-04	-1.1034E-04	0.4245	288.1
41	45.70	2	7.0900E+01	2.0452E-04	-1.1040E-04	0.4247	288.1
42	48.70	2	6.8900E+01	2.1037E-04	-1.1044E-04	0.4249	288.1
43	51.70	2	6.6900E+01	2.1648E-04	-1.1047E-04	0.4252	288.1
44	54.50	2	6.4900E+01	2.2287E-04	-1.1048E-04	0.4254	288.1
45	56.70	2	6.3400E+01	2.2786E-04	-1.1047E-04	0.4256	288.1
46	58.20	2	6.2300E+01	2.3162E-04	-1.1046E-04	0.4257	288.1
47	59.20	2	6.1600E+01	2.3407E-04	-1.1045E-04	0.4258	288.1
48	59.90	2	6.1100E+01	2.3584E-04	-1.1045E-04	0.4258	288.1
49	60.40	2	6.0800E+01	2.3692E-04	-1.1044E-04	0.4258	288.1
50	60.70	2	6.0500E+01	2.3800E-04	-1.1043E-04	0.4259	288.1
51	60.90	2	6.0400E+01	2.3836E-04	-1.1043E-04	0.4259	288.1
52	61.00	2	6.0300E+01	2.3872E-04	-1.1043E-04	0.4259	288.1
53	61.10	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
54	61.30	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
55	61.60	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
56	62.10	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
57	63.00	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
58	64.50	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
59	67.50	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
60	72.50	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
61	82.50	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
62	102.50	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
63	132.50	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
64	182.50	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
65	272.50	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
66	413.40	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
67	503.40	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
68	553.40	3	6.0300E+01	6.7857E-05	-7.5640E-04	0.0659	288.1
69	583.40	3	6.0800E+01	6.5401E-05	-7.4430E-04	0.0656	288.1
70	603.40	3	6.4200E+01	5.1289E-05	-6.6912E-04	0.0632	288.1
71	613.40	3	7.0500E+01	3.3734E-05	-5.5672E-04	0.0593	288.1
72	618.40	3	7.8200E+01	2.1190E-05	-4.5375E-04	0.0554	288.1
73	621.40	3	8.7700E+01	1.2656E-05	-3.6156E-04	0.0516	288.1
74	622.90	3	9.6000E+01	8.4238E-06	-3.0210E-04	0.0489	288.1
75	623.80	3	1.0400E+02	5.8728E-06	-2.5760E-04	0.0466	288.1
76	624.30	3	1.1000E+02	4.5602E-06	-2.3034E-04	0.0452	288.1
77	624.60	3	1.1400E+02	3.8814E-06	-2.1450E-04	0.0443	288.1
78	624.80	3	1.1800E+02	3.3220E-06	-2.0023E-04	0.0434	288.1
79	624.90	3	1.2000E+02	3.0792E-06	-1.9362E-04	0.0431	288.1
80	625.00	4	1.2000E+02	1.1267E-04	-1.0618E-04	0.4194	288.1
81	625.20	4	1.2000E+02	1.1267E-04	-1.0618E-04	0.4194	288.1
82	625.50	4	1.2000E+02	1.1267E-04	-1.0618E-04	0.4194	288.1
83	626.00	4	1.2000E+02	1.1267E-04	-1.0618E-04	0.4194	288.1

84	626.70	4	1.2000E+02	1.1267E-04	-1.0618E-04	0.4194	288.1
85	627.70	4	1.1900E+02	1.1388E-04	-1.0630E-04	0.4195	288.1
86	629.20	4	1.1900E+02	1.1388E-04	-1.0630E-04	0.4195	288.1
87	631.40	4	1.1800E+02	1.1512E-04	-1.0643E-04	0.4196	288.1
88	635.40	4	1.1600E+02	1.1764E-04	-1.0667E-04	0.4198	288.1
89	642.40	4	1.1300E+02	1.2157E-04	-1.0702E-04	0.4201	288.1
90	655.40	4	1.0700E+02	1.3002E-04	-1.0770E-04	0.4208	288.1
91	668.40	4	1.0100E+02	1.3933E-04	-1.0833E-04	0.4214	288.1
92	675.40	4	9.6900E+01	1.4625E-04	-1.0873E-04	0.4219	288.1
93	679.40	4	9.4700E+01	1.5017E-04	-1.0894E-04	0.4221	288.1
94	681.60	4	9.3500E+01	1.5237E-04	-1.0904E-04	0.4222	288.1
95	683.10	4	9.2700E+01	1.5386E-04	-1.0911E-04	0.4223	288.1
96	684.10	4	9.2100E+01	1.5499E-04	-1.0916E-04	0.4224	288.1
97	684.80	4	9.1700E+01	1.5576E-04	-1.0920E-04	0.4224	288.1
98	685.30	4	9.1400E+01	1.5633E-04	-1.0922E-04	0.4225	288.1
99	685.60	4	9.1300E+01	1.5653E-04	-1.0923E-04	0.4225	288.1
100	685.80	4	9.1200E+01	1.5672E-04	-1.0924E-04	0.4225	288.1
101	685.90	4	9.1100E+01	1.5691E-04	-1.0925E-04	0.4225	288.1
102	686.00	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
103	686.20	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
104	686.50	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
105	687.00	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
106	687.70	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
107	688.70	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
108	690.20	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
109	692.00	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
110	696.00	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
111	702.00	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
112	712.00	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
113	726.00	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
114	746.00	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
115	775.00	5	9.1100E+01	6.7808E-05	-4.4932E-04	0.0474	288.1
116	818.00	5	9.0700E+01	6.9534E-05	-4.5419E-04	0.0476	288.1
117	883.00	5	9.2100E+01	6.3707E-05	-4.3746E-04	0.0470	288.1
118	926.00	5	8.2000E+01	1.2356E-04	-5.8084E-04	0.0521	288.1
119	955.00	5	5.9400E+01	7.5995E-04	-1.2523E-03	0.0715	288.1
120	975.00	5	4.0000E+01	6.4584E-03	-2.9853E-03	0.1095	288.1
121	989.00	5	2.6100E+01	5.1182E-02	-6.2522E-03	0.1708	288.1
122	999.00	5	1.6100E+01	3.0268E-01	-9.1739E-03	0.2495	288.1
123	1005.00	5	1.0100E+01	8.3868E-01	-7.8793E-03	0.3028	288.1
124	1009.00	5	6.1000E+00	1.4341E+00	-4.6094E-03	0.3283	288.1
125	1010.80	5	4.3000E+00	1.7214E+00	-2.8711E-03	0.3350	288.1
126	1012.30	5	2.8000E+00	1.9394E+00	-1.5389E-03	0.3383	288.1
127	1013.30	5	1.8000E+00	2.0614E+00	-7.9452E-04	0.3394	288.1
128	1014.00	5	1.1000E+00	2.1299E+00	-3.7748E-04	0.3398	288.1
129	1014.50	5	6.0000E-01	2.1672E+00	-1.5058E-04	0.3400	288.1
130	1014.80	5	3.0000E-01	2.1834E+00	-5.2590E-05	0.3400	288.1
131	1015.00	5	1.0000E-01	2.1904E+00	-9.9232E-06	0.3400	288.1
132	1015.10	5	0.0000E+00	2.1920E+00	-1.5572E-08	0.3400	288.1

Total Initial Storage = 112.7934 cm

NSURPE = 0: There will be no surface evaporation

IRAIN = 0
NWATER (number of days of rain/irrigation) =365

Rainfall/Irrigation Details

Day	Time (hr)	Amount (cm)	Application Type	Efficiency	Changes In Rate/Head
1	0.000	0.0016	1	1.000	2
	24.000	0.0000			
2	0.000	0.0016	1	1.000	2
	24.000	0.0000			
3	0.000	0.0016	1	1.000	2
	24.000	0.0000			
•					
•					
•					
362	0.000	0.0016	1	1.000	2
	24.000	0.0000			
363	0.000	0.0016	1	1.000	2
	24.000	0.0000			
364	0.000	0.0016	1	1.000	2
	24.000	0.0000			
365	0.000	0.0016	1	1.000	2
	24.000	0.0000			

Total Water Applied = 0.5950 cm

UNSAT-H OUTPUT FILES

CAS-T27e.out	Class A South Cell Top Slope, 0.276 cm/yr
CAS-S28c.out	Class A South Cell Side Slope, 0.286 cm/yr
CAS-S59c.out	Class A South Cell Side Slope, 0.595 cm/yr

UNSAT-H Version 2.05
INITIAL CONDITIONS

Input Filename: C:\Projects\4101L\CAS2007\Unsat07\CAS-T27e.inp
Results Filename: C:\Projects\4101L\CAS2007\Unsat07\CAS-T27e.res
Date of Run: 06 Dec 2007
Time of Run: 12:10:48.95
Title:
CAS-T27e.INP: Class A South cell Unsat flow, frost-prot. top slope, 0.276 cm/yr

		Initial Conditions					Initial Conditions		
NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)	NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)
1	0.000E+00	4.201E+01	0.4279	0.00	2	1.000E-01	4.210E+01	0.4279	0.00
3	3.000E-01	4.229E+01	0.4279	0.00	4	6.000E-01	4.257E+01	0.4278	0.00
5	1.100E+00	4.305E+01	0.4278	0.00	6	2.000E+00	4.394E+01	0.4277	0.00
7	3.300E+00	4.527E+01	0.4275	0.00	8	5.600E+00	4.778E+01	0.4273	0.00
9	6.900E+00	4.930E+01	0.4271	0.00	10	7.800E+00	5.039E+01	0.4270	0.00
11	8.300E+00	5.102E+01	0.4269	0.00	12	8.600E+00	5.140E+01	0.4269	0.00
13	8.800E+00	5.165E+01	0.4268	0.00	14	8.900E+00	5.178E+01	0.4268	0.00
15	9.000E+00	5.191E+01	0.4268	0.00	16	9.200E+00	5.217E+01	0.4268	0.00
17	9.500E+00	5.256E+01	0.4267	0.00	18	1.000E+01	5.323E+01	0.4267	0.00
19	1.090E+01	5.446E+01	0.4265	0.00	20	1.310E+01	5.765E+01	0.4262	0.00
21	1.640E+01	6.299E+01	0.4256	0.00	22	2.150E+01	7.280E+01	0.4245	0.00
23	2.480E+01	8.040E+01	0.4237	0.00	24	2.700E+01	8.614E+01	0.4230	0.00
25	2.850E+01	9.041E+01	0.4226	0.00	26	2.940E+01	9.312E+01	0.4223	0.00
27	2.990E+01	9.468E+01	0.4221	0.00	28	3.020E+01	9.564E+01	0.4220	0.00
29	3.040E+01	9.628E+01	0.4219	0.00	30	3.050E+01	9.661E+01	0.4219	0.00
31	3.060E+01	9.660E+01	0.4219	0.00	32	3.080E+01	9.644E+01	0.4219	0.00
33	3.110E+01	9.621E+01	0.4219	0.00	34	3.160E+01	9.581E+01	0.4220	0.00
35	3.230E+01	9.526E+01	0.4221	0.00	36	3.330E+01	9.447E+01	0.4221	0.00
37	3.480E+01	9.328E+01	0.4223	0.00	38	3.700E+01	9.152E+01	0.4225	0.00
39	3.970E+01	8.936E+01	0.4227	0.00	40	4.270E+01	8.693E+01	0.4230	0.00
41	4.570E+01	8.449E+01	0.4232	0.00	42	4.870E+01	8.203E+01	0.4235	0.00
43	5.170E+01	7.956E+01	0.4238	0.00	44	5.450E+01	7.723E+01	0.4240	0.00
45	5.670E+01	7.539E+01	0.4242	0.00	46	5.820E+01	7.413E+01	0.4244	0.00
47	5.920E+01	7.329E+01	0.4245	0.00	48	5.990E+01	7.270E+01	0.4245	0.00
49	6.040E+01	7.228E+01	0.4246	0.00	50	6.070E+01	7.203E+01	0.4246	0.00
51	6.090E+01	7.186E+01	0.4246	0.00	52	6.100E+01	7.177E+01	0.4246	0.00
53	6.110E+01	7.171E+01	0.0587	0.00	54	6.130E+01	7.171E+01	0.0587	0.00
55	6.160E+01	7.171E+01	0.0587	0.00	56	6.210E+01	7.171E+01	0.0587	0.00
57	6.300E+01	7.171E+01	0.0587	0.00	58	6.450E+01	7.171E+01	0.0587	0.00
59	6.750E+01	7.171E+01	0.0587	0.00	60	7.250E+01	7.171E+01	0.0587	0.00
61	8.250E+01	7.171E+01	0.0587	0.00	62	1.025E+02	7.171E+01	0.0587	0.00
63	1.325E+02	7.171E+01	0.0587	0.00	64	1.775E+02	7.171E+01	0.0587	0.00
65	2.425E+02	7.171E+01	0.0587	0.00	66	3.425E+02	7.171E+01	0.0587	0.00
67	5.025E+02	7.171E+01	0.0587	0.00	68	7.468E+02	7.171E+01	0.0587	0.00
69	9.911E+02	7.171E+01	0.0587	0.00	70	1.151E+03	7.171E+01	0.0587	0.00
71	1.251E+03	7.171E+01	0.0587	0.00	72	1.316E+03	7.171E+01	0.0587	0.00
73	1.361E+03	7.174E+01	0.0586	0.00	74	1.391E+03	7.294E+01	0.0580	0.00
75	1.411E+03	7.810E+01	0.0555	0.00	76	1.421E+03	8.661E+01	0.0520	0.00
77	1.426E+03	9.650E+01	0.0487	0.00	78	1.429E+03	1.083E+02	0.0456	0.00
79	1.431E+03	1.185E+02	0.0433	0.00	80	1.432E+03	1.278E+02	0.0416	0.00
81	1.432E+03	1.350E+02	0.0405	0.00	82	1.432E+03	1.403E+02	0.0397	0.00
83	1.433E+03	1.445E+02	0.0391	0.00	84	1.433E+03	1.469E+02	0.0388	0.00
85	1.433E+03	1.471E+02	0.4166	0.00	86	1.433E+03	1.470E+02	0.4166	0.00
87	1.433E+03	1.468E+02	0.4166	0.00	88	1.434E+03	1.465E+02	0.4166	0.00
89	1.434E+03	1.460E+02	0.4167	0.00	90	1.435E+03	1.454E+02	0.4167	0.00
91	1.437E+03	1.444E+02	0.4168	0.00	92	1.439E+03	1.430E+02	0.4170	0.00
93	1.443E+03	1.404E+02	0.4173	0.00	94	1.450E+03	1.357E+02	0.4177	0.00
95	1.463E+03	1.268E+02	0.4187	0.00	96	1.476E+03	1.174E+02	0.4197	0.00
97	1.483E+03	1.123E+02	0.4202	0.00	98	1.487E+03	1.093E+02	0.4205	0.00
99	1.489E+03	1.076E+02	0.4207	0.00	100	1.491E+03	1.065E+02	0.4208	0.00
101	1.492E+03	1.057E+02	0.4209	0.00	102	1.493E+03	1.052E+02	0.4210	0.00
103	1.493E+03	1.048E+02	0.4210	0.00	104	1.493E+03	1.046E+02	0.4210	0.00
105	1.494E+03	1.044E+02	0.4211	0.00	106	1.494E+03	1.043E+02	0.4211	0.00
107	1.494E+03	1.043E+02	0.0424	0.00	108	1.494E+03	1.043E+02	0.0424	0.00
109	1.494E+03	1.043E+02	0.0424	0.00	110	1.495E+03	1.043E+02	0.0424	0.00
111	1.495E+03	1.043E+02	0.0424	0.00	112	1.496E+03	1.043E+02	0.0424	0.00
113	1.498E+03	1.043E+02	0.0424	0.00	114	1.500E+03	1.043E+02	0.0424	0.00
115	1.504E+03	1.043E+02	0.0424	0.00	116	1.510E+03	1.043E+02	0.0424	0.00
117	1.520E+03	1.043E+02	0.0424	0.00	118	1.534E+03	1.043E+02	0.0424	0.00
119	1.554E+03	1.043E+02	0.0424	0.00	120	1.583E+03	1.043E+02	0.0424	0.00
121	1.626E+03	1.043E+02	0.0424	0.00	122	1.691E+03	1.042E+02	0.0424	0.00
123	1.734E+03	8.540E+01	0.0502	0.00	124	1.763E+03	5.978E+01	0.0710	0.00
125	1.783E+03	4.007E+01	0.1092	0.00	126	1.797E+03	2.610E+01	0.1708	0.00
127	1.807E+03	1.610E+01	0.2495	0.00	128	1.813E+03	1.010E+01	0.3028	0.00
129	1.817E+03	6.100E+00	0.3283	0.00	130	1.819E+03	4.300E+00	0.3350	0.00
131	1.820E+03	2.800E+00	0.3383	0.00	132	1.821E+03	1.800E+00	0.3394	0.00
133	1.822E+03	1.100E+00	0.3398	0.00	134	1.822E+03	6.000E-01	0.3400	0.00
135	1.823E+03	3.000E-01	0.3400	0.00	136	1.823E+03	1.000E-01	0.3400	0.00
137	1.823E+03	0.000E+00	0.3400	0.00					

Initial Water Storage = 154.6118 cm

```
-------------------------------------------------------------------------------

 DAILY SUMMARY:  Day =   1, Simulated Time = 24.0000 hr
 -------------
 Node Number        =      25          50          75         100         125
 Depth (cm)         =    28.50000    60.70000  1411.10000  1490.80000  1782.70000
 Water (cm3/cm3)    =     0.42258     0.42460     0.05549     0.42083     0.10925
 Head (cm)          = 9.04056E+01 7.20277E+01 7.81033E+01 1.06483E+02 4.00727E+01
 Water Flow (cm)    = 7.50000E-04 7.50000E-04 7.50186E-04 7.50210E-04 7.50331E-04

  PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN   NEWSTOR          STORAGE
 154.6118+ 0.0008+ 0.0000 - 0.0000- 0.0000-  0.0008 =154.6118  Versus 154.6118

 Mass Balance =  2.2737E-13 cm;  Time step attempts =  388 and successes =  388

-------------------------------------------------------------------------------

 DAILY SUMMARY:  Day = 365, Simulated Time = 24.0000 hr
 -------------
 Node Number        =      25          50          75         100         125
 Depth (cm)         =    28.50000    60.70000  1411.10000  1490.80000  1782.70000
 Water (cm3/cm3)    =     0.42258     0.42460     0.05549     0.42083     0.10925
 Head (cm)          = 9.04056E+01 7.20277E+01 7.81039E+01 1.06484E+02 4.00727E+01
 Water Flow (cm)    = 7.50000E-04 7.50000E-04 7.50163E-04 7.50187E-04 7.50306E-04

  PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN   NEWSTOR          STORAGE
 154.6117+ 0.0008+ 0.0000 - 0.0000- 0.0000-  0.0008 =154.6117  Versus 154.6117

 Mass Balance =  2.8422E-14 cm;  Time step attempts =  160 and successes =  160
1

-------------------------------------------------------------------------------
                            UNSAT-H Version 2.05
                             SIMULATION SUMMARY

 Title:
 CAS-T27e.INP: Class A South disposal cell Unsat flow, frost-prot. top slope, 0.
-------------------------------------------------------------------------------

 Transpiration Scheme is:              =    0
 Potential Evapotranspiration          =  0.0000E+00     [cm]
 Potential Transpiration               =  0.0000E+00     [cm]
 Actual Transpiration                  =  0.0000E+00     [cm]
 Potential Evaporation                 =  0.0000E+00     [cm]
 Actual Evaporation                    =  0.0000E+00     [cm]
 Evaporation during Growth             =  0.0000E+00     [cm]
 Total Runoff                          =  0.0000E+00     [cm]
 Total Infiltration                    =  2.7375E-01     [cm]
 Total Drainage at Base of Profile     =  2.7387E-01     [cm]
 Total Applied Water                   =  2.7375E-01     [cm]
 Actual Rainfall                       =  2.7375E-01     [cm]
 Actual Irrigation                     =  0.0000E+00     [cm]
 Total Final Moisture Storage          =  1.5461E+02     [cm]
 Mass Balance Error                    =  4.4338E-12     [cm]
 Total Successful Time Steps           =     58628
 Total Attempted Time Steps            =     58628
 Total Time Step Reductions (DHMAX)    =         0
 Total Changes in Surface Boundary     =         0
 Total Time Actually Simulated         =  3.6500E+02     [days]


 Total water flow (cm) across different depths at the end of 3.6500E+02 days:

     DEPTH        FLOW         DEPTH        FLOW         DEPTH        FLOW
    -------    -----------    -------    -----------    -------    -----------
      0.000    2.7375E-01      0.050     2.7375E-01      0.200     2.7375E-01
      0.450    2.7375E-01      0.850     2.7375E-01      1.550     2.7375E-01
      2.650    2.7375E-01      4.450     2.7375E-01      6.250     2.7375E-01
      7.350    2.7375E-01      8.050     2.7375E-01      8.450     2.7375E-01
      8.700    2.7375E-01      8.850     2.7375E-01      8.950     2.7375E-01
      9.100    2.7375E-01      9.350     2.7375E-01      9.750     2.7375E-01
     10.450    2.7375E-01     12.000     2.7375E-01     14.750     2.7375E-01
     18.950    2.7375E-01     23.150     2.7375E-01     25.900     2.7375E-01
     27.750    2.7375E-01     28.950     2.7375E-01     29.650     2.7375E-01
     30.050    2.7375E-01     30.300     2.7375E-01     30.450     2.7375E-01
     30.550    2.7375E-01     30.700     2.7375E-01     30.950     2.7375E-01
     31.350    2.7375E-01     31.950     2.7375E-01     32.800     2.7375E-01
     34.050    2.7375E-01     35.900     2.7375E-01     38.350     2.7375E-01
     41.200    2.7375E-01     44.200     2.7375E-01     47.200     2.7375E-01
     50.200    2.7375E-01     53.100     2.7375E-01     55.600     2.7375E-01
     57.450    2.7375E-01     58.700     2.7375E-01     59.550     2.7375E-01
     60.150    2.7375E-01     60.550     2.7375E-01     60.800     2.7375E-01
     60.950    2.7375E-01     61.050     2.7375E-01     61.200     2.7375E-01
```

61.450	2.7375E-01	61.850	2.7375E-01	62.550	2.7375E-01
63.750	2.7375E-01	66.000	2.7375E-01	70.000	2.7375E-01
77.500	2.7375E-01	92.500	2.7375E-01	117.500	2.7375E-01
155.000	2.7375E-01	210.000	2.7375E-01	292.500	2.7375E-01
422.500	2.7376E-01	624.650	2.7375E-01	868.950	2.7373E-01
1071.100	2.7374E-01	1201.100	2.7376E-01	1283.600	2.7378E-01
1338.600	2.7379E-01	1376.100	2.7380E-01	1401.100	2.7381E-01
1416.100	2.7381E-01	1423.600	2.7382E-01	1427.600	2.7382E-01
1429.850	2.7382E-01	1431.050	2.7382E-01	1431.750	2.7382E-01
1432.150	2.7382E-01	1432.400	2.7382E-01	1432.550	2.7382E-01
1432.650	2.7382E-01	1432.800	2.7382E-01	1433.050	2.7382E-01
1433.450	2.7382E-01	1434.050	2.7382E-01	1434.900	2.7382E-01
1436.150	2.7382E-01	1438.000	2.7382E-01	1441.100	2.7382E-01
1446.600	2.7382E-01	1456.600	2.7382E-01	1469.600	2.7382E-01
1479.600	2.7382E-01	1485.100	2.7382E-01	1488.200	2.7382E-01
1490.050	2.7382E-01	1491.300	2.7382E-01	1492.150	2.7382E-01
1492.750	2.7382E-01	1493.150	2.7382E-01	1493.400	2.7382E-01
1493.550	2.7382E-01	1493.650	2.7382E-01	1493.800	2.7382E-01
1494.050	2.7382E-01	1494.450	2.7382E-01	1495.050	2.7382E-01
1495.900	2.7382E-01	1497.150	2.7382E-01	1498.800	2.7382E-01
1501.700	2.7382E-01	1506.700	2.7383E-01	1514.700	2.7383E-01
1526.700	2.7383E-01	1543.700	2.7383E-01	1568.200	2.7384E-01
1604.200	2.7384E-01	1658.200	2.7385E-01	1712.200	2.7386E-01
1748.200	2.7387E-01	1772.700	2.7387E-01	1789.700	2.7387E-01
1801.700	2.7387E-01	1809.700	2.7387E-01	1814.700	2.7387E-01
1817.600	2.7387E-01	1819.250	2.7387E-01	1820.500	2.7387E-01
1821.350	2.7387E-01	1821.950	2.7387E-01	1822.350	2.7387E-01
1822.600	2.7387E-01	1822.750	2.7387E-01	1822.800	2.7387E-01

UNSAT-H Version 2.05
INITIAL CONDITIONS

Input Filename: C:\Projects\4101L\CAS2007\Unsat07\CAS-28c.inp
Results Filename: C:\Projects\4101L\CAS2007\Unsat07\CAS-28c.res
Date of Run: 06 Dec 2007
Time of Run: 12:42:50.03
Title:
CAS-28c.INP: Class A South cell Unsat flow, frost-protected side slope, 0.286 c

		Initial Conditions					Initial Conditions		
NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)	NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)
1	0.000E+00	3.997E+01	0.4281	0.00	2	1.000E-01	4.006E+01	0.4281	0.00
3	3.000E-01	4.025E+01	0.4281	0.00	4	6.000E-01	4.053E+01	0.4281	0.00
5	1.100E+00	4.101E+01	0.4280	0.00	6	2.000E+00	4.190E+01	0.4279	0.00
7	3.300E+00	4.324E+01	0.4278	0.00	8	5.600E+00	4.577E+01	0.4275	0.00
9	6.900E+00	4.730E+01	0.4273	0.00	10	7.800E+00	4.841E+01	0.4272	0.00
11	8.300E+00	4.904E+01	0.4271	0.00	12	8.600E+00	4.942E+01	0.4271	0.00
13	8.800E+00	4.968E+01	0.4271	0.00	14	8.900E+00	4.981E+01	0.4271	0.00
15	9.000E+00	4.994E+01	0.4270	0.00	16	9.200E+00	5.020E+01	0.4270	0.00
17	9.500E+00	5.060E+01	0.4270	0.00	18	1.000E+01	5.127E+01	0.4269	0.00
19	1.090E+01	5.252E+01	0.4268	0.00	20	1.310E+01	5.576E+01	0.4264	0.00
21	1.640E+01	6.119E+01	0.4258	0.00	22	2.150E+01	7.123E+01	0.4247	0.00
23	2.480E+01	7.904E+01	0.4238	0.00	24	2.700E+01	8.496E+01	0.4232	0.00
25	2.850E+01	8.937E+01	0.4227	0.00	26	2.940E+01	9.219E+01	0.4224	0.00
27	2.990E+01	9.381E+01	0.4222	0.00	28	3.020E+01	9.480E+01	0.4221	0.00
29	3.040E+01	9.547E+01	0.4220	0.00	30	3.050E+01	9.581E+01	0.4220	0.00
31	3.060E+01	9.581E+01	0.4220	0.00	32	3.080E+01	9.565E+01	0.4220	0.00
33	3.110E+01	9.541E+01	0.4220	0.00	34	3.160E+01	9.502E+01	0.4221	0.00
35	3.230E+01	9.448E+01	0.4221	0.00	36	3.330E+01	9.369E+01	0.4222	0.00
37	3.480E+01	9.251E+01	0.4224	0.00	38	3.700E+01	9.077E+01	0.4225	0.00
39	3.970E+01	8.862E+01	0.4228	0.00	40	4.270E+01	8.621E+01	0.4230	0.00
41	4.570E+01	8.379E+01	0.4233	0.00	42	4.870E+01	8.134E+01	0.4236	0.00
43	5.170E+01	7.888E+01	0.4238	0.00	44	5.450E+01	7.657E+01	0.4241	0.00
45	5.670E+01	7.475E+01	0.4243	0.00	46	5.820E+01	7.349E+01	0.4244	0.00
47	5.920E+01	7.266E+01	0.4245	0.00	48	5.990E+01	7.207E+01	0.4246	0.00
49	6.040E+01	7.165E+01	0.4246	0.00	50	6.070E+01	7.140E+01	0.4247	0.00
51	6.090E+01	7.123E+01	0.4247	0.00	52	6.100E+01	7.115E+01	0.4247	0.00
53	6.110E+01	7.109E+01	0.0590	0.00	54	6.130E+01	7.109E+01	0.0590	0.00
55	6.160E+01	7.109E+01	0.0590	0.00	56	6.210E+01	7.109E+01	0.0590	0.00
57	6.300E+01	7.109E+01	0.0590	0.00	58	6.450E+01	7.109E+01	0.0590	0.00
59	6.750E+01	7.109E+01	0.0590	0.00	60	7.250E+01	7.109E+01	0.0590	0.00
61	8.250E+01	7.109E+01	0.0590	0.00	62	1.025E+02	7.109E+01	0.0590	0.00
63	1.325E+02	7.109E+01	0.0590	0.00	64	1.825E+02	7.109E+01	0.0590	0.00
65	2.725E+02	7.109E+01	0.0590	0.00	66	4.134E+02	7.109E+01	0.0590	0.00
67	5.034E+02	7.108E+01	0.0590	0.00	68	5.534E+02	7.112E+01	0.0590	0.00
69	5.834E+02	7.227E+01	0.0584	0.00	70	6.034E+02	7.734E+01	0.0558	0.00
71	6.134E+02	8.573E+01	0.0523	0.00	72	6.184E+02	9.551E+01	0.0490	0.00
73	6.214E+02	1.072E+02	0.0458	0.00	74	6.229E+02	1.173E+02	0.0436	0.00
75	6.238E+02	1.266E+02	0.0418	0.00	76	6.243E+02	1.338E+02	0.0407	0.00
77	6.246E+02	1.391E+02	0.0399	0.00	78	6.248E+02	1.433E+02	0.0393	0.00
79	6.249E+02	1.456E+02	0.0390	0.00	80	6.250E+02	1.459E+02	0.4167	0.00
81	6.252E+02	1.457E+02	0.4167	0.00	82	6.255E+02	1.455E+02	0.4167	0.00
83	6.260E+02	1.452E+02	0.4168	0.00	84	6.267E+02	1.448E+02	0.4168	0.00
85	6.277E+02	1.442E+02	0.4169	0.00	86	6.292E+02	1.432E+02	0.4170	0.00
87	6.314E+02	1.418E+02	0.4171	0.00	88	6.354E+02	1.392E+02	0.4174	0.00
89	6.424E+02	1.346E+02	0.4178	0.00	90	6.554E+02	1.258E+02	0.4188	0.00
91	6.684E+02	1.166E+02	0.4197	0.00	92	6.754E+02	1.115E+02	0.4203	0.00
93	6.794E+02	1.085E+02	0.4206	0.00	94	6.816E+02	1.069E+02	0.4208	0.00
95	6.831E+02	1.058E+02	0.4209	0.00	96	6.841E+02	1.050E+02	0.4210	0.00
97	6.848E+02	1.045E+02	0.4211	0.00	98	6.853E+02	1.041E+02	0.4211	0.00
99	6.856E+02	1.039E+02	0.4211	0.00	100	6.858E+02	1.037E+02	0.4211	0.00
101	6.859E+02	1.036E+02	0.4211	0.00	102	6.860E+02	1.036E+02	0.0426	0.00
103	6.862E+02	1.036E+02	0.0426	0.00	104	6.865E+02	1.036E+02	0.0426	0.00
105	6.870E+02	1.036E+02	0.0426	0.00	106	6.877E+02	1.036E+02	0.0426	0.00
107	6.887E+02	1.036E+02	0.0426	0.00	108	6.902E+02	1.036E+02	0.0426	0.00
109	6.920E+02	1.036E+02	0.0426	0.00	110	6.960E+02	1.036E+02	0.0426	0.00
111	7.020E+02	1.036E+02	0.0426	0.00	112	7.120E+02	1.036E+02	0.0426	0.00
113	7.260E+02	1.036E+02	0.0426	0.00	114	7.460E+02	1.036E+02	0.0426	0.00
115	7.750E+02	1.036E+02	0.0426	0.00	116	8.180E+02	1.036E+02	0.0426	0.00
117	8.830E+02	1.036E+02	0.0426	0.00	118	9.260E+02	8.527E+01	0.0503	0.00
119	9.550E+02	5.977E+01	0.0710	0.00	120	9.750E+02	4.007E+01	0.1093	0.00
121	9.890E+02	2.610E+01	0.1708	0.00	122	9.990E+02	1.610E+01	0.2495	0.00
123	1.005E+03	1.010E+01	0.3028	0.00	124	1.009E+03	6.100E+00	0.3283	0.00
125	1.011E+03	4.300E+00	0.3350	0.00	126	1.012E+03	2.800E+00	0.3383	0.00
127	1.013E+03	1.800E+00	0.3394	0.00	128	1.014E+03	1.100E+00	0.3398	0.00
129	1.015E+03	6.000E-01	0.3400	0.00	130	1.015E+03	3.000E-01	0.3400	0.00
131	1.015E+03	1.000E-01	0.3400	0.00	132	1.015E+03	0.000E+00	0.3400	0.00

Initial Water Storage = 107.4932 cm

```
DAILY SUMMARY:  Day =    1, Simulated Time = 24.0000 hr
-------------
Node Number        =       25          50          75         100         125
Depth (cm)         =    28.50000    60.70000   623.80000   685.80000  1010.80000
Water (cm3/cm3)    =     0.42269     0.42467     0.04183     0.42113     0.33499
Head (cm)          = 8.93738E+01 7.14008E+01 1.26640E+02 1.03714E+02 4.29993E+00
Water Flow (cm)    = 7.80000E-04 7.80000E-04 7.79999E-04 7.79999E-04 7.79999E-04

 PRESTOR    INFIL  RUNOFF    EVAPO    TRANS     DRAIN   NEWSTOR          STORAGE
107.4932+ 0.0008+ 0.0000 - 0.0000- 0.0000-  0.0008 =107.4932  Versus 107.4932

Mass Balance = -1.9895E-13 cm;  Time step attempts =  388 and successes =  388

--------------------------------------------------------------------------------


DAILY SUMMARY:  Day = 365, Simulated Time = 24.0000 hr
-------------
Node Number        =       25          50          75         100         125
Depth (cm)         =    28.50000    60.70000   623.80000   685.80000  1010.80000
Water (cm3/cm3)    =     0.42269     0.42467     0.04183     0.42113     0.33499
Head (cm)          = 8.93738E+01 7.14008E+01 1.26640E+02 1.03714E+02 4.29993E+00
Water Flow (cm)    = 7.80000E-04 7.80000E-04 7.79999E-04 7.79999E-04 7.79999E-04

 PRESTOR    INFIL  RUNOFF    EVAPO    TRANS     DRAIN   NEWSTOR          STORAGE
107.4932+ 0.0008+ 0.0000 - 0.0000- 0.0000-  0.0008 =107.4932  Versus 107.4932

Mass Balance =  1.4211E-14 cm;  Time step attempts =  160 and successes =  160
1

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                            UNSAT-H Version 2.05
                             SIMULATION SUMMARY

Title:
CAS-28c.INP: Class A South cell Unsat flow, frost-protected side slope, 0.286 c
--------------------------------------------------------------------------------

Transpiration Scheme is:             =    0
Potential Evapotranspiration         =  0.0000E+00     [cm]
Potential Transpiration              =  0.0000E+00     [cm]
Actual Transpiration                 =  0.0000E+00     [cm]
Potential Evaporation                =  0.0000E+00     [cm]
Actual Evaporation                   =  0.0000E+00     [cm]
Evaporation during Growth            =  0.0000E+00     [cm]
Total Runoff                         =  0.0000E+00     [cm]
Total Infiltration                   =  2.8470E-01     [cm]
Total Drainage at Base of Profile    =  2.8470E-01     [cm]
Total Applied Water                  =  2.8470E-01     [cm]
Actual Rainfall                      =  2.8470E-01     [cm]
Actual Irrigation                    =  0.0000E+00     [cm]
Total Final Moisture Storage         =  1.0749E+02     [cm]
Mass Balance Error                   =  1.9270E-11     [cm]
Total Successful Time Steps          =     58628
Total Attempted Time Steps           =     58628
Total Time Step Reductions (DHMAX)   =         0
Total Changes in Surface Boundary    =         0
Total Time Actually Simulated        =  3.6500E+02     [days]


Total water flow (cm) across different depths at the end of 3.6500E+02 days:

    DEPTH        FLOW        DEPTH        FLOW        DEPTH        FLOW
   -------   -----------    -------   -----------    -------   -----------
     0.000   2.8470E-01      0.050   2.8470E-01      0.200   2.8470E-01
     0.450   2.8470E-01      0.850   2.8470E-01      1.550   2.8470E-01
     2.650   2.8470E-01      4.450   2.8470E-01      6.250   2.8470E-01
     7.350   2.8470E-01      8.050   2.8470E-01      8.450   2.8470E-01
     8.700   2.8470E-01      8.850   2.8470E-01      8.950   2.8470E-01
     9.100   2.8470E-01      9.350   2.8470E-01      9.750   2.8470E-01
    10.450   2.8470E-01     12.000   2.8470E-01     14.750   2.8470E-01
    18.950   2.8470E-01     23.150   2.8470E-01     25.900   2.8470E-01
    27.750   2.8470E-01     28.950   2.8470E-01     29.650   2.8470E-01
    30.050   2.8470E-01     30.300   2.8470E-01     30.450   2.8470E-01
    30.550   2.8470E-01     30.700   2.8470E-01     30.950   2.8470E-01
    31.350   2.8470E-01     31.950   2.8470E-01     32.800   2.8470E-01
    34.050   2.8470E-01     35.900   2.8470E-01     38.350   2.8470E-01
    41.200   2.8470E-01     44.200   2.8470E-01     47.200   2.8470E-01
    50.200   2.8470E-01     53.100   2.8470E-01     55.600   2.8470E-01
    57.450   2.8470E-01     58.700   2.8470E-01     59.550   2.8470E-01
    60.150   2.8470E-01     60.550   2.8470E-01     60.800   2.8470E-01
    60.950   2.8470E-01     61.050   2.8470E-01     61.200   2.8470E-01
    61.450   2.8470E-01     61.850   2.8470E-01     62.550   2.8470E-01
    63.750   2.8470E-01     66.000   2.8470E-01     70.000   2.8470E-01
    77.500   2.8470E-01     92.500   2.8470E-01    117.500   2.8470E-01
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157.500	2.8470E-01	227.500	2.8470E-01	342.950	2.8470E-01
458.400	2.8470E-01	528.400	2.8470E-01	568.400	2.8470E-01
593.400	2.8470E-01	608.400	2.8470E-01	615.900	2.8470E-01
619.900	2.8470E-01	622.150	2.8470E-01	623.350	2.8470E-01
624.050	2.8470E-01	624.450	2.8470E-01	624.700	2.8470E-01
624.850	2.8470E-01	624.950	2.8470E-01	625.100	2.8470E-01
625.350	2.8470E-01	625.750	2.8470E-01	626.350	2.8470E-01
627.200	2.8470E-01	628.450	2.8470E-01	630.300	2.8470E-01
633.400	2.8470E-01	638.900	2.8470E-01	648.900	2.8470E-01
661.900	2.8470E-01	671.900	2.8470E-01	677.400	2.8470E-01
680.500	2.8470E-01	682.350	2.8470E-01	683.600	2.8470E-01
684.450	2.8470E-01	685.050	2.8470E-01	685.450	2.8470E-01
685.700	2.8470E-01	685.850	2.8470E-01	685.950	2.8470E-01
686.100	2.8470E-01	686.350	2.8470E-01	686.750	2.8470E-01
687.350	2.8470E-01	688.200	2.8470E-01	689.450	2.8470E-01
691.100	2.8470E-01	694.000	2.8470E-01	699.000	2.8470E-01
707.000	2.8470E-01	719.000	2.8470E-01	736.000	2.8470E-01
760.500	2.8470E-01	796.500	2.8470E-01	850.500	2.8470E-01
904.500	2.8470E-01	940.500	2.8470E-01	965.000	2.8470E-01
982.000	2.8470E-01	994.000	2.8470E-01	1002.000	2.8470E-01
1007.000	2.8470E-01	1009.900	2.8470E-01	1011.550	2.8470E-01
1012.800	2.8470E-01	1013.650	2.8470E-01	1014.250	2.8470E-01
1014.650	2.8470E-01	1014.900	2.8470E-01	1015.050	2.8470E-01
1015.100	2.8470E-01				

UNSAT-H Version 2.05
INITIAL CONDITIONS

Input Filename: C:\Projects\4101L\CAS2007\Unsat07\CAS-59c.inp
Results Filename: C:\Projects\4101L\CAS2007\Unsat07\CAS-59c.res
Date of Run: 06 Dec 2007
Time of Run: 12:45:08.25
Title:
CAS-59c.INP: Class A South cell Unsat flow, frost-prot. side slope, 12"filter,

		Initial Conditions					Initial Conditions		
NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)	NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)
1	0.000E+00	7.057E+00	0.4315	0.00	2	1.000E-01	7.118E+00	0.4315	0.00
3	3.000E-01	7.243E+00	0.4315	0.00	4	6.000E-01	7.433E+00	0.4314	0.00
5	1.100E+00	7.762E+00	0.4314	0.00	6	2.000E+00	8.388E+00	0.4314	0.00
7	3.300E+00	9.376E+00	0.4313	0.00	8	5.600E+00	1.139E+01	0.4311	0.00
9	6.900E+00	1.270E+01	0.4310	0.00	10	7.800E+00	1.368E+01	0.4309	0.00
11	8.300E+00	1.425E+01	0.4308	0.00	12	8.600E+00	1.460E+01	0.4308	0.00
13	8.800E+00	1.484E+01	0.4307	0.00	14	8.900E+00	1.496E+01	0.4307	0.00
15	9.000E+00	1.509E+01	0.4307	0.00	16	9.200E+00	1.533E+01	0.4307	0.00
17	9.500E+00	1.571E+01	0.4307	0.00	18	1.000E+01	1.636E+01	0.4306	0.00
19	1.090E+01	1.759E+01	0.4305	0.00	20	1.310E+01	2.095E+01	0.4301	0.00
21	1.640E+01	2.709E+01	0.4295	0.00	22	2.150E+01	4.001E+01	0.4281	0.00
23	2.480E+01	5.147E+01	0.4269	0.00	24	2.700E+01	6.100E+01	0.4258	0.00
25	2.850E+01	6.862E+01	0.4250	0.00	26	2.940E+01	7.372E+01	0.4244	0.00
27	2.990E+01	7.675E+01	0.4241	0.00	28	3.020E+01	7.864E+01	0.4239	0.00
29	3.040E+01	7.992E+01	0.4237	0.00	30	3.050E+01	8.058E+01	0.4237	0.00
31	3.060E+01	8.065E+01	0.4236	0.00	32	3.080E+01	8.052E+01	0.4237	0.00
33	3.110E+01	8.034E+01	0.4237	0.00	34	3.160E+01	8.002E+01	0.4237	0.00
35	3.230E+01	7.959E+01	0.4238	0.00	36	3.330E+01	7.896E+01	0.4238	0.00
37	3.480E+01	7.801E+01	0.4239	0.00	38	3.700E+01	7.661E+01	0.4241	0.00
39	3.970E+01	7.487E+01	0.4243	0.00	40	4.270E+01	7.291E+01	0.4245	0.00
41	4.570E+01	7.092E+01	0.4247	0.00	42	4.870E+01	6.890E+01	0.4249	0.00
43	5.170E+01	6.685E+01	0.4252	0.00	44	5.450E+01	6.492E+01	0.4254	0.00
45	5.670E+01	6.338E+01	0.4256	0.00	46	5.820E+01	6.233E+01	0.4257	0.00
47	5.920E+01	6.162E+01	0.4257	0.00	48	5.990E+01	6.112E+01	0.4258	0.00
49	6.040E+01	6.076E+01	0.4258	0.00	50	6.070E+01	6.055E+01	0.4259	0.00
51	6.090E+01	6.041E+01	0.4259	0.00	52	6.100E+01	6.033E+01	0.4259	0.00
53	6.110E+01	6.029E+01	0.0659	0.00	54	6.130E+01	6.029E+01	0.0659	0.00
55	6.160E+01	6.029E+01	0.0659	0.00	56	6.210E+01	6.029E+01	0.0659	0.00
57	6.300E+01	6.029E+01	0.0659	0.00	58	6.450E+01	6.029E+01	0.0659	0.00
59	6.750E+01	6.029E+01	0.0659	0.00	60	7.250E+01	6.029E+01	0.0659	0.00
61	8.250E+01	6.029E+01	0.0659	0.00	62	1.025E+02	6.029E+01	0.0659	0.00
63	1.325E+02	6.029E+01	0.0659	0.00	64	1.825E+02	6.029E+01	0.0659	0.00
65	2.725E+02	6.029E+01	0.0659	0.00	66	4.134E+02	6.028E+01	0.0660	0.00
67	5.034E+02	6.030E+01	0.0659	0.00	68	5.534E+02	6.026E+01	0.0660	0.00
69	5.834E+02	6.077E+01	0.0656	0.00	70	6.034E+02	6.419E+01	0.0632	0.00
71	6.134E+02	7.051E+01	0.0593	0.00	72	6.184E+02	7.823E+01	0.0554	0.00
73	6.214E+02	8.768E+01	0.0516	0.00	74	6.229E+02	9.605E+01	0.0488	0.00
75	6.238E+02	1.038E+02	0.0467	0.00	76	6.243E+02	1.098E+02	0.0452	0.00
77	6.246E+02	1.144E+02	0.0442	0.00	78	6.248E+02	1.180E+02	0.0434	0.00
79	6.249E+02	1.200E+02	0.0430	0.00	80	6.250E+02	1.203E+02	0.4194	0.00
81	6.252E+02	1.202E+02	0.4194	0.00	82	6.255E+02	1.201E+02	0.4194	0.00
83	6.260E+02	1.199E+02	0.4194	0.00	84	6.267E+02	1.196E+02	0.4194	0.00
85	6.277E+02	1.192E+02	0.4195	0.00	86	6.292E+02	1.186E+02	0.4195	0.00
87	6.314E+02	1.177E+02	0.4196	0.00	88	6.354E+02	1.160E+02	0.4198	0.00
89	6.424E+02	1.130E+02	0.4201	0.00	90	6.554E+02	1.070E+02	0.4208	0.00
91	6.684E+02	1.006E+02	0.4215	0.00	92	6.754E+02	9.690E+01	0.4219	0.00
93	6.794E+02	9.473E+01	0.4221	0.00	94	6.816E+02	9.352E+01	0.4222	0.00
95	6.831E+02	9.268E+01	0.4223	0.00	96	6.841E+02	9.212E+01	0.4224	0.00
97	6.848E+02	9.173E+01	0.4224	0.00	98	6.853E+02	9.145E+01	0.4225	0.00
99	6.856E+02	9.128E+01	0.4225	0.00	100	6.858E+02	9.117E+01	0.4225	0.00
101	6.859E+02	9.111E+01	0.4225	0.00	102	6.860E+02	9.107E+01	0.0474	0.00
103	6.862E+02	9.107E+01	0.0474	0.00	104	6.865E+02	9.107E+01	0.0474	0.00
105	6.870E+02	9.107E+01	0.0474	0.00	106	6.877E+02	9.107E+01	0.0474	0.00
107	6.887E+02	9.107E+01	0.0474	0.00	108	6.902E+02	9.107E+01	0.0474	0.00
109	6.920E+02	9.107E+01	0.0474	0.00	110	6.960E+02	9.107E+01	0.0474	0.00
111	7.020E+02	9.107E+01	0.0474	0.00	112	7.120E+02	9.107E+01	0.0474	0.00
113	7.260E+02	9.108E+01	0.0474	0.00	114	7.460E+02	9.108E+01	0.0474	0.00
115	7.750E+02	9.113E+01	0.0474	0.00	116	8.180E+02	9.073E+01	0.0476	0.00
117	8.830E+02	9.209E+01	0.0470	0.00	118	9.260E+02	8.199E+01	0.0521	0.00
119	9.550E+02	5.943E+01	0.0715	0.00	120	9.750E+02	4.004E+01	0.1093	0.00
121	9.890E+02	2.609E+01	0.1708	0.00	122	9.990E+02	1.610E+01	0.2495	0.00
123	1.005E+03	1.010E+01	0.3028	0.00	124	1.009E+03	6.100E+00	0.3283	0.00
125	1.011E+03	4.300E+00	0.3350	0.00	126	1.012E+03	2.800E+00	0.3383	0.00
127	1.013E+03	1.800E+00	0.3394	0.00	128	1.014E+03	1.100E+00	0.3398	0.00
129	1.015E+03	6.000E-01	0.3400	0.00	130	1.015E+03	3.000E-01	0.3400	0.00
131	1.015E+03	1.000E-01	0.3400	0.00	132	1.015E+03	0.000E+00	0.3400	0.00

Initial Water Storage = 112.7976 cm

```
DAILY SUMMARY:  Day =   1, Simulated Time = 24.0000 hr
-------------
Node Number        =      25          50          75          100         125
Depth (cm)         =    28.50000    60.70000   623.80000   685.80000  1010.80000
Water (cm3/cm3)    =     0.42498     0.42587     0.04667     0.42250     0.33499
Head (cm)          = 6.86249E+01 6.05491E+01 1.03810E+02 9.11654E+01 4.29985E+00
Water Flow (cm)    = 1.63000E-03 1.63000E-03 1.63000E-03 1.63000E-03 1.63000E-03

 PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN   NEWSTOR          STORAGE
112.7976+ 0.0016+ 0.0000 - 0.0000- 0.0000-  0.0016 =112.7976  Versus 112.7976

Mass Balance = -1.7053E-13 cm;  Time step attempts =  388 and successes =  388

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DAILY SUMMARY:  Day = 365, Simulated Time = 24.0000 hr
-------------
Node Number        =      25          50          75          100         125
Depth (cm)         =    28.50000    60.70000   623.80000   685.80000  1010.80000
Water (cm3/cm3)    =     0.42498     0.42587     0.04667     0.42250     0.33499
Head (cm)          = 6.86249E+01 6.05491E+01 1.03810E+02 9.11654E+01 4.29985E+00
Water Flow (cm)    = 1.63000E-03 1.63000E-03 1.63000E-03 1.63000E-03 1.63000E-03

 PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN   NEWSTOR          STORAGE
112.7976+ 0.0016+ 0.0000 - 0.0000- 0.0000-  0.0016 =112.7976  Versus 112.7976

Mass Balance =  3.4106E-13 cm;  Time step attempts =  160 and successes =  160
1

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                            UNSAT-H Version 2.05
                             SIMULATION SUMMARY

Title:
CAS-59c.INP: Class A South cell Unsat flow, frost-prot. side slope, 12"filter,
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Transpiration Scheme is:           =     0
Potential Evapotranspiration       =  0.0000E+00     [cm]
Potential Transpiration            =  0.0000E+00     [cm]
Actual Transpiration               =  0.0000E+00     [cm]
Potential Evaporation              =  0.0000E+00     [cm]
Actual Evaporation                 =  0.0000E+00     [cm]
Evaporation during Growth          =  0.0000E+00     [cm]
Total Runoff                       =  0.0000E+00     [cm]
Total Infiltration                 =  5.9495E-01     [cm]
Total Drainage at Base of Profile  =  5.9495E-01     [cm]
Total Applied Water                =  5.9495E-01     [cm]
Actual Rainfall                    =  5.9495E-01     [cm]
Actual Irrigation                  =  0.0000E+00     [cm]
Total Final Moisture Storage       =  1.1280E+02     [cm]
Mass Balance Error                 =  1.1021E-10     [cm]
Total Successful Time Steps        =     58628
Total Attempted Time Steps         =     58628
Total Time Step Reductions (DHMAX) =         0
Total Changes in Surface Boundary  =         0
Total Time Actually Simulated      =  3.6500E+02     [days]


Total water flow (cm) across different depths at the end of 3.6500E+02 days:

    DEPTH        FLOW         DEPTH        FLOW         DEPTH        FLOW
   -------    -----------    -------    -----------    -------    -----------
     0.000    5.9495E-01      0.050     5.9495E-01      0.200     5.9495E-01
     0.450    5.9495E-01      0.850     5.9495E-01      1.550     5.9495E-01
     2.650    5.9495E-01      4.450     5.9495E-01      6.250     5.9495E-01
     7.350    5.9495E-01      8.050     5.9495E-01      8.450     5.9495E-01
     8.700    5.9495E-01      8.850     5.9495E-01      8.950     5.9495E-01
     9.100    5.9495E-01      9.350     5.9495E-01      9.750     5.9495E-01
    10.450    5.9495E-01     12.000     5.9495E-01     14.750     5.9495E-01
    18.950    5.9495E-01     23.150     5.9495E-01     25.900     5.9495E-01
    27.750    5.9495E-01     28.950     5.9495E-01     29.650     5.9495E-01
    30.050    5.9495E-01     30.300     5.9495E-01     30.450     5.9495E-01
    30.550    5.9495E-01     30.700     5.9495E-01     30.950     5.9495E-01
    31.350    5.9495E-01     31.950     5.9495E-01     32.800     5.9495E-01
    34.050    5.9495E-01     35.900     5.9495E-01     38.350     5.9495E-01
    41.200    5.9495E-01     44.200     5.9495E-01     47.200     5.9495E-01
    50.200    5.9495E-01     53.100     5.9495E-01     55.600     5.9495E-01
    57.450    5.9495E-01     58.700     5.9495E-01     59.550     5.9495E-01
    60.150    5.9495E-01     60.550     5.9495E-01     60.800     5.9495E-01
    60.950    5.9495E-01     61.050     5.9495E-01     61.200     5.9495E-01
    61.450    5.9495E-01     61.850     5.9495E-01     62.550     5.9495E-01
    63.750    5.9495E-01     66.000     5.9495E-01     70.000     5.9495E-01
    77.500    5.9495E-01     92.500     5.9495E-01    117.500     5.9495E-01
```

157.500	5.9495E-01	227.500	5.9495E-01	342.950	5.9495E-01
458.400	5.9495E-01	528.400	5.9495E-01	568.400	5.9495E-01
593.400	5.9495E-01	608.400	5.9495E-01	615.900	5.9495E-01
619.900	5.9495E-01	622.150	5.9495E-01	623.350	5.9495E-01
624.050	5.9495E-01	624.450	5.9495E-01	624.700	5.9495E-01
624.850	5.9495E-01	624.950	5.9495E-01	625.100	5.9495E-01
625.350	5.9495E-01	625.750	5.9495E-01	626.350	5.9495E-01
627.200	5.9495E-01	628.450	5.9495E-01	630.300	5.9495E-01
633.400	5.9495E-01	638.900	5.9495E-01	648.900	5.9495E-01
661.900	5.9495E-01	671.900	5.9495E-01	677.400	5.9495E-01
680.500	5.9495E-01	682.350	5.9495E-01	683.600	5.9495E-01
684.450	5.9495E-01	685.050	5.9495E-01	685.450	5.9495E-01
685.700	5.9495E-01	685.850	5.9495E-01	685.950	5.9495E-01
686.100	5.9495E-01	686.350	5.9495E-01	686.750	5.9495E-01
687.350	5.9495E-01	688.200	5.9495E-01	689.450	5.9495E-01
691.100	5.9495E-01	694.000	5.9495E-01	699.000	5.9495E-01
707.000	5.9495E-01	719.000	5.9495E-01	736.000	5.9495E-01
760.500	5.9495E-01	796.500	5.9495E-01	850.500	5.9495E-01
904.500	5.9495E-01	940.500	5.9495E-01	965.000	5.9495E-01
982.000	5.9495E-01	994.000	5.9495E-01	1002.000	5.9495E-01
1007.000	5.9495E-01	1009.900	5.9495E-01	1011.550	5.9495E-01
1012.800	5.9495E-01	1013.650	5.9495E-01	1014.250	5.9495E-01
1014.650	5.9495E-01	1014.900	5.9495E-01	1015.050	5.9495E-01
1015.100	5.9495E-01				

ATTACHMENT 3
ENERGY*SOLUTIONS*
CLASS A SOUTH CELL
PATHRAE MODEL FILES

Prepared for

Energy*Solutions,* LLC
423 West 300 South, Suite 200
Salt Lake City, UT 84101

Prepared by

Whetstone Associates, Inc.
714 S. Oak Street
P.O. Box 1156
La Veta, Colorado 81055-1156
719-742-5155

Document 4101L.071207

December 2007

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PATHRAE-RAD(PC)  Version 2.2d  February 1995
  Date: 12- 6-2007
  Time: 19: 2:53
EnergySolutions Class A South cell top slope, vertical/vadose, part 1, T27a
***** Mirror Image of Input Files *****
-- Input File:  ABCDEF.DAT
EnergySolutions Class A South cell top slope, vertical/vadose, part 1, T27a
118,1.,3.,6.,9.,12.,15.,18.,21.,24.,27.,30.,35.,40.,45.,50.,55.,60.,65.,70.,75.,80.,85.,90.,95.,100.,105.,110.,115.,120.,125.,130.,1
65,0,1
1,2
0,1.,1.,2.76E-03,2.76E-03,3.64,0
1558.,0.100,0,0,0.307,3.34E-02,97.4,0
1,0,0,0,0,0
0,1.,1.,3.64,0,1800.,1.,0,0,0
0,0,0,0.0,1.
0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0
0,0,0,1,0,0,1
1,0,1,0
0.00276,0.025,0.109,0,0,1.,0,1.,0,0.355

-- Input File:  BRCDCF.DAT
101,Ac-227   0,0,0,0,0,0,0
102,Ag-108m  0,0,0,0,0,0,0
103,Al-26    0,0,0,0,0,0,0
48,Am-241    0,0,0,0,0,0,0
104,Am-242m  0,0,0,0,0,0,0
105,Am-243   0,0,0,0,0,0,0
106,Ba-133   0,0,0,0,0,0,0
107,Be-10    0,0,0,0,0,0,0
108,Bi-207   0,0,0,0,0,0,0
109,Bi-210m  0,0,0,0,0,0,0
110,Bk-247   0,0,0,0,0,0,0
111,C-14     0,0,0,0,0,0,0
112,Ca-41    0,0,0,0,0,0,0
113,Cd-113   0,0,0,0,0,0,0
114,Cd-113m  0,0,0,0,0,0,0
115,Cf-249   0,0,0,0,0,0,0
116,Cf-250   0,0,0,0,0,0,0
117,Cf-251   0,0,0,0,0,0,0
118,Cf-252   0,0,0,0,0,0,0
119,Cl-36    0,0,0,0,0,0,0
120,Cm-243   0,0,0,0,0,0,0
50,Cm-244    0,0,0,0,0,0,0
121,Cm-245   0,0,0,0,0,0,0
122,Cm-246   0,0,0,0,0,0,0
123,Cm-247   0,0,0,0,0,0,0
124,Cm-248   0,0,0,0,0,0,0
125,Co-60    0,0,0,0,0,0,0
126,Cs-135   0,0,0,0,0,0,0
127,Cs-137   0,0,0,0,0,0,0
128,Eu-152   0,0,0,0,0,0,0
129,Eu-154   0,0,0,0,0,0,0
130,Eu-155   0,0,0,0,0,0,0
131,Fe-55    0,0,0,0,0,0,0
132,Fe-60    0,0,0,0,0,0,0
133,Gd-148   0,0,0,0,0,0,0
134,H-3      0,0,0,0,0,0,0
135,Hg-194   0,0,0,0,0,0,0
136,Ho-166m  0,0,0,0,0,0,0
137,I-129    0,0,0,0,0,0,0
138,K-40     0,0,0,0,0,0,0
139,Mn-53    0,0,0,0,0,0,0
140,Na-22    0,0,0,0,0,0,0
141,Nb-91    0,0,0,0,0,0,0
142,Nb-92    0,0,0,0,0,0,0
143,Nb-93m   0,0,0,0,0,0,0
144,Nb-94    0,0,0,0,0,0,0
146,Ni-59    0,0,0,0,0,0,0
147,Ni-63    0,0,0,0,0,0,0
42,Np-237    0,0,0,0,0,0,0
148,Os-194   0,0,0,0,0,0,0
149,Pa-231   0,0,0,0,0,0,0
150,Pb-202   0,0,0,0,0,0,0
151,Pb-210   0,0,0,0,0,0,0
152,Pd-107   0,0,0,0,0,0,0
153,Pm-145   0,0,0,0,0,0,0
154,Pm-147   0,0,0,0,0,0,0
155,Po-208   0,0,0,0,0,0,0
156,Po-209   0,0,0,0,0,0,0
157,Pt-193   0,0,0,0,0,0,0
45,Pu-240    0,0,0,0,0,0,0
46,Pu-241    0,0,0,0,0,0,0
55,Ra-226    0,0,0,0,0,0,0
36,Th-230    0,0,0,0,0,0,0
40,U-236     0,0,0,0,0,0,0
41,U-238     0,0,0,0,0,0,0
-- Input File:  INVNTRY.DAT
101,2.18E+01,1.30E+08,0,0,0,0,0
102,4.18E+02,4.69E+07,0,0,0,0,0
103,7.40E+05,3.72E-02,0,0,0,0,0
48,4.32E+02,1.80E-02,0,0,0,0,0
104,1.41E+02,1.80E-02,0,0,0,0,0
105,7.37E+03,1.80E-02,0,0,0,0,0
106,1.05E+01,4.61E+08,0,0,0,0,0
107,1.51E+06,3.96E+04,0,0,0,0,0
108,3.16E+01,9.66E+07,0,0,0,0,0
109,3.04E+06,1.02E+03,0,0,0,0,0
110,1.40E+03,1.77E-10,0,0,0,0,0
111,5.73E+03,1.30E+01,0,0,0,0,0
112,1.03E+05,3.70E-06,0,0,0,0,0
113,9.30E+15,7.75E-07,0,0,0,0,0
114,1.41E+01,4.04E+08,0,0,0,0,0
115,3.51E+02,1.80E-02,0,0,0,0,0
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116,1.31E+01,9.00E-04,0,0,0,0,0
117,8.98E+02,1.80E-02,0,0,0,0,0
118,2.65E+00,7.92E+02,0,0,0,0,0
119,3.01E+05,5.14E-07,0,0,0,0,0
120,2.91E+01,1.80E-02,0,0,0,0,0
50,1.81E+01,1.80E-02,0,0,0,0,0
121,8.50E+03,1.80E-02,0,0,0,0,0
122,4.73E+03,1.80E-02,0,0,0,0,0
123,1.56E+07,1.80E-02,0,0,0,0,0
124,3.40E+05,1.80E-02,0,0,0,0,0
125,5.27E+00,7.92E+02,0,0,0,0,0
126,2.30E+06,2.07E+03,0,0,0,0,0
127,3.01E+01,1.13E+00,0,0,0,0,0
128,1.35E+01,3.11E+08,0,0,0,0,0
129,8.59E+00,4.87E+08,0,0,0,0,0
130,4.76E+00,7.92E+02,0,0,0,0,0
131,2.73E+00,7.92E+02,0,0,0,0,0
132,1.50E+06,7.15E+03,0,0,0,0,0
133,7.46E+01,5.80E+07,0,0,0,0,0
134,1.23E+01,4.50E+01,0,0,0,0,0
135,4.44E+02,6.38E+06,0,0,0,0,0
136,1.20E+03,3.24E+06,0,0,0,0,0
137,1.57E+07,9.00E-03,0,0,0,0,0
138,1.28E+09,1.26E+01,0,0,0,0,0
139,3.74E+06,3.24E+03,0,0,0,0,0
140,2.60E+00,7.92E+02,0,0,0,0,0
141,6.80E+02,1.04E+07,0,0,0,0,0
142,3.47E+07,2.02E+02,0,0,0,0,0
143,1.61E+01,4.74E+08,0,0,0,0,0
144,2.03E+04,2.34E-02,0,0,0,0,0
146,7.60E+04,2.52E+01,0,0,0,0,0
147,1.00E+02,3.96E+00,0,0,0,0,0
42,2.14E+06,1.80E-02,0,0,0,0,0
148,6.00E+00,5.53E+08,0,0,0,0,0
149,3.28E+04,8.46E+04,0,0,0,0,0
150,5.25E+04,6.12E+03,0,0,0,0,0
151,2.23E+01,1.37E+08,0,0,0,0,0
152,6.50E+06,9.18E+02,0,0,0,0,0
153,1.77E+01,2.52E+08,0,0,0,0,0
154,2.62E+00,7.92E+02,0,0,0,0,0
155,2.90E+00,7.92E+02,0,0,0,0,0
156,1.02E+02,3.02E+07,0,0,0,0,0
157,5.00E+01,6.66E+07,0,0,0,0,0
55,1.60E+03,1.80E-02,0,0,0,0,0
45,6.56E+03,1.80E-02,0,0,0,0,0
46,1.44E+01,6.30E-01,0,0,0,0,0
36,7.54E+04,3.71E+04,0,0,0,0,0
40,2.34E+07,1.16E+02,0,0,0,0,0
41,4.47E+09,6.05E-01,0,0,0,0,0
-- Input File:  RQSITE.DAT
101,3.38E-04,4.5,4.5
102,5.61E-04,2.7,2.7
103,1.02E-04,15.0,15.0
48,1.48E-03,1.0,1.0
104,1.48E-03,1.0,1.0
105,1.48E-03,1.0,1.0
106,1.53E-04,10.0,10.0
107,6.05E-04,2.5,2.5
108,1.48E-03,1.0,1.0
109,1.48E-03,1.0,1.0
110,4.54E-02,0.001,0.001
111,1.79E-04,8.52,8.52
112,1.85E-02,0.05,0.05
113,1.48E-03,1.0,1.0
114,1.48E-03,1.0,1.0
115,7.54E-04,2.0,2.0
116,7.54E-04,2.0,2.0
117,7.54E-04,2.0,2.0
118,7.54E-04,2.0,2.0
119,4.35E-02,0.0025,0.0025
120,1.64E-05,93.3,93.3
50,1.64E-05,93.3,93.3
121,1.64E-05,93.3,93.3
122,1.64E-05,93.3,93.3
123,1.64E-05,93.3,93.3
124,1.64E-05,93.3,93.3
125,4.14E-06,370.0,370.0
126,1.15E-05,133.0,133.0
127,1.15E-05,133.0,133.0
128,2.35E-04,6.5,6.5
129,2.35E-04,6.5,6.5
130,2.35E-04,6.5,6.5
131,1.07E-03,1.4,1.4
132,1.07E-03,1.4,1.4
133,2.35E-04,6.5,6.5
134,2.11E-02,0.04,0.04
135,1.53E-04,10.0,10.0
136,6.05E-04,2.5,2.5
137,1.00E-02,0.12,0.12
138,8.39E-03,0.15,0.15
139,2.38E-04,6.4,6.4
140,1.48E-03,1.0,1.0
141,9.39E-04,1.6,1.6
142,9.39E-04,1.6,1.6
143,9.39E-04,1.6,1.6
144,9.39E-04,1.6,1.6
146,1.53E-04,10.0,10.0
147,1.53E-04,10.0,10.0
42,5.06E-04,3.0,3.0
148,3.38E-04,4.5,4.5
149,2.77E-04,5.5,5.5
150,8.06E-05,19.0,19.0
151,8.06E-05,19.0,19.0
152,2.63E-03,0.55,0.55
153,2.35E-04,6.5,6.5
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154,2.35E-04,6.5,6.5
155,1.70E-04,9.0,9.0
156,1.70E-04,9.0,9.0
157,1.64E-03,0.9,0.9
45,1.53E-04,10.0,10.0
46,1.53E-04,10.0,10.0
55,1.53E-04,9.99,9.99
36,1.53E-04,10.0,10.0
40,2.54E-04,6.0,6.0
41,2.54E-04,6.0,6.0

-- Input File:  UPTAKE.DAT
2.76E-03,3.55E-01,1.558
0,0,0,0,0
0,0,0
0,0,0,0
0,0,0,0,0
0,0,0,0,0,730.,0
101,0.00E+00,0.0,0.0,0,0,0,0
102,0.00E+00,0.0,0.0,0,0,0,0
103,0.00E+00,0.0,0.0,0,0,0,0
48,0.00E+00,0.0,0.0,0,0,0,0
104,0.00E+00,0.0,0.0,0,0,0,0
105,0.00E+00,0.0,0.0,0,0,0,0
106,0.00E+00,0.0,0.0,0,0,0,0
107,0.00E+00,0.0,0.0,0,0,0,0
108,0.00E+00,0.0,0.0,0,0,0,0
109,0.00E+00,0.0,0.0,0,0,0,0
110,0.00E+00,0.0,0.0,0,0,0,0
111,0.00E+00,0.0,0.0,0,0,0,0
112,0.00E+00,0.0,0.0,0,0,0,0
113,0.00E+00,0.0,0.0,0,0,0,0
114,0.00E+00,0.0,0.0,0,0,0,0
115,0.00E+00,0.0,0.0,0,0,0,0
116,0.00E+00,0.0,0.0,0,0,0,0
117,0.00E+00,0.0,0.0,0,0,0,0
118,0.00E+00,0.0,0.0,0,0,0,0
119,0.00E+00,0.0,0.0,0,0,0,0
120,0.00E+00,0.0,0.0,0,0,0,0
50,0.00E+00,0.0,0.0,0,0,0,0
121,0.00E+00,0.0,0.0,0,0,0,0
122,0.00E+00,0.0,0.0,0,0,0,0
123,0.00E+00,0.0,0.0,0,0,0,0
124,0.00E+00,0.0,0.0,0,0,0,0
125,0.00E+00,0.0,0.0,0,0,0,0
126,0.00E+00,0.0,0.0,0,0,0,0
127,0.00E+00,0.0,0.0,0,0,0,0
128,0.00E+00,0.0,0.0,0,0,0,0
129,0.00E+00,0.0,0.0,0,0,0,0
130,0.00E+00,0.0,0.0,0,0,0,0
131,0.00E+00,0.0,0.0,0,0,0,0
132,0.00E+00,0.0,0.0,0,0,0,0
133,0.00E+00,0.0,0.0,0,0,0,0
134,0.00E+00,0.0,0.0,0,0,0,0
135,0.00E+00,0.0,0.0,0,0,0,0
136,0.00E+00,0.0,0.0,0,0,0,0
137,0.00E+00,0.0,0.0,0,0,0,0
138,0.00E+00,0.0,0.0,0,0,0,0
139,0.00E+00,0.0,0.0,0,0,0,0
140,0.00E+00,0.0,0.0,0,0,0,0
141,0.00E+00,0.0,0.0,0,0,0,0
142,0.00E+00,0.0,0.0,0,0,0,0
143,0.00E+00,0.0,0.0,0,0,0,0
144,0.00E+00,0.0,0.0,0,0,0,0
146,0.00E+00,0.0,0.0,0,0,0,0
147,0.00E+00,0.0,0.0,0,0,0,0
42,0.00E+00,0.0,0.0,0,0,0,0
148,0.00E+00,0.0,0.0,0,0,0,0
149,0.00E+00,0.0,0.0,0,0,0,0
150,0.00E+00,0.0,0.0,0,0,0,0
151,0.00E+00,0.0,0.0,0,0,0,0
152,0.00E+00,0.0,0.0,0,0,0,0
153,0.00E+00,0.0,0.0,0,0,0,0
154,0.00E+00,0.0,0.0,0,0,0,0
155,0.00E+00,0.0,0.0,0,0,0,0
156,0.00E+00,0.0,0.0,0,0,0,0
157,0.00E+00,0.0,0.0,0,0,0,0
45,0.00E+00,0.0,0.0,0,0,0,0
46,0.00E+00,0.0,0.0,0,0,0,0
55,0.00E+00,0.0,0.0,0,0,0,0
36,0.00E+00,0.0,0.0,0,0,0,0
40,0.00E+00,0.0,0.0,0,0,0,0
41,0.00E+00,0.0,0.0,0,0,0,0
1
                        TOTAL EQUIVALENT UPTAKE FACTORS FOR PATHRAE
               UT(J,1)   UT(J,2)   UT(J,3)   UT(J,4)   UT(J,5)   UT(J,6)
               RIVER     WELL      EROSION   BATHTUB   SPILLAGE  FOOD
NUCLIDE        L/YR      L/YR      L/YR      L/YR      L/YR      KG/YR
  Ac-227      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Ag-108m     0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
•
•
•
  Po-209      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Pt-193      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
**********  PATHRAE INPUT SUMMARY  **********
THERE ARE 80 ISOTOPES IN THE DOSE FACTOR LIBRARY
NUMBER OF TIMES FOR CALCULATION IS118
YEARS TO BE CALCULATED ARE ...
     1.00     3.00     6.00     9.00    12.00
    15.00    18.00    21.00    24.00    27.00
    30.00    35.00    40.00    45.00    50.00
    55.00    60.00    65.00    70.00    75.00
    80.00    85.00    90.00    95.00   100.00
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     105.00   110.00   115.00   120.00   125.00
     130.00   135.00   140.00   145.00   150.00
     155.00   160.00   165.00   170.00   175.00
     180.00   185.00   190.00   195.00   200.00
     205.00   210.00   215.00   220.00   225.00
     230.00   235.00   240.00   245.00   250.00
     255.00   260.00   265.00   270.00   275.00
     280.00   285.00   290.00   295.00   300.00
     310.00   320.00   330.00   340.00   350.00
     360.00   370.00   380.00   390.00   400.00
     410.00   420.00   430.00   440.00   450.00
     460.00   470.00   480.00   490.00   500.00
     510.00   520.00   530.00   540.00   550.00
     560.00   570.00   580.00   590.00   600.00
     610.00   620.00   630.00   640.00   650.00
     660.00   670.00   680.00   690.00   700.00
     720.00   740.00   760.00   780.00   800.00
     825.00   850.00   875.00   900.00   925.00
     950.00   975.00  1000.00
THERE ARE  65 ISOTOPES IN THE INVENTORY FILE
THE VALUE OF IFLAG IS 0
NUMBER OF PATHWAYS IS  1
           PATHWAY                TYPE OF USAGE
                                FOR UPTAKE FACTORS
   1  GROUNDWATER TO RIVER              2
TIME OF OPERATION OF WASTE FACILITY IN YEARS                       0.
LENGTH OF REPOSITORY (M)                                           1.
WIDTH OF REPOSITORY (M)                                            1.
RIVER FLOW RATE (M**3/YR)                                          2.76E-03
STREAM FLOW RATE (M**3/YR)                                         2.76E-03
DISTANCE TO RIVER (M)                                              4.
OPERATIONAL SPILLAGE FRACTION                                      0.00E+00
DENSITY OF AQUIFER (KG/M**3)                                    1558.
LONGITUDINAL DISPERSIVITY (M)                                      1.00E-01
LATERAL DISPERSION COEFFICIENT -- Y AXIS (M**2/YR)                 0.00E+00
NUMBER OF MESH POINTS FOR DISPERSION CALCULATION                   1
FLAG FOR GAMMA PATHWAY OPTIONS                                     0
FLAG FOR GAMMA BUILDUP CALCULATION                                 0
FLAG FOR ATMOSPHERIC PATHWAY                                       0
COVER THICKNESS OVER WASTE (M)                                      .00
THICKNESS OF WASTE IN PITS (M)                                     1.00
TOTAL WASTE VOLUME (M**3)                                          1.000E+00
DISTANCE TO WELL -- X COORDINATE (M)                               4.
DISTANCE TO WELL -- Y COORDINATE (M)                               0.
DENSITY OF WASTE (KG/M**3)                                      1800.
FRACTION OF FOOD CONSUMED THAT IS GROWN ON SITE                    1.000
FRACTION OF YEAR SPENT IN DIRECT RADIATION FIELD                    .000
DEPTH OF PLANT ROOT ZONE (M)                                        .000
AREAL DENSITY OF PLANTS (KG/M**2)                                   .000
AVERAGE DUST LOADING IN AIR (KG/M**3)                              0.00E+00
ANNUAL ADULT BREATHING RATE (M**3/YR)                              0.
FRACTION OF YEAR EXPOSED TO DUST                                    .000
CANISTER LIFETIME (YEARS)                                          0.
INVENTORY SCALING FACTOR                                           1.00E+00
HEIGHT OF ROOMS IN RECLAIMER HOUSE (CM)                            0.
AIR CHANGE RATE IN RECLAIMER HOUSE (CHANGES/SEC)                   0.00E+00
RADON EMANATING POWER OF THE WASTE                                 0.00E+00

DIFFUSION COEFF. OF RADON IN WASTE (CM**2/SEC)                     0.00E+00
DIFFUSION COEFF. OF RN IN CONCRETE (CM**2/SEC)                     0.00E+00
THICKNESS OF CONCRETE SLAB FLOOR (CM)                               .0
DIFFUSION COEFF. OF RADON IN COVER (CM**2/SEC)                     0.00E+00
ATMOSPHERIC STABILITY CLASS                                        0
AVERAGE WIND SPEED (M/S)                                            .00
FRACTION OF TIME WIND BLOWS TOWARD RECEPTOR                         .0000
RECEPTOR DISTANCE FOR ATMOSPHERIC PATHWAY (M)                       .0
DUST RESUSPENSION RATE FOR OFFSITE TRANSPORT (M**3/S)              0.00E+00
DEPOSITION VELOCITY (M/S)                                           .0000
STACK HEIGHT (M)                                                    .0
STACK INSIDE DIAMETER (M)                                           .00
STACK GAS VELOCITY (M/S)                                            .0
HEAT EMISSION RATE FROM BURNING (CAL/S)                            0.00E+00
DECAY CHAIN FLAGS                          0   0   0   1   0   0   1
FLAG FOR INPUT SUMMARY PRINTOUT                                    1
FLAG FOR DIRECTION OF TRENCH FILLING                               1
FLAG FOR GROUNDWATER PATHWAY OPTIONS                               0
AMOUNT OF WATER PERCOLATING THROUGH WASTE ANNUALLY (M)             2.76E-03
DEGREE OF SOIL SATURATION                                           .307
RESIDUAL SOIL SATURATION                                            .033
PERMEABILITY OF VERTICAL ZONE (M/YR)                              97.40
SOIL NUMBER                                                         .000
POROSITY OF AQUIFER                                                 .11
POROSITY OF UNSATURATED ZONE                                        .36
DISTANCE FROM AQUIFER TO WASTE (M)                                  .0
AVERAGE VERTICAL GROUNDWATER VELOCITY (M/YR)                       2.53E-02
HORIZONTAL VELOCITY OF AQUIFER (M/YR)                               .0
LENGTH OF PERFORATED WELL CASING (M)                               1.000
SURFACE EROSION RATE (M/YR)                                        0.000E+00
LEACH RATE SCALING FACTOR                                          1.000E+00
ANNUAL RUNOFF OF PRECIPITATION (M)                                 0.00E+00
                     INGESTION       INHALATION      DIRECT GAMMA
                   DOSE FACTORS     DOSE FACTORS     DOSE FACTORS        HALF
  NUCLIDE           (MREM/PCI)       (MREM/PCI)    (MREM-M2/PCI-YR)    LIFE (YR)
   Ac-227           0.000E+00        0.000E+00        0.000E+00        2.180E+01
   Ag-108m          0.000E+00        0.000E+00        0.000E+00        4.180E+02
   Al-26            0.000E+00        0.000E+00        0.000E+00        7.400E+05
   Am-242m          0.000E+00        0.000E+00        0.000E+00        1.410E+02
   Am-243           0.000E+00        0.000E+00        0.000E+00        7.370E+03
   Ba-133           0.000E+00        0.000E+00        0.000E+00        1.050E+01
   Be-10            0.000E+00        0.000E+00        0.000E+00        1.510E+06
   Bi-207           0.000E+00        0.000E+00        0.000E+00        3.160E+01
   Bi-210m          0.000E+00        0.000E+00        0.000E+00        3.040E+06
   Bk-247           0.000E+00        0.000E+00        0.000E+00        1.400E+03
   C-14             0.000E+00        0.000E+00        0.000E+00        5.730E+03
   Ca-41            0.000E+00        0.000E+00        0.000E+00        1.030E+05
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Cd-113	0.000E+00	0.000E+00	0.000E+00	9.300E+15
Cd-113m	0.000E+00	0.000E+00	0.000E+00	1.410E+01
Cf-249	0.000E+00	0.000E+00	0.000E+00	3.510E+02
Cf-250	0.000E+00	0.000E+00	0.000E+00	1.310E+01
Cf-251	0.000E+00	0.000E+00	0.000E+00	8.980E+02
Cf-252	0.000E+00	0.000E+00	0.000E+00	2.650E+00
Cl-36	0.000E+00	0.000E+00	0.000E+00	3.010E+05
Cm-243	0.000E+00	0.000E+00	0.000E+00	2.910E+01
Cm-245	0.000E+00	0.000E+00	0.000E+00	8.500E+03
Cm-246	0.000E+00	0.000E+00	0.000E+00	4.730E+03
Cm-247	0.000E+00	0.000E+00	0.000E+00	1.560E+07
Cm-248	0.000E+00	0.000E+00	0.000E+00	3.400E+05
Co-60	0.000E+00	0.000E+00	0.000E+00	5.270E+00
Cs-135	0.000E+00	0.000E+00	0.000E+00	2.300E+06
Cs-137	0.000E+00	0.000E+00	0.000E+00	3.010E+01
Eu-152	0.000E+00	0.000E+00	0.000E+00	1.350E+01
Eu-154	0.000E+00	0.000E+00	0.000E+00	8.590E+00
Eu-155	0.000E+00	0.000E+00	0.000E+00	4.760E+00
Fe-55	0.000E+00	0.000E+00	0.000E+00	2.730E+00
Fe-60	0.000E+00	0.000E+00	0.000E+00	1.500E+06
Gd-148	0.000E+00	0.000E+00	0.000E+00	7.460E+01
H-3	0.000E+00	0.000E+00	0.000E+00	1.230E+01
Hg-194	0.000E+00	0.000E+00	0.000E+00	4.440E+02
Th-230	0.000E+00	0.000E+00	0.000E+00	7.540E+04
U-236	0.000E+00	0.000E+00	0.000E+00	2.340E+07
U-238	0.000E+00	0.000E+00	0.000E+00	4.470E+09
Np-237	0.000E+00	0.000E+00	0.000E+00	2.140E+06
Pu-240	0.000E+00	0.000E+00	0.000E+00	6.560E+03
Pu-241	0.000E+00	0.000E+00	0.000E+00	1.440E+01
Am-241	0.000E+00	0.000E+00	0.000E+00	4.320E+02
Cm-244	0.000E+00	0.000E+00	0.000E+00	1.810E+01
Ra-226	0.000E+00	0.000E+00	0.000E+00	1.600E+03
Ho-166m	0.000E+00	0.000E+00	0.000E+00	1.200E+03
I-129	0.000E+00	0.000E+00	0.000E+00	1.570E+07
K-40	0.000E+00	0.000E+00	0.000E+00	1.280E+09
Mn-53	0.000E+00	0.000E+00	0.000E+00	3.740E+06
Na-22	0.000E+00	0.000E+00	0.000E+00	2.600E+00
Nb-91	0.000E+00	0.000E+00	0.000E+00	6.800E+02
Nb-92	0.000E+00	0.000E+00	0.000E+00	3.470E+07
Nb-93m	0.000E+00	0.000E+00	0.000E+00	1.610E+01
Nb-94	0.000E+00	0.000E+00	0.000E+00	2.030E+04
Ni-59	0.000E+00	0.000E+00	0.000E+00	7.600E+04
Ni-63	0.000E+00	0.000E+00	0.000E+00	1.000E+02
Os-194	0.000E+00	0.000E+00	0.000E+00	6.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	3.280E+04
Pb-202	0.000E+00	0.000E+00	0.000E+00	5.250E+04
Pb-210	0.000E+00	0.000E+00	0.000E+00	2.230E+01
Pd-107	0.000E+00	0.000E+00	0.000E+00	6.500E+06
Pm-145	0.000E+00	0.000E+00	0.000E+00	1.770E+01
Pm-147	0.000E+00	0.000E+00	0.000E+00	2.620E+00
Po-208	0.000E+00	0.000E+00	0.000E+00	2.900E+00
Po-209	0.000E+00	0.000E+00	0.000E+00	1.020E+02
Pt-193	0.000E+00	0.000E+00	0.000E+00	5.000E+01

NUCLIDE	VOLATILITY FRACTION	GAMMA ENERGY (MEV)	GAMMA ATTENUATION (1/M)
Ac-227	0.000E+00	0.000E+00	0.000E+00
Ag-108m	0.000E+00	0.000E+00	0.000E+00
•			
•			
•			
Po-209	0.000E+00	0.000E+00	0.000E+00
Pt-193	0.000E+00	0.000E+00	0.000E+00

NUCLIDE	INPUT LEACH RATE (1/YR)	FINAL LEACH RATE (1/YR)	SOLUBILITY (MOLE/L)	INPUT INVENTORY (CI)
Ac-227	3.380E-04	3.380E-04	0.000E+00	1.300E+08
Ag-108m	5.610E-04	5.610E-04	0.000E+00	4.690E+07
Al-26	1.020E-04	1.020E-04	0.000E+00	3.720E-02
Am-242m	1.480E-03	1.480E-03	0.000E+00	1.800E-02
Am-243	1.480E-03	1.480E-03	0.000E+00	1.800E-02
Ba-133	1.530E-04	1.530E-04	0.000E+00	4.610E+08
Be-10	6.050E-04	6.050E-04	0.000E+00	3.960E+04
Bi-207	1.480E-03	1.480E-03	0.000E+00	9.660E+07
Bi-210m	1.480E-03	1.480E-03	0.000E+00	1.020E+03
Bk-247	4.540E-02	4.540E-02	0.000E+00	1.770E-10
C-14	1.790E-04	1.790E-04	0.000E+00	1.300E+01
Ca-41	1.850E-02	1.850E-02	0.000E+00	3.700E-06
Cd-113	1.480E-03	1.480E-03	0.000E+00	7.750E-07
Cd-113m	1.480E-03	1.480E-03	0.000E+00	4.040E+08
Cf-249	7.540E-04	7.540E-04	0.000E+00	1.800E-02
Cf-250	7.540E-04	7.540E-04	0.000E+00	9.000E-04
Cf-251	7.540E-04	7.540E-04	0.000E+00	1.800E-02
Cf-252	7.540E-04	7.540E-04	0.000E+00	7.920E+02
Cl-36	4.350E-02	4.350E-02	0.000E+00	5.140E-07
Cm-243	1.640E-05	1.640E-05	0.000E+00	1.800E-02
Cm-245	1.640E-05	1.640E-05	0.000E+00	1.800E-02
Cm-246	1.640E-05	1.640E-05	0.000E+00	1.800E-02
Cm-247	1.640E-05	1.640E-05	0.000E+00	1.800E-02
Cm-248	1.640E-05	1.640E-05	0.000E+00	1.800E-02
Co-60	4.140E-06	4.140E-06	0.000E+00	7.920E+02
Cs-135	1.150E-05	1.150E-05	0.000E+00	2.070E+03
Cs-137	1.150E-05	1.150E-05	0.000E+00	1.130E+00
Eu-152	2.350E-04	2.350E-04	0.000E+00	3.110E+08
Eu-154	2.350E-04	2.350E-04	0.000E+00	4.870E+08
Eu-155	2.350E-04	2.350E-04	0.000E+00	7.920E+02
Fe-55	1.070E-03	1.070E-03	0.000E+00	7.920E+02
Fe-60	1.070E-03	1.070E-03	0.000E+00	7.150E+03
Gd-148	2.350E-04	2.350E-04	0.000E+00	5.800E+07
H-3	2.110E-02	2.110E-02	0.000E+00	4.500E+01
Hg-194	1.530E-04	1.530E-04	0.000E+00	6.380E+06
Th-230	1.530E-04	1.530E-04	0.000E+00	3.710E+04
U-236	2.540E-04	2.540E-04	0.000E+00	1.160E+02
U-238	2.540E-04	2.540E-04	0.000E+00	6.050E-01

Np-237	5.060E-04	5.060E-04	0.000E+00	1.800E-02
Pu-240	1.530E-04	1.530E-04	0.000E+00	1.800E-02
Pu-241	1.530E-04	1.530E-04	0.000E+00	6.300E-01
Am-241	1.480E-03	1.480E-03	0.000E+00	1.800E-02
Cm-244	1.640E-05	1.640E-05	0.000E+00	1.800E-02
Ra-226	1.530E-04	1.530E-04	0.000E+00	1.800E-02
Ho-166m	6.050E-04	6.050E-04	0.000E+00	3.240E+06
I-129	1.000E-02	1.000E-02	0.000E+00	9.000E-03
K-40	8.390E-03	8.390E-03	0.000E+00	1.260E+01
Mn-53	2.380E-04	2.380E-04	0.000E+00	3.240E+03
Na-22	1.480E-03	1.480E-03	0.000E+00	7.920E+02
Nb-91	9.390E-04	9.390E-04	0.000E+00	1.040E+07
Nb-92	9.390E-04	9.390E-04	0.000E+00	2.020E+02
Nb-93m	9.390E-04	9.390E-04	0.000E+00	4.740E+08
Nb-94	9.390E-04	9.390E-04	0.000E+00	2.340E-02
Ni-59	1.530E-04	1.530E-04	0.000E+00	2.520E+01
Ni-63	1.530E-04	1.530E-04	0.000E+00	3.960E+00
Os-194	3.380E-04	3.380E-04	0.000E+00	5.530E+08
Pa-231	2.770E-04	2.770E-04	0.000E+00	8.460E+04
Pb-202	8.060E-05	8.060E-05	0.000E+00	6.120E+03
Pb-210	8.060E-05	8.060E-05	0.000E+00	1.370E+08
Pd-107	2.630E-03	2.630E-03	0.000E+00	9.180E+02
Pm-145	2.350E-04	2.350E-04	0.000E+00	2.520E+08
Pm-147	2.350E-04	2.350E-04	0.000E+00	7.920E+02
Po-208	1.700E-04	1.700E-04	0.000E+00	7.920E+02
Po-209	1.700E-04	1.700E-04	0.000E+00	3.020E+07
Pt-193	1.640E-03	1.640E-03	0.000E+00	6.660E+07

NUCLIDE	AQUIFER SORPTION	AQUIFER RETARDATION	VERTICAL SORPTION	VERTICAL RETARDATION
Ac-227	4.500E+00	6.532E+01	4.500E+00	6.533E+01
Ag-108m	2.700E+00	3.959E+01	2.700E+00	3.960E+01
Al-26	1.500E+01	2.154E+02	1.500E+01	2.154E+02
Am-242m	1.000E+00	1.529E+01	1.000E+00	1.530E+01
Am-243	1.000E+00	1.529E+01	1.000E+00	1.530E+01
Ba-133	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Be-10	2.500E+00	3.673E+01	2.500E+00	3.674E+01
Bi-207	1.000E+00	1.529E+01	1.000E+00	1.530E+01
Bi-210m	1.000E+00	1.529E+01	1.000E+00	1.530E+01
Bk-247	1.000E-03	1.014E+00	1.000E-03	1.014E+00
C-14	8.520E+00	1.228E+02	8.520E+00	1.228E+02
Ca-41	5.000E-02	1.715E+00	5.000E-02	1.715E+00
Cd-113	1.000E+00	1.529E+01	1.000E+00	1.530E+01
Cd-113m	1.000E+00	1.529E+01	1.000E+00	1.530E+01
Cf-249	2.000E+00	2.959E+01	2.000E+00	2.959E+01
Cf-250	2.000E+00	2.959E+01	2.000E+00	2.959E+01
Cf-251	2.000E+00	2.959E+01	2.000E+00	2.959E+01
Cf-252	2.000E+00	2.959E+01	2.000E+00	2.959E+01
Cl-36	2.500E-03	1.036E+00	2.500E-03	1.036E+00
Cm-243	9.330E+01	1.335E+03	9.330E+01	1.335E+03
Cm-245	9.330E+01	1.335E+03	9.330E+01	1.335E+03
Cm-246	9.330E+01	1.335E+03	9.330E+01	1.335E+03
Cm-247	9.330E+01	1.335E+03	9.330E+01	1.335E+03
Cm-248	9.330E+01	1.335E+03	9.330E+01	1.335E+03
Co-60	3.700E+02	5.290E+03	3.700E+02	5.290E+03
Cs-135	1.330E+02	1.902E+03	1.330E+02	1.902E+03
Cs-137	1.330E+02	1.902E+03	1.330E+02	1.902E+03
Eu-152	6.500E+00	9.391E+01	6.500E+00	9.392E+01
Eu-154	6.500E+00	9.391E+01	6.500E+00	9.392E+01
Eu-155	6.500E+00	9.391E+01	6.500E+00	9.392E+01
Fe-55	1.400E+00	2.101E+01	1.400E+00	2.101E+01
Fe-60	1.400E+00	2.101E+01	1.400E+00	2.101E+01
Gd-148	6.500E+00	9.391E+01	6.500E+00	9.392E+01
H-3	4.000E-02	1.572E+00	4.000E-02	1.572E+00
Hg-194	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Th-230	1.000E+01	1.439E+02	1.000E+01	1.440E+02
U-236	6.000E+00	8.676E+01	6.000E+00	8.677E+01
U-238	6.000E+00	8.676E+01	6.000E+00	8.677E+01
Np-237	3.000E+00	4.388E+01	3.000E+00	4.389E+01
Pu-240	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Pu-241	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Am-241	1.000E+00	1.529E+01	1.000E+00	1.530E+01
Cm-244	9.330E+01	1.335E+03	9.330E+01	1.335E+03
Ra-226	9.990E+00	1.438E+02	9.990E+00	1.438E+02
Ho-166m	2.500E+00	3.673E+01	2.500E+00	3.674E+01
I-129	1.200E-01	2.715E+00	1.200E-01	2.715E+00
K-40	1.500E-01	3.144E+00	1.500E-01	3.144E+00
Mn-53	6.400E+00	9.248E+01	6.400E+00	9.249E+01
Na-22	1.000E+00	1.529E+01	1.000E+00	1.530E+01
Nb-91	1.600E+00	2.387E+01	1.600E+00	2.387E+01
Nb-92	1.600E+00	2.387E+01	1.600E+00	2.387E+01
Nb-93m	1.600E+00	2.387E+01	1.600E+00	2.387E+01
Nb-94	1.600E+00	2.387E+01	1.600E+00	2.387E+01
Ni-59	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Ni-63	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Os-194	4.500E+00	6.532E+01	4.500E+00	6.533E+01
Pa-231	5.500E+00	7.961E+01	5.500E+00	7.963E+01
Pb-202	1.900E+01	2.726E+02	1.900E+01	2.726E+02
Pb-210	1.900E+01	2.726E+02	1.900E+01	2.726E+02
Pd-107	5.500E-01	8.861E+00	5.500E-01	8.863E+00
Pm-145	6.500E+00	9.391E+01	6.500E+00	9.392E+01
Pm-147	6.500E+00	9.391E+01	6.500E+00	9.392E+01
Po-208	9.000E+00	1.296E+02	9.000E+00	1.297E+02
Po-209	9.000E+00	1.296E+02	9.000E+00	1.297E+02
Pt-193	9.000E-01	1.386E+01	9.000E-01	1.387E+01

BIOACCUMULATION FACTORS

NUCLIDE	SOIL-PLANT Bv	SOIL-PLANT Br	FORAGE-MILK Fm (D/L)	FORAGE-MEAT Ff (D/KG)
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ag-108m	0.000E+00	0.000E+00	0.000E+00	0.000E+00
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•				
•				
Po-209	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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   Pt-193          0.000E+00      0.000E+00      0.000E+00      0.000E+00
                                                 PATHWAY  1
                                              GROUNDWATER TO RIVER
 ********* NUCLIDE DOSES (mrem/yr) ********
   NUCLIDE/TIME          1.         3.         6.         9.        12.        15.        18.        21.        24.        27.        30.        35.
 40.        45.        50.        55.        60.        65.        70.        75.        80.        85.        90.        95.       100.       105.
 110.       115.       120.       125.       130.       135.       140.       145.       150.       155.       160.       165.       170.       175.
 180.       185.       190.       195.       200.       205.       210.       215.       220.       225.       230.       235.       240.       245.
 250.       255.       260.       265.       270.       275.       280.       285.       290.       295.       300.       310.       320.       330.
 340.       350.       360.       370.       380.       390.       400.       410.       420.       430.       440.       450.       460.       470.
 480.       490.       500.       510.       520.       530.       540.       550.       560.       570.       580.       590.       600.       610.
 620.       630.       640.       650.       660.       670.       680.       690.       700.       720.       740.       760.       780.       800.
 825.       850.      875.       900.       925.       950.       975.       1000.
      Ac-227          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Ag-108m         0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Al-26           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Am-242m         0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Am-243          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Ba-133          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Be-10           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Bi-207          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Bi-210m         0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Bk-247          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      C-14            0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
 0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
```

```
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Ca-41           0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Cd-113          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Cd-113m         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Cf-249          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Cf-250          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Cf-251          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Cf-252          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Cl-36           0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Cm-243          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Cm-245          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Cm-246          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
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    Cm-247      0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    Cm-248      0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    Co-60       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    Cs-135      0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    Cs-137      0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    Eu-152      0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    Eu-154      0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    Eu-155      0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    Fe-55       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    Fe-60       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    Gd-148      0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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    H-3         0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
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0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Hg-194      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
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0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Th-230      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
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0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
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0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      U-236       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
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0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
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0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      U-238       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
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0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Np-237      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Pu-240      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Pu-241      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Am-241      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Cm-244      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Ra-226      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Ho-166m     0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
```

```
     I-129          0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     K-40           0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Mn-53          0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Na-22          0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Nb-91          0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Nb-92          0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Nb-93m         0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Nb-94          0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Ni-59          0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Ni-63          0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Os-194         0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Pa-231         0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
 0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
```

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pb-202		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pb-210		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pd-107		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pm-145		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pm-147		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Po-208		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Po-209		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pt-193		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						

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PATHRAE-RAD(PC)  Version 2.2d  February 1995
  Date: 11-29-2007
  Time: 13:54:35
EnergySolutions Class A South cell top slope, vertical/vadose, part 2, T27b
*****  Mirror Image of Input Files  *****
-- Input File:  ABCDEF.DAT
EnergySolutions Class A South cell top slope, vertical/vadose, part 2, T27b
118,1.,3.,6.,9.,12.,15.,18.,21.,24.,27.,30.,35.,40.,45.,50.,55.,60.,65.,70.,75.,80.,85.,90.,95.,100.,105.,110.,115.,120.,125.,130.,1
35,0,1
1,2
0,1.,1.,2.76E-03,2.76E-03,3.64,0
1558.,0.100,0,0,0.307,3.34E-02,97.4,0
1,0,0,0,0,0
0,1.,1.,3.64,0,1800.,1.,0,0,0
0,0,0,0.0,1.
0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0
0,0
1,0,1,0
0.00276,0.025,0.109,0,0,1.,0,1.,0,0.355

-- Input File:  BRCDCF.DAT
158,Pu-236  0,0,0,0,0,0,0
159,Pu-238  0,0,0,0,0,0,0
160,Pu-239  0,0,0,0,0,0,0
161,Pu-242  0,0,0,0,0,0,0
162,Pu-244  0,0,0,0,0,0,0
163,Ra-228  0,0,0,0,0,0,0
164,Re-187  0,0,0,0,0,0,0
165,Se-79   0,0,0,0,0,0,0
166,Si-32   0,0,0,0,0,0,0
167,Sm-151  0,0,0,0,0,0,0
168,Sn-121m 0,0,0,0,0,0,0
169,Sn-126  0,0,0,0,0,0,0
170,Sr-90   0,0,0,0,0,0,0
171,Tb-157  0,0,0,0,0,0,0
172,Tb-158  0,0,0,0,0,0,0
173,Tc-99   0,0,0,0,0,0,0
174,Te-123  0,0,0,0,0,0,0
175,Th-229  0,0,0,0,0,0,0
176,Th-232  0,0,0,0,0,0,0
177,Ti-44   0,0,0,0,0,0,0
178,Tl-204  0,0,0,0,0,0,0
179,Tm-170  0,0,0,0,0,0,0
180,U-232   0,0,0,0,0,0,0
181,U-233   0,0,0,0,0,0,0
182,U-234   0,0,0,0,0,0,0
183,U-235   0,0,0,0,0,0,0
184,V-50    0,0,0,0,0,0,0
185,Zr-93   0,0,0,0,0,0,0
186,Ks-20   0,0,0,0,0,0,0
187,Ks-21   0,0,0,0,0,0,0
188,Ks-22   0,0,0,0,0,0,0
189,Ks-23   0,0,0,0,0,0,0
190,Ks-24   0,0,0,0,0,0,0
191,Ks-25   0,0,0,0,0,0,0
192,Ks-26   0,0,0,0,0,0,0
-- Input File:  INVNTRY.DAT
158,2.86E+00,9.00E-04,0,0,0,0,0
159,8.77E+01,1.80E-02,0,0,0,0,0
160,2.41E+04,1.80E-02,0,0,0,0,0
161,3.73E+05,1.80E-02,0,0,0,0,0
162,8.08E+07,9.00E-04,0,0,0,0,0
163,5.75E+00,4.90E+08,0,0,0,0,0
164,4.35E+10,3.21E-02,0,0,0,0,0
165,6.50E+04,1.25E+05,0,0,0,0,0
166,1.72E+02,1.17E+08,0,0,0,0,0
167,9.00E+01,4.74E+07,0,0,0,0,0
168,5.50E+01,9.68E+07,0,0,0,0,0
169,1.00E+05,5.11E+04,0,0,0,0,0
170,2.88E+01,4.50E-02,0,0,0,0,0
171,7.10E+01,2.70E+07,0,0,0,0,0
172,1.80E+02,2.70E+07,0,0,0,0,0
173,2.11E+05,3.38E-01,0,0,0,0,0
174,1.00E+13,5.24E-04,0,0,0,0,0
175,7.88E+03,3.83E+05,0,0,0,0,0
176,1.41E+10,1.98E-01,0,0,0,0,0
177,6.30E+01,2.81E+08,0,0,0,0,0
178,3.78E+00,7.92E+02,0,0,0,0,0
179,3.52E-01,7.92E+02,0,0,0,0,0
180,6.89E+01,3.97E+07,0,0,0,0,0
181,1.59E+05,1.35E-01,0,0,0,0,0
182,2.46E+05,1.12E+04,0,0,0,0,0
183,7.04E+08,3.42E-03,0,0,0,0,0
184,1.40E+17,9.20E-08,0,0,0,0,0
185,1.53E+06,4.53E+03,0,0,0,0,0
186,1.00E+00,7.92E+02,0,0,0,0,0
187,1.00E+00,7.92E+02,0,0,0,0,0
188,1.00E+00,7.92E+02,0,0,0,0,0
189,1.00E+00,7.92E+02,0,0,0,0,0
190,4.00E+00,7.92E+02,0,0,0,0,0
191,4.00E+00,7.92E+02,0,0,0,0,0
192,2.00E+00,7.92E+02,0,0,0,0,0
-- Input File:  RQSITE.DAT
158,1.53E-04,10.0,10.0
159,1.53E-04,10.0,10.0
160,1.53E-04,10.0,10.0
161,1.53E-04,10.0,10.0
162,1.53E-04,10.0,10.0
163,1.53E-04,10.0,10.0
164,1.42E-02,0.075,0.075
165,1.48E-03,1.0,1.0
166,4.01E-03,0.35,0.35
167,6.18E-04,2.45,2.45
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168,3.06E-05,50.0,50.0
169,3.06E-05,50.0,50.0
170,1.85E-02,0.05,0.05
171,2.35E-04,6.5,6.5
172,2.35E-04,6.5,6.5
173,1.07E-02,0.11,0.11
174,1.20E-03,1.25,1.25
175,1.53E-04,10.0,10.0
176,1.53E-04,10.0,10.0
177,1.53E-04,10.0,10.0
178,8.39E-03,0.15,0.15
179,2.35E-04,6.5,6.5
180,2.54E-04,6.0,6.0
181,2.54E-04,6.0,6.0
182,2.54E-04,6.0,6.0
183,2.54E-04,6.0,6.0
184,1.53E-04,10.0,10.0
185,1.53E-04,10.0,10.0
186,4.54E-02,0.001,0.001
187,3.58E-02,0.01,0.01
188,1.15E-02,0.1,0.1
189,1.48E-03,1.0,1.0
190,3.06E-05,50.0,50.0
191,1.53E-05,100.0,100.0
192,1.48E-03,1.0,1.0
-- Input File:  UPTAKE.DAT
2.76E-03,3.55E-01,1.558
0,0,0,0,0
0,0,0
0,0,0,0
0,0,0,0,0
0,0,0,0,0,730.,0
158,0.00E+00,0.0,0.0,0,0,0,0
159,0.00E+00,0.0,0.0,0,0,0,0
160,0.00E+00,0.0,0.0,0,0,0,0
161,0.00E+00,0.0,0.0,0,0,0,0
162,0.00E+00,0.0,0.0,0,0,0,0
163,0.00E+00,0.0,0.0,0,0,0,0
164,0.00E+00,0.0,0.0,0,0,0,0
165,0.00E+00,0.0,0.0,0,0,0,0
166,0.00E+00,0.0,0.0,0,0,0,0
167,0.00E+00,0.0,0.0,0,0,0,0
168,0.00E+00,0.0,0.0,0,0,0,0
169,0.00E+00,0.0,0.0,0,0,0,0
170,0.00E+00,0.0,0.0,0,0,0,0
171,0.00E+00,0.0,0.0,0,0,0,0
172,0.00E+00,0.0,0.0,0,0,0,0
173,0.00E+00,0.0,0.0,0,0,0,0
174,0.00E+00,0.0,0.0,0,0,0,0
175,0.00E+00,0.0,0.0,0,0,0,0
176,0.00E+00,0.0,0.0,0,0,0,0
177,0.00E+00,0.0,0.0,0,0,0,0
178,0.00E+00,0.0,0.0,0,0,0,0
179,0.00E+00,0.0,0.0,0,0,0,0
180,0.00E+00,0.0,0.0,0,0,0,0
181,0.00E+00,0.0,0.0,0,0,0,0
182,0.00E+00,0.0,0.0,0,0,0,0
183,0.00E+00,0.0,0.0,0,0,0,0
184,0.00E+00,0.0,0.0,0,0,0,0
185,0.00E+00,0.0,0.0,0,0,0,0
186,0.00E+00,0.0,0.0,0,0,0,0
187,0.00E+00,0.0,0.0,0,0,0,0
188,0.00E+00,0.0,0.0,0,0,0,0
189,0.00E+00,0.0,0.0,0,0,0,0
190,0.00E+00,0.0,0.0,0,0,0,0
191,0.00E+00,0.0,0.0,0,0,0,0
192,0.00E+00,0.0,0.0,0,0,0,0
1
                  TOTAL EQUIVALENT UPTAKE FACTORS FOR PATHRAE
             UT(J,1)   UT(J,2)   UT(J,3)   UT(J,4)   UT(J,5)   UT(J,6)
              RIVER     WELL     EROSION   BATHTUB  SPILLAGE    FOOD
NUCLIDE       L/YR      L/YR      L/YR      L/YR      L/YR     KG/YR
  Pu-236    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Pu-238    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Pu-239    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
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  •
  •
  Ks-24     0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Ks-25     0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Ks-26     0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
**********  PATHRAE INPUT SUMMARY  **********
THERE ARE 80 ISOTOPES IN THE DOSE FACTOR LIBRARY
NUMBER OF TIMES FOR CALCULATION IS118
YEARS TO BE CALCULATED ARE ...
     1.00     3.00     6.00     9.00    12.00
    15.00    18.00    21.00    24.00    27.00
    30.00    35.00    40.00    45.00    50.00
    55.00    60.00    65.00    70.00    75.00
    80.00    85.00    90.00    95.00   100.00
   105.00   110.00   115.00   120.00   125.00
   130.00   135.00   140.00   145.00   150.00
   155.00   160.00   165.00   170.00   175.00
   180.00   185.00   190.00   195.00   200.00
   205.00   210.00   215.00   220.00   225.00
   230.00   235.00   240.00   245.00   250.00
   255.00   260.00   265.00   270.00   275.00
   280.00   285.00   290.00   295.00   300.00
   310.00   320.00   330.00   340.00   350.00
   360.00   370.00   380.00   390.00   400.00
   410.00   420.00   430.00   440.00   450.00
   460.00   470.00   480.00   490.00   500.00
   510.00   520.00   530.00   540.00   550.00
   560.00   570.00   580.00   590.00   600.00
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   610.00   620.00   630.00   640.00   650.00
   660.00   670.00   680.00   690.00   700.00
   720.00   740.00   760.00   780.00   800.00
   825.00   850.00   875.00   900.00   925.00
   950.00   975.00  1000.00
THERE ARE  35 ISOTOPES IN THE INVENTORY FILE
THE VALUE OF IFLAG IS 0
NUMBER OF PATHWAYS IS  1
           PATHWAY              TYPE OF USAGE
                              FOR UPTAKE FACTORS
   1  GROUNDWATER TO RIVER          2
TIME OF OPERATION OF WASTE FACILITY IN YEARS                      0.
LENGTH OF REPOSITORY (M)                                          1.
WIDTH OF REPOSITORY (M)                                           1.
RIVER FLOW RATE (M**3/YR)                                         2.76E-03
STREAM FLOW RATE (M**3/YR)                                        2.76E-03
DISTANCE TO RIVER (M)                                             4.
OPERATIONAL SPILLAGE FRACTION                                     0.00E+00
DENSITY OF AQUIFER (KG/M**3)                                   1558.
LONGITUDINAL DISPERSIVITY (M)                                     1.00E-01
LATERAL DISPERSION COEFFICIENT -- Y AXIS (M**2/YR)                0.00E+00
NUMBER OF MESH POINTS FOR DISPERSION CALCULATION                  1
FLAG FOR GAMMA PATHWAY OPTIONS                                    0
FLAG FOR GAMMA BUILDUP CALCULATION                                0
FLAG FOR ATMOSPHERIC PATHWAY                                      0
COVER THICKNESS OVER WASTE (M)                                     .00
THICKNESS OF WASTE IN PITS (M)                                    1.00
TOTAL WASTE VOLUME (M**3)                                         1.000E+00
DISTANCE TO WELL -- X COORDINATE (M)                              4.
DISTANCE TO WELL -- Y COORDINATE (M)                              0.
DENSITY OF WASTE (KG/M**3)                                     1800.
FRACTION OF FOOD CONSUMED THAT IS GROWN ON SITE                   1.000
FRACTION OF YEAR SPENT IN DIRECT RADIATION FIELD                   .000
DEPTH OF PLANT ROOT ZONE (M)                                       .000
AREAL DENSITY OF PLANTS (KG/M**2)                                  .000
AVERAGE DUST LOADING IN AIR (KG/M**3)                             0.00E+00
ANNUAL ADULT BREATHING RATE (M**3/YR)                             0.
FRACTION OF YEAR EXPOSED TO DUST                                   .000
CANISTER LIFETIME (YEARS)                                         0.
INVENTORY SCALING FACTOR                                          1.00E+00
HEIGHT OF ROOMS IN RECLAIMER HOUSE (CM)                           0.
AIR CHANGE RATE IN RECLAIMER HOUSE (CHANGES/SEC)                  0.00E+00
RADON EMANATING POWER OF THE WASTE                                0.00E+00
DIFFUSION COEFF. OF RADON IN WASTE (CM**2/SEC)                    0.00E+00
DIFFUSION COEFF. OF RN IN CONCRETE (CM**2/SEC)                    0.00E+00
THICKNESS OF CONCRETE SLAB FLOOR (CM)                              .0
DIFFUSION COEFF. OF RADON IN COVER (CM**2/SEC)                    0.00E+00
ATMOSPHERIC STABILITY CLASS                                       0
AVERAGE WIND SPEED (M/S)                                           .00
FRACTION OF TIME WIND BLOWS TOWARD RECEPTOR                        .0000
RECEPTOR DISTANCE FOR ATMOSPHERIC PATHWAY (M)                      .0
DUST RESUSPENSION RATE FOR OFFSITE TRANSPORT (M**3/S)             0.00E+00
DEPOSITION VELOCITY (M/S)                                          .0000
STACK HEIGHT (M)                                                   .0
STACK INSIDE DIAMETER (M)                                          .00
STACK GAS VELOCITY (M/S)                                           .0
HEAT EMISSION RATE FROM BURNING (CAL/S)                           0.00E+00
DECAY CHAIN FLAGS                           0   0   0   0   0   0   0
FLAG FOR INPUT SUMMARY PRINTOUT                                   1
FLAG FOR DIRECTION OF TRENCH FILLING                              1
FLAG FOR GROUNDWATER PATHWAY OPTIONS                              0
AMOUNT OF WATER PERCOLATING THROUGH WASTE ANNUALLY (M)            2.76E-03
DEGREE OF SOIL SATURATION                                          .307
RESIDUAL SOIL SATURATION                                           .033
PERMEABILITY OF VERTICAL ZONE (M/YR)                             97.40
SOIL NUMBER                                                        .000
POROSITY OF AQUIFER                                                .11
POROSITY OF UNSATURATED ZONE                                       .36
DISTANCE FROM AQUIFER TO WASTE (M)                                 .0
AVERAGE VERTICAL GROUNDWATER VELOCITY (M/YR)                      2.53E-02
HORIZONTAL VELOCITY OF AQUIFER (M/YR)                              .0
LENGTH OF PERFORATED WELL CASING (M)                              1.000
SURFACE EROSION RATE (M/YR)                                       0.000E+00
LEACH RATE SCALING FACTOR                                         1.000E+00
ANNUAL RUNOFF OF PRECIPITATION (M)                                0.00E+00
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NUCLIDE	INGESTION DOSE FACTORS (MREM/PCI)	INHALATION DOSE FACTORS (MREM/PCI)	DIRECT GAMMA DOSE FACTORS (MREM-M2/PCI-YR)	HALF LIFE (YR)
Pu-236	0.000E+00	0.000E+00	0.000E+00	2.860E+00
Pu-238	0.000E+00	0.000E+00	0.000E+00	8.770E+01
Pu-239	0.000E+00	0.000E+00	0.000E+00	2.410E+04
Pu-242	0.000E+00	0.000E+00	0.000E+00	3.730E+05
Pu-244	0.000E+00	0.000E+00	0.000E+00	8.080E+07
Ra-228	0.000E+00	0.000E+00	0.000E+00	5.750E+00
Re-187	0.000E+00	0.000E+00	0.000E+00	4.350E+10
Se-79	0.000E+00	0.000E+00	0.000E+00	6.500E+04
Si-32	0.000E+00	0.000E+00	0.000E+00	1.720E+02
Sm-151	0.000E+00	0.000E+00	0.000E+00	9.000E+01
Sn-121m	0.000E+00	0.000E+00	0.000E+00	5.500E+01
Sn-126	0.000E+00	0.000E+00	0.000E+00	1.000E+05
Sr-90	0.000E+00	0.000E+00	0.000E+00	2.880E+01
Tb-157	0.000E+00	0.000E+00	0.000E+00	7.100E+01
Tb-158	0.000E+00	0.000E+00	0.000E+00	1.800E+02
Tc-99	0.000E+00	0.000E+00	0.000E+00	2.110E+05
Te-123	0.000E+00	0.000E+00	0.000E+00	1.000E+13
Th-229	0.000E+00	0.000E+00	0.000E+00	7.880E+03
Th-232	0.000E+00	0.000E+00	0.000E+00	1.410E+10
Ti-44	0.000E+00	0.000E+00	0.000E+00	6.300E+01
Tl-204	0.000E+00	0.000E+00	0.000E+00	3.780E+00
Tm-170	0.000E+00	0.000E+00	0.000E+00	3.520E-01
U-232	0.000E+00	0.000E+00	0.000E+00	6.890E+01
U-233	0.000E+00	0.000E+00	0.000E+00	1.590E+05
U-234	0.000E+00	0.000E+00	0.000E+00	2.460E+05
U-235	0.000E+00	0.000E+00	0.000E+00	7.040E+08
V-50	0.000E+00	0.000E+00	0.000E+00	1.400E+17

Zr-93	0.000E+00	0.000E+00	0.000E+00	1.530E+06
Ks-20	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-21	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-22	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-23	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-24	0.000E+00	0.000E+00	0.000E+00	4.000E+00
Ks-25	0.000E+00	0.000E+00	0.000E+00	4.000E+00
Ks-26	0.000E+00	0.000E+00	0.000E+00	2.000E+00

NUCLIDE	VOLATILITY FRACTION	GAMMA ENERGY (MEV)	GAMMA ATTENUATION (1/M)
Pu-236	0.000E+00	0.000E+00	0.000E+00
Pu-238	0.000E+00	0.000E+00	0.000E+00
•			
•			
•			
Ks-24	0.000E+00	0.000E+00	0.000E+00
Ks-25	0.000E+00	0.000E+00	0.000E+00
Ks-26	0.000E+00	0.000E+00	0.000E+00

NUCLIDE	INPUT LEACH RATE (1/YR)	FINAL LEACH RATE (1/YR)	SOLUBILITY (MOLE/L)	INPUT INVENTORY (CI)
Pu-236	1.530E-04	1.530E-04	0.000E+00	9.000E-04
Pu-238	1.530E-04	1.530E-04	0.000E+00	1.800E-02
Pu-239	1.530E-04	1.530E-04	0.000E+00	1.800E-02
Pu-242	1.530E-04	1.530E-04	0.000E+00	1.800E-02
Pu-244	1.530E-04	1.530E-04	0.000E+00	9.000E-04
Ra-228	1.530E-04	1.530E-04	0.000E+00	4.900E+08
Re-187	1.420E-02	1.420E-02	0.000E+00	3.210E-02
Se-79	1.480E-03	1.480E-03	0.000E+00	1.250E+05
Si-32	4.010E-03	4.010E-03	0.000E+00	1.170E+08
Sm-151	6.180E-04	6.180E-04	0.000E+00	4.740E+07
Sn-121m	3.060E-05	3.060E-05	0.000E+00	9.680E+07
Sn-126	3.060E-05	3.060E-05	0.000E+00	5.110E+04
Sr-90	1.850E-02	1.850E-02	0.000E+00	4.500E-02
Tb-157	2.350E-04	2.350E-04	0.000E+00	2.700E+07
Tb-158	2.350E-04	2.350E-04	0.000E+00	2.700E+07
Tc-99	1.070E-02	1.070E-02	0.000E+00	3.380E-01
Te-123	1.200E-03	1.200E-03	0.000E+00	5.240E-04
Th-229	1.530E-04	1.530E-04	0.000E+00	3.830E+05
Th-232	1.530E-04	1.530E-04	0.000E+00	1.980E-01
Ti-44	1.530E-04	1.530E-04	0.000E+00	2.810E+08
Tl-204	8.390E-03	8.390E-03	0.000E+00	7.920E+02
Tm-170	2.350E-04	2.350E-04	0.000E+00	7.920E+02
U-232	2.540E-04	2.540E-04	0.000E+00	3.970E+07
U-233	2.540E-04	2.540E-04	0.000E+00	1.350E-01
U-234	2.540E-04	2.540E-04	0.000E+00	1.120E+04
U-235	2.540E-04	2.540E-04	0.000E+00	3.420E-03
V-50	1.530E-04	1.530E-04	0.000E+00	9.200E-08
Zr-93	1.530E-04	1.530E-04	0.000E+00	4.530E+03
Ks-20	4.540E-02	4.540E-02	0.000E+00	7.920E+02
Ks-21	3.580E-02	3.580E-02	0.000E+00	7.920E+02
Ks-22	1.150E-02	1.150E-02	0.000E+00	7.920E+02
Ks-23	1.480E-03	1.480E-03	0.000E+00	7.920E+02
Ks-24	3.060E-05	3.060E-05	0.000E+00	7.920E+02
Ks-25	1.530E-05	1.530E-05	0.000E+00	7.920E+02
Ks-26	1.480E-03	1.480E-03	0.000E+00	7.920E+02

NUCLIDE	AQUIFER SORPTION	AQUIFER RETARDATION	VERTICAL SORPTION	VERTICAL RETARDATION
Pu-236	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Pu-238	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Pu-239	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Pu-242	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Pu-244	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Ra-228	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Re-187	7.500E-02	2.072E+00	7.500E-02	2.072E+00
Se-79	1.000E+00	1.529E+01	1.000E+00	1.530E+01
Si-32	3.500E-01	6.003E+00	3.500E-01	6.003E+00
Sm-151	2.450E+00	3.602E+01	2.450E+00	3.602E+01
Sn-121m	5.000E+01	7.157E+02	5.000E+01	7.158E+02
Sn-126	5.000E+01	7.157E+02	5.000E+01	7.158E+02
Sr-90	5.000E-02	1.715E+00	5.000E-02	1.715E+00
Tb-157	6.500E+00	9.391E+01	6.500E+00	9.392E+01
Tb-158	6.500E+00	9.391E+01	6.500E+00	9.392E+01
Tc-99	1.100E-01	2.572E+00	1.100E-01	2.573E+00
Te-123	1.250E+00	1.887E+01	1.250E+00	1.887E+01
Th-229	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Th-232	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Ti-44	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Tl-204	1.500E-01	3.144E+00	1.500E-01	3.144E+00
Tm-170	6.500E+00	9.391E+01	6.500E+00	9.392E+01
U-232	6.000E+00	8.676E+01	6.000E+00	8.677E+01
U-233	6.000E+00	8.676E+01	6.000E+00	8.677E+01
U-234	6.000E+00	8.676E+01	6.000E+00	8.677E+01
U-235	6.000E+00	8.676E+01	6.000E+00	8.677E+01
V-50	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Zr-93	1.000E+01	1.439E+02	1.000E+01	1.440E+02
Ks-20	1.000E-03	1.014E+00	1.000E-03	1.014E+00
Ks-21	1.000E-02	1.143E+00	1.000E-02	1.143E+00
Ks-22	1.000E-01	2.429E+00	1.000E-01	2.430E+00
Ks-23	1.000E+00	1.529E+01	1.000E+00	1.530E+01
Ks-24	5.000E+01	7.157E+02	5.000E+01	7.158E+02
Ks-25	1.000E+02	1.430E+03	1.000E+02	1.431E+03
Ks-26	1.000E+00	1.529E+01	1.000E+00	1.530E+01

BIOACCUMULATION FACTORS

NUCLIDE	SOIL-PLANT Bv	SOIL-PLANT Br	FORAGE-MILK Fm (D/L)	FORAGE-MEAT Ff (D/KG)
Pu-236	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-239	0.000E+00	0.000E+00	0.000E+00	0.000E+00
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      Ks-25             0.000E+00       0.000E+00       0.000E+00       0.000E+00
      Ks-26             0.000E+00       0.000E+00       0.000E+00       0.000E+00
                                                      PATHWAY  1
                                                 GROUNDWATER TO RIVER
********* NUCLIDE DOSES (mrem/yr) ********
  NUCLIDE/TIME         1.        3.        6.        9.       12.       15.       18.       21.       24.       27.       30.       35.
40.       45.       50.       55.       60.       65.       70.       75.       80.       85.       90.       95.      100.      105.
110.      115.      120.      125.      130.      135.      140.      145.      150.      155.      160.      165.      170.      175.
180.      185.      190.      195.      200.      205.      210.      215.      220.      225.      230.      235.      240.      245.
250.      255.      260.      265.      270.      275.      280.      285.      290.      295.      300.      310.      320.      330.
340.      350.      360.      370.      380.      390.      400.      410.      420.      430.      440.      450.      460.      470.
480.      490.      500.      510.      520.      530.      540.      550.      560.      570.      580.      590.      600.      610.
620.      630.      640.      650.      660.      670.      680.      690.      700.      720.      740.      760.      780.      800.
825.      850.      875.      900.      925.      950.      975.     1000.
      Pu-236      0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pu-238      0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pu-239      0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pu-242      0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pu-244      0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ra-228      0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Re-187      0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Se-79       0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Si-32       0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Sm-151      0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
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0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
Tm-170 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
```

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-232		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-233		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-234		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-235		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
V-50		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Zr-93		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-20		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-21		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-22		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-23		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-24		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-25		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-26		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						

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PATHRAE-RAD(PC)  Version 2.2d  February 1995
  Date: 12- 6-2007
  Time: 19: 3: 5
EnergySolutions Class A South cell side slope, vertical/vadose, lim conc, part 1
*****  Mirror Image of Input Files  *****
-- Input File:  ABCDEF.DAT
EnergySolutions Class A South cell side slope, vertical/vadose, lim conc, part 1, S28La
118,1.,3.,6.,9.,12.,15.,18.,21.,24.,27.,30.,35.,40.,45.,50.,55.,60.,65.,70.,75.,80.,85.,90.,95.,100.,105.,110.,115.,120.,125.,130.,1
65,0,1
1,2
0,1.,1.,2.86E-03,2.86E-03,3.64,0
1558.,0.100,0,0,0.308,3.34E-02,97.4,0
1,0,0,0,0,0
0,1.,1.,3.64,0,1800.,1.,0,0,0
0,0,0,0.0,1.
0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0
0,0,0,1,0,0,1
1,0,1,0
0.00286,0.026,0.109,0,0,1.,0,1.,0,0.355

-- Input File:  BRCDCF.DAT
101,Ac-227  0,0,0,0,0,0,0
102,Ag-108m 0,0,0,0,0,0,0
103,Al-26   0,0,0,0,0,0,0
48,Am-241   0,0,0,0,0,0,0
104,Am-242m 0,0,0,0,0,0,0
105,Am-243  0,0,0,0,0,0,0
106,Ba-133  0,0,0,0,0,0,0
107,Be-10   0,0,0,0,0,0,0
108,Bi-207  0,0,0,0,0,0,0
109,Bi-210m 0,0,0,0,0,0,0
110,Bk-247  0,0,0,0,0,0,0
111,C-14    0,0,0,0,0,0,0
112,Ca-41   0,0,0,0,0,0,0
113,Cd-113  0,0,0,0,0,0,0
114,Cd-113m 0,0,0,0,0,0,0
115,Cf-249  0,0,0,0,0,0,0
116,Cf-250  0,0,0,0,0,0,0
117,Cf-251  0,0,0,0,0,0,0
118,Cf-252  0,0,0,0,0,0,0
119,Cl-36   0,0,0,0,0,0,0
120,Cm-243  0,0,0,0,0,0,0
50,Cm-244   0,0,0,0,0,0,0
121,Cm-245  0,0,0,0,0,0,0
122,Cm-246  0,0,0,0,0,0,0
123,Cm-247  0,0,0,0,0,0,0
124,Cm-248  0,0,0,0,0,0,0
125,Co-60   0,0,0,0,0,0,0
126,Cs-135  0,0,0,0,0,0,0
127,Cs-137  0,0,0,0,0,0,0
128,Eu-152  0,0,0,0,0,0,0
129,Eu-154  0,0,0,0,0,0,0
130,Eu-155  0,0,0,0,0,0,0
131,Fe-55   0,0,0,0,0,0,0
132,Fe-60   0,0,0,0,0,0,0
133,Gd-148  0,0,0,0,0,0,0
134,H-3     0,0,0,0,0,0,0
135,Hg-194  0,0,0,0,0,0,0
136,Ho-166m 0,0,0,0,0,0,0
137,I-129   0,0,0,0,0,0,0
138,K-40    0,0,0,0,0,0,0
139,Mn-53   0,0,0,0,0,0,0
140,Na-22   0,0,0,0,0,0,0
141,Nb-91   0,0,0,0,0,0,0
142,Nb-92   0,0,0,0,0,0,0
143,Nb-93m  0,0,0,0,0,0,0
144,Nb-94   0,0,0,0,0,0,0
146,Ni-59   0,0,0,0,0,0,0
147,Ni-63   0,0,0,0,0,0,0
42,Np-237   0,0,0,0,0,0,0
148,Os-194  0,0,0,0,0,0,0
149,Pa-231  0,0,0,0,0,0,0
150,Pb-202  0,0,0,0,0,0,0
151,Pb-210  0,0,0,0,0,0,0
152,Pd-107  0,0,0,0,0,0,0
153,Pm-145  0,0,0,0,0,0,0
154,Pm-147  0,0,0,0,0,0,0
155,Po-208  0,0,0,0,0,0,0
156,Po-209  0,0,0,0,0,0,0
157,Pt-193  0,0,0,0,0,0,0
45,Pu-240   0,0,0,0,0,0,0
46,Pu-241   0,0,0,0,0,0,0
55,Ra-226   0,0,0,0,0,0,0
36,Th-230   0,0,0,0,0,0,0
40,U-236    0,0,0,0,0,0,0
41,U-238    0,0,0,0,0,0,0
-- Input File:  INVNTRY.DAT
101,2.18E+01,1.30E+08,0,0,0,0,0
102,4.18E+02,4.69E+07,0,0,0,0,0
103,7.40E+05,3.72E-02,0,0,0,0,0
48,4.32E+02,1.80E-02,0,0,0,0,0
104,1.41E+02,1.80E-02,0,0,0,0,0
105,7.37E+03,1.80E-02,0,0,0,0,0
106,1.05E+01,4.61E+08,0,0,0,0,0
107,1.51E+06,3.96E+04,0,0,0,0,0
108,3.16E+01,9.66E+07,0,0,0,0,0
109,3.04E+06,1.02E+03,0,0,0,0,0
110,1.40E+03,1.63E-10,0,0,0,0,0
111,5.73E+03,1.30E+01,0,0,0,0,0
112,1.03E+05,2.74E-06,0,0,0,0,0
113,9.30E+15,7.75E-07,0,0,0,0,0
114,1.41E+01,4.04E+08,0,0,0,0,0
115,3.51E+02,1.80E-02,0,0,0,0,0
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116,1.31E+01,9.00E-04,0,0,0,0,0
117,8.98E+02,1.80E-02,0,0,0,0,0
118,2.65E+00,7.92E+02,0,0,0,0,0
119,3.01E+05,4.83E-07,0,0,0,0,0
120,2.91E+01,1.80E-02,0,0,0,0,0
50,1.81E+01,1.80E-02,0,0,0,0,0
121,8.50E+03,1.80E-02,0,0,0,0,0
122,4.73E+03,1.80E-02,0,0,0,0,0
123,1.56E+07,1.80E-02,0,0,0,0,0
124,3.40E+05,1.80E-02,0,0,0,0,0
125,5.27E+00,7.92E+02,0,0,0,0,0
126,2.30E+06,2.07E+03,0,0,0,0,0
127,3.01E+01,1.13E+00,0,0,0,0,0
128,1.35E+01,3.11E+08,0,0,0,0,0
129,8.59E+00,4.87E+08,0,0,0,0,0
130,4.76E+00,7.92E+02,0,0,0,0,0
131,2.73E+00,7.92E+02,0,0,0,0,0
132,1.50E+06,7.15E+03,0,0,0,0,0
133,7.46E+01,5.80E+07,0,0,0,0,0
134,1.23E+01,4.50E+01,0,0,0,0,0
135,4.44E+02,6.38E+06,0,0,0,0,0
136,1.20E+03,3.24E+06,0,0,0,0,0
137,1.57E+07,9.00E-03,0,0,0,0,0
138,1.28E+09,1.26E+01,0,0,0,0,0
139,3.74E+06,3.24E+03,0,0,0,0,0
140,2.60E+00,7.92E+02,0,0,0,0,0
141,6.80E+02,1.04E+07,0,0,0,0,0
142,3.47E+07,2.02E+02,0,0,0,0,0
143,1.61E+01,4.74E+08,0,0,0,0,0
144,2.03E+04,2.34E-02,0,0,0,0,0
146,7.60E+04,2.52E+01,0,0,0,0,0
147,1.00E+02,3.96E+00,0,0,0,0,0
42,2.14E+06,1.80E-02,0,0,0,0,0
148,6.00E+00,5.53E+08,0,0,0,0,0
149,3.28E+04,8.46E+04,0,0,0,0,0
150,5.25E+04,6.12E+03,0,0,0,0,0
151,2.23E+01,1.37E+08,0,0,0,0,0
152,6.50E+06,9.18E+02,0,0,0,0,0
153,1.77E+01,2.52E+08,0,0,0,0,0
154,2.62E+00,7.92E+02,0,0,0,0,0
155,2.90E+00,7.92E+02,0,0,0,0,0
156,1.02E+02,3.02E+07,0,0,0,0,0
157,5.00E+01,6.66E+07,0,0,0,0,0
55,1.60E+03,1.80E-02,0,0,0,0,0
45,6.56E+03,1.80E-02,0,0,0,0,0
46,1.44E+01,6.30E-01,0,0,0,0,0
36,7.54E+04,3.71E+04,0,0,0,0,0
40,2.34E+07,1.16E+02,0,0,0,0,0
41,4.47E+09,6.05E-01,0,0,0,0,0
-- Input File:  RQSITE.DAT
101,3.51E-04,4.5,4.5
102,5.81E-04,2.7,2.7
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122,1.70E-05,93.3,93.3
123,1.70E-05,93.3,93.3
124,1.70E-05,93.3,93.3
125,4.29E-06,370.0,370.0
126,1.19E-05,133.0,133.0
127,1.19E-05,133.0,133.0
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129,2.43E-04,6.5,6.5
130,2.43E-04,6.5,6.5
131,1.11E-03,1.4,1.4
132,1.11E-03,1.4,1.4
133,2.43E-04,6.5,6.5
134,2.18E-02,0.04,0.04
135,1.58E-04,10.0,10.0
136,6.27E-04,2.5,2.5
137,1.04E-02,0.12,0.12
138,8.69E-03,0.15,0.15
139,2.47E-04,6.4,6.4
140,1.54E-03,1.0,1.0
141,9.73E-04,1.6,1.6
142,9.73E-04,1.6,1.6
143,9.73E-04,1.6,1.6
144,9.73E-04,1.6,1.6
146,1.58E-04,10.0,10.0
147,1.58E-04,10.0,10.0
42,5.24E-04,3.0,3.0
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149,2.87E-04,5.5,5.5
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151,8.35E-05,19.0,19.0
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153,2.43E-04,6.5,6.5
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45,0.00E+00,0.0,0.0,0,0,0,0
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55,0.00E+00,0.0,0.0,0,0,0,0
36,0.00E+00,0.0,0.0,0,0,0,0
40,0.00E+00,0.0,0.0,0,0,0,0
41,0.00E+00,0.0,0.0,0,0,0,0
1
                      TOTAL EQUIVALENT UPTAKE FACTORS FOR PATHRAE
               UT(J,1)   UT(J,2)   UT(J,3)   UT(J,4)   UT(J,5)   UT(J,6)
                RIVER     WELL     EROSION   BATHTUB  SPILLAGE    FOOD
NUCLIDE         L/YR      L/YR      L/YR      L/YR      L/YR     KG/YR
  Ac-227      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Ag-108m     0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  •
  •
  •
  Po-209      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Pt-193      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
**********  PATHRAE INPUT SUMMARY  **********
THERE ARE 80 ISOTOPES IN THE DOSE FACTOR LIBRARY
NUMBER OF TIMES FOR CALCULATION IS118
YEARS TO BE CALCULATED ARE ...
     1.00      3.00      6.00      9.00     12.00
    15.00     18.00     21.00     24.00     27.00
    30.00     35.00     40.00     45.00     50.00
    55.00     60.00     65.00     70.00     75.00
    80.00     85.00     90.00     95.00    100.00
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   105.00   110.00   115.00   120.00   125.00
   130.00   135.00   140.00   145.00   150.00
   155.00   160.00   165.00   170.00   175.00
   180.00   185.00   190.00   195.00   200.00
   205.00   210.00   215.00   220.00   225.00
   230.00   235.00   240.00   245.00   250.00
   255.00   260.00   265.00   270.00   275.00
   280.00   285.00   290.00   295.00   300.00
   310.00   320.00   330.00   340.00   350.00
   360.00   370.00   380.00   390.00   400.00
   410.00   420.00   430.00   440.00   450.00
   460.00   470.00   480.00   490.00   500.00
   510.00   520.00   530.00   540.00   550.00
   560.00   570.00   580.00   590.00   600.00
   610.00   620.00   630.00   640.00   650.00
   660.00   670.00   680.00   690.00   700.00
   720.00   740.00   760.00   780.00   800.00
   825.00   850.00   875.00   900.00   925.00
   950.00   975.00  1000.00
THERE ARE  65 ISOTOPES IN THE INVENTORY FILE
THE VALUE OF IFLAG IS 0
NUMBER OF PATHWAYS IS  1
           PATHWAY           TYPE OF USAGE
                           FOR UPTAKE FACTORS
   1  GROUNDWATER TO RIVER         2
TIME OF OPERATION OF WASTE FACILITY IN YEARS                    0.
LENGTH OF REPOSITORY (M)                                        1.
WIDTH OF REPOSITORY (M)                                         1.
RIVER FLOW RATE (M**3/YR)                                       2.86E-03
STREAM FLOW RATE (M**3/YR)                                      2.86E-03
DISTANCE TO RIVER (M)                                           4.
OPERATIONAL SPILLAGE FRACTION                                   0.00E+00
DENSITY OF AQUIFER (KG/M**3)                                 1558.
LONGITUDINAL DISPERSIVITY (M)                                   1.00E-01
LATERAL DISPERSION COEFFICIENT -- Y AXIS (M**2/YR)              0.00E+00
NUMBER OF MESH POINTS FOR DISPERSION CALCULATION                1
FLAG FOR GAMMA PATHWAY OPTIONS                                  0
FLAG FOR GAMMA BUILDUP CALCULATION                              0
FLAG FOR ATMOSPHERIC PATHWAY                                    0
COVER THICKNESS OVER WASTE (M)                                   .00
THICKNESS OF WASTE IN PITS (M)                                  1.00
TOTAL WASTE VOLUME (M**3)                                       1.000E+00
DISTANCE TO WELL -- X COORDINATE (M)                            4.
DISTANCE TO WELL -- Y COORDINATE (M)                            0.
DENSITY OF WASTE (KG/M**3)                                   1800.
FRACTION OF FOOD CONSUMED THAT IS GROWN ON SITE                 1.000
FRACTION OF YEAR SPENT IN DIRECT RADIATION FIELD                 .000
DEPTH OF PLANT ROOT ZONE (M)                                     .000
AREAL DENSITY OF PLANTS (KG/M**2)                                .000
AVERAGE DUST LOADING IN AIR (KG/M**3)                           0.00E+00
ANNUAL ADULT BREATHING RATE (M**3/YR)                           0.
FRACTION OF YEAR EXPOSED TO DUST                                 .000
CANISTER LIFETIME (YEARS)                                       0.
INVENTORY SCALING FACTOR                                        1.00E+00
HEIGHT OF ROOMS IN RECLAIMER HOUSE (CM)                         0.
AIR CHANGE RATE IN RECLAIMER HOUSE (CHANGES/SEC)                0.00E+00
RADON EMANATING POWER OF THE WASTE                              0.00E+00

DIFFUSION COEFF. OF RADON IN WASTE (CM**2/SEC)                  0.00E+00
DIFFUSION COEFF. OF RN IN CONCRETE (CM**2/SEC)                  0.00E+00
THICKNESS OF CONCRETE SLAB FLOOR (CM)                            .0
DIFFUSION COEFF. OF RADON IN COVER (CM**2/SEC)                  0.00E+00
ATMOSPHERIC STABILITY CLASS                                     0
AVERAGE WIND SPEED (M/S)                                         .00
FRACTION OF TIME WIND BLOWS TOWARD RECEPTOR                      .0000
RECEPTOR DISTANCE FOR ATMOSPHERIC PATHWAY (M)                    .0
DUST RESUSPENSION RATE FOR OFFSITE TRANSPORT (M**3/S)           0.00E+00
DEPOSITION VELOCITY (M/S)                                        .0000
STACK HEIGHT (M)                                                 .0
STACK INSIDE DIAMETER (M)                                        .00
STACK GAS VELOCITY (M/S)                                         .0
HEAT EMISSION RATE FROM BURNING (CAL/S)                         0.00E+00
DECAY CHAIN FLAGS                            0   0   0   1   0   0   1
FLAG FOR INPUT SUMMARY PRINTOUT                                 1
FLAG FOR DIRECTION OF TRENCH FILLING                            1
FLAG FOR GROUNDWATER PATHWAY OPTIONS                            0
AMOUNT OF WATER PERCOLATING THROUGH WASTE ANNUALLY (M)          2.86E-03
DEGREE OF SOIL SATURATION                                        .308
RESIDUAL SOIL SATURATION                                         .033
PERMEABILITY OF VERTICAL ZONE (M/YR)                          97.40
SOIL NUMBER                                                      .000
POROSITY OF AQUIFER                                              .11
POROSITY OF UNSATURATED ZONE                                     .36
DISTANCE FROM AQUIFER TO WASTE (M)                               .0
AVERAGE VERTICAL GROUNDWATER VELOCITY (M/YR)                    2.62E-02
HORIZONTAL VELOCITY OF AQUIFER (M/YR)                            .0
LENGTH OF PERFORATED WELL CASING (M)                            1.000
SURFACE EROSION RATE (M/YR)                                     0.000E+00
LEACH RATE SCALING FACTOR                                       1.000E+00
ANNUAL RUNOFF OF PRECIPITATION (M)                              0.00E+00
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NUCLIDE	INGESTION DOSE FACTORS (MREM/PCI)	INHALATION DOSE FACTORS (MREM/PCI)	DIRECT GAMMA DOSE FACTORS (MREM-M2/PCI-YR)	HALF LIFE (YR)
Ac-227	0.000E+00	0.000E+00	0.000E+00	2.180E+01
Ag-108m	0.000E+00	0.000E+00	0.000E+00	4.180E+02
Al-26	0.000E+00	0.000E+00	0.000E+00	7.400E+05
Am-242m	0.000E+00	0.000E+00	0.000E+00	1.410E+02
Am-243	0.000E+00	0.000E+00	0.000E+00	7.370E+03
Ba-133	0.000E+00	0.000E+00	0.000E+00	1.050E+01
Be-10	0.000E+00	0.000E+00	0.000E+00	1.510E+06
Bi-207	0.000E+00	0.000E+00	0.000E+00	3.160E+01
Bi-210m	0.000E+00	0.000E+00	0.000E+00	3.040E+06
Bk-247	0.000E+00	0.000E+00	0.000E+00	1.400E+03
C-14	0.000E+00	0.000E+00	0.000E+00	5.730E+03
Ca-41	0.000E+00	0.000E+00	0.000E+00	1.030E+05

Cd-113	0.000E+00	0.000E+00	0.000E+00	9.300E+15
Cd-113m	0.000E+00	0.000E+00	0.000E+00	1.410E+01
Cf-249	0.000E+00	0.000E+00	0.000E+00	3.510E+02
Cf-250	0.000E+00	0.000E+00	0.000E+00	1.310E+01
Cf-251	0.000E+00	0.000E+00	0.000E+00	8.980E+02
Cf-252	0.000E+00	0.000E+00	0.000E+00	2.650E+00
Cl-36	0.000E+00	0.000E+00	0.000E+00	3.010E+05
Cm-243	0.000E+00	0.000E+00	0.000E+00	2.910E+01
Cm-245	0.000E+00	0.000E+00	0.000E+00	8.500E+03
Cm-246	0.000E+00	0.000E+00	0.000E+00	4.730E+03
Cm-247	0.000E+00	0.000E+00	0.000E+00	1.560E+07
Cm-248	0.000E+00	0.000E+00	0.000E+00	3.400E+05
Co-60	0.000E+00	0.000E+00	0.000E+00	5.270E+00
Cs-135	0.000E+00	0.000E+00	0.000E+00	2.300E+06
Cs-137	0.000E+00	0.000E+00	0.000E+00	3.010E+01
Eu-152	0.000E+00	0.000E+00	0.000E+00	1.350E+01
Eu-154	0.000E+00	0.000E+00	0.000E+00	8.590E+00
Eu-155	0.000E+00	0.000E+00	0.000E+00	4.760E+00
Fe-55	0.000E+00	0.000E+00	0.000E+00	2.730E+00
Fe-60	0.000E+00	0.000E+00	0.000E+00	1.500E+06
Gd-148	0.000E+00	0.000E+00	0.000E+00	7.460E+01
H-3	0.000E+00	0.000E+00	0.000E+00	1.230E+01
Hg-194	0.000E+00	0.000E+00	0.000E+00	4.440E+02
Th-230	0.000E+00	0.000E+00	0.000E+00	7.540E+04
U-236	0.000E+00	0.000E+00	0.000E+00	2.340E+07
U-238	0.000E+00	0.000E+00	0.000E+00	4.470E+09
Np-237	0.000E+00	0.000E+00	0.000E+00	2.140E+06
Pu-240	0.000E+00	0.000E+00	0.000E+00	6.560E+03
Pu-241	0.000E+00	0.000E+00	0.000E+00	1.440E+01
Am-241	0.000E+00	0.000E+00	0.000E+00	4.320E+02
Cm-244	0.000E+00	0.000E+00	0.000E+00	1.810E+01
Ra-226	0.000E+00	0.000E+00	0.000E+00	1.600E+03
Ho-166m	0.000E+00	0.000E+00	0.000E+00	1.200E+03
I-129	0.000E+00	0.000E+00	0.000E+00	1.570E+07
K-40	0.000E+00	0.000E+00	0.000E+00	1.280E+09
Mn-53	0.000E+00	0.000E+00	0.000E+00	3.740E+06
Na-22	0.000E+00	0.000E+00	0.000E+00	2.600E+00
Nb-91	0.000E+00	0.000E+00	0.000E+00	6.800E+02
Nb-92	0.000E+00	0.000E+00	0.000E+00	3.470E+07
Nb-93m	0.000E+00	0.000E+00	0.000E+00	1.610E+01
Nb-94	0.000E+00	0.000E+00	0.000E+00	2.030E+04
Ni-59	0.000E+00	0.000E+00	0.000E+00	7.600E+04
Ni-63	0.000E+00	0.000E+00	0.000E+00	1.000E+02
Os-194	0.000E+00	0.000E+00	0.000E+00	6.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	3.280E+04
Pb-202	0.000E+00	0.000E+00	0.000E+00	5.250E+04
Pb-210	0.000E+00	0.000E+00	0.000E+00	2.230E+01
Pd-107	0.000E+00	0.000E+00	0.000E+00	6.500E+06
Pm-145	0.000E+00	0.000E+00	0.000E+00	1.770E+01
Pm-147	0.000E+00	0.000E+00	0.000E+00	2.620E+00
Po-208	0.000E+00	0.000E+00	0.000E+00	2.900E+00
Po-209	0.000E+00	0.000E+00	0.000E+00	1.020E+02
Pt-193	0.000E+00	0.000E+00	0.000E+00	5.000E+01

NUCLIDE	VOLATILITY FRACTION	GAMMA ENERGY (MEV)	GAMMA ATTENUATION (1/M)
Ac-227	0.000E+00	0.000E+00	0.000E+00
Ag-108m	0.000E+00	0.000E+00	0.000E+00
•			
•			
•			
Po-209	0.000E+00	0.000E+00	0.000E+00
Pt-193	0.000E+00	0.000E+00	0.000E+00

NUCLIDE	INPUT LEACH RATE (1/YR)	FINAL LEACH RATE (1/YR)	SOLUBILITY (MOLE/L)	INPUT INVENTORY (CI)
Ac-227	3.510E-04	3.510E-04	0.000E+00	1.300E+08
Ag-108m	5.810E-04	5.810E-04	0.000E+00	4.690E+07
Al-26	1.060E-04	1.060E-04	0.000E+00	3.720E-02
Am-242m	1.540E-03	1.540E-03	0.000E+00	1.800E-02
Am-243	1.540E-03	1.540E-03	0.000E+00	1.800E-02
Ba-133	1.580E-04	1.580E-04	0.000E+00	4.610E+08
Be-10	6.270E-04	6.270E-04	0.000E+00	3.960E+04
Bi-207	1.540E-03	1.540E-03	0.000E+00	9.660E+07
Bi-210m	1.540E-03	1.540E-03	0.000E+00	1.020E+03
Bk-247	4.700E-02	4.700E-02	0.000E+00	1.630E-10
C-14	1.860E-04	1.860E-04	0.000E+00	1.300E+01
Ca-41	1.920E-02	1.920E-02	0.000E+00	2.740E-06
Cd-113	1.540E-03	1.540E-03	0.000E+00	7.750E-07
Cd-113m	1.540E-03	1.540E-03	0.000E+00	4.040E+08
Cf-249	7.820E-04	7.820E-04	0.000E+00	1.800E-02
Cf-250	7.820E-04	7.820E-04	0.000E+00	9.000E-04
Cf-251	7.820E-04	7.820E-04	0.000E+00	1.800E-02
Cf-252	7.820E-04	7.820E-04	0.000E+00	7.920E+02
Cl-36	4.500E-02	4.500E-02	0.000E+00	4.830E-07
Cm-243	1.700E-05	1.700E-05	0.000E+00	1.800E-02
Cm-245	1.700E-05	1.700E-05	0.000E+00	1.800E-02
Cm-246	1.700E-05	1.700E-05	0.000E+00	1.800E-02
Cm-247	1.700E-05	1.700E-05	0.000E+00	1.800E-02
Cm-248	1.700E-05	1.700E-05	0.000E+00	1.800E-02
Co-60	4.290E-06	4.290E-06	0.000E+00	7.920E+02
Cs-135	1.190E-05	1.190E-05	0.000E+00	2.070E+03
Cs-137	1.190E-05	1.190E-05	0.000E+00	1.130E+00
Eu-152	2.430E-04	2.430E-04	0.000E+00	3.110E+08
Eu-154	2.430E-04	2.430E-04	0.000E+00	4.870E+08
Eu-155	2.430E-04	2.430E-04	0.000E+00	7.920E+02
Fe-55	1.110E-03	1.110E-03	0.000E+00	7.920E+02
Fe-60	1.110E-03	1.110E-03	0.000E+00	7.150E+03
Gd-148	2.430E-04	2.430E-04	0.000E+00	5.800E+07
H-3	2.180E-02	2.180E-02	0.000E+00	4.500E+01
Hg-194	1.580E-04	1.580E-04	0.000E+00	6.380E+06
Th-230	1.580E-04	1.580E-04	0.000E+00	3.710E+04
U-236	2.630E-04	2.630E-04	0.000E+00	1.160E+02
U-238	2.630E-04	2.630E-04	0.000E+00	6.050E-01
Np-237	5.240E-04	5.240E-04	0.000E+00	1.800E-02

Pu-240	1.580E-04	1.580E-04	0.000E+00	1.800E-02
Pu-241	1.580E-04	1.580E-04	0.000E+00	6.300E-01
Am-241	1.540E-03	1.540E-03	0.000E+00	1.800E-02
Cm-244	1.700E-05	1.700E-05	0.000E+00	1.800E-02
Ra-226	1.580E-04	1.580E-04	0.000E+00	1.800E-02
Ho-166m	6.270E-04	6.270E-04	0.000E+00	3.240E+06
I-129	1.040E-02	1.040E-02	0.000E+00	9.000E-03
K-40	8.690E-03	8.690E-03	0.000E+00	1.260E+01
Mn-53	2.470E-04	2.470E-04	0.000E+00	3.240E+03
Na-22	1.540E-03	1.540E-03	0.000E+00	7.920E+02
Nb-91	9.730E-04	9.730E-04	0.000E+00	1.040E+07
Nb-92	9.730E-04	9.730E-04	0.000E+00	2.020E+02
Nb-93m	9.730E-04	9.730E-04	0.000E+00	4.740E+08
Nb-94	9.730E-04	9.730E-04	0.000E+00	2.340E-02
Ni-59	1.580E-04	1.580E-04	0.000E+00	2.520E+01
Ni-63	1.580E-04	1.580E-04	0.000E+00	3.960E+00
Os-194	3.510E-04	3.510E-04	0.000E+00	5.530E+08
Pa-231	2.870E-04	2.870E-04	0.000E+00	8.460E+04
Pb-202	8.350E-05	8.350E-05	0.000E+00	6.120E+03
Pb-210	8.350E-05	8.350E-05	0.000E+00	1.370E+08
Pd-107	2.730E-03	2.730E-03	0.000E+00	9.180E+02
Pm-145	2.430E-04	2.430E-04	0.000E+00	2.520E+08
Pm-147	2.430E-04	2.430E-04	0.000E+00	7.920E+02
Po-208	1.760E-04	1.760E-04	0.000E+00	7.920E+02
Po-209	1.760E-04	1.760E-04	0.000E+00	3.020E+07
Pt-193	1.700E-03	1.700E-03	0.000E+00	6.660E+07

NUCLIDE	AQUIFER SORPTION	AQUIFER RETARDATION	VERTICAL SORPTION	VERTICAL RETARDATION
Ac-227	4.500E+00	6.532E+01	4.500E+00	6.512E+01
Ag-108m	2.700E+00	3.959E+01	2.700E+00	3.947E+01
Al-26	1.500E+01	2.154E+02	1.500E+01	2.147E+02
Am-242m	1.000E+00	1.529E+01	1.000E+00	1.525E+01
Am-243	1.000E+00	1.529E+01	1.000E+00	1.525E+01
Ba-133	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Be-10	2.500E+00	3.673E+01	2.500E+00	3.662E+01
Bi-207	1.000E+00	1.529E+01	1.000E+00	1.525E+01
Bi-210m	1.000E+00	1.529E+01	1.000E+00	1.525E+01
Bk-247	1.000E-03	1.014E+00	1.000E-03	1.014E+00
C-14	8.520E+00	1.228E+02	8.520E+00	1.224E+02
Ca-41	5.000E-02	1.715E+00	5.000E-02	1.712E+00
Cd-113	1.000E+00	1.529E+01	1.000E+00	1.525E+01
Cd-113m	1.000E+00	1.529E+01	1.000E+00	1.525E+01
Cf-249	2.000E+00	2.959E+01	2.000E+00	2.950E+01
Cf-250	2.000E+00	2.959E+01	2.000E+00	2.950E+01
Cf-251	2.000E+00	2.959E+01	2.000E+00	2.950E+01
Cf-252	2.000E+00	2.959E+01	2.000E+00	2.950E+01
Cl-36	2.500E-03	1.036E+00	2.500E-03	1.036E+00
Cm-243	9.330E+01	1.335E+03	9.330E+01	1.330E+03
Cm-245	9.330E+01	1.335E+03	9.330E+01	1.330E+03
Cm-246	9.330E+01	1.335E+03	9.330E+01	1.330E+03
Cm-247	9.330E+01	1.335E+03	9.330E+01	1.330E+03
Cm-248	9.330E+01	1.335E+03	9.330E+01	1.330E+03
Co-60	3.700E+02	5.290E+03	3.700E+02	5.273E+03
Cs-135	1.330E+02	1.902E+03	1.330E+02	1.896E+03
Cs-137	1.330E+02	1.902E+03	1.330E+02	1.896E+03
Eu-152	6.500E+00	9.391E+01	6.500E+00	9.362E+01
Eu-154	6.500E+00	9.391E+01	6.500E+00	9.362E+01
Eu-155	6.500E+00	9.391E+01	6.500E+00	9.362E+01
Fe-55	1.400E+00	2.101E+01	1.400E+00	2.095E+01
Fe-60	1.400E+00	2.101E+01	1.400E+00	2.095E+01
Gd-148	6.500E+00	9.391E+01	6.500E+00	9.362E+01
H-3	4.000E-02	1.572E+00	4.000E-02	1.570E+00
Hg-194	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Th-230	1.000E+01	1.439E+02	1.000E+01	1.435E+02
U-236	6.000E+00	8.676E+01	6.000E+00	8.649E+01
U-238	6.000E+00	8.676E+01	6.000E+00	8.649E+01
Np-237	3.000E+00	4.388E+01	3.000E+00	4.375E+01
Pu-240	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Pu-241	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Am-241	1.000E+00	1.529E+01	1.000E+00	1.525E+01
Cm-244	9.330E+01	1.335E+03	9.330E+01	1.330E+03
Ra-226	9.990E+00	1.438E+02	9.990E+00	1.433E+02
Ho-166m	2.500E+00	3.673E+01	2.500E+00	3.662E+01
I-129	1.200E-01	2.715E+00	1.200E-01	2.710E+00
K-40	1.500E-01	3.144E+00	1.500E-01	3.137E+00
Mn-53	6.400E+00	9.248E+01	6.400E+00	9.219E+01
Na-22	1.000E+00	1.529E+01	1.000E+00	1.525E+01
Nb-91	1.600E+00	2.387E+01	1.600E+00	2.380E+01
Nb-92	1.600E+00	2.387E+01	1.600E+00	2.380E+01
Nb-93m	1.600E+00	2.387E+01	1.600E+00	2.380E+01
Nb-94	1.600E+00	2.387E+01	1.600E+00	2.380E+01
Ni-59	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Ni-63	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Os-194	4.500E+00	6.532E+01	4.500E+00	6.512E+01
Pa-231	5.500E+00	7.961E+01	5.500E+00	7.937E+01
Pb-202	1.900E+01	2.726E+02	1.900E+01	2.717E+02
Pb-210	1.900E+01	2.726E+02	1.900E+01	2.717E+02
Pd-107	5.500E-01	8.861E+00	5.500E-01	8.837E+00
Pm-145	6.500E+00	9.391E+01	6.500E+00	9.362E+01
Pm-147	6.500E+00	9.391E+01	6.500E+00	9.362E+01
Po-208	9.000E+00	1.296E+02	9.000E+00	1.292E+02
Po-209	9.000E+00	1.296E+02	9.000E+00	1.292E+02
Pt-193	9.000E-01	1.386E+01	9.000E-01	1.382E+01

BIOACCUMULATION FACTORS

NUCLIDE	SOIL-PLANT Bv	SOIL-PLANT Br	FORAGE-MILK Fm (D/L)	FORAGE-MEAT Ff (D/KG)
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ag-108m	0.000E+00	0.000E+00	0.000E+00	0.000E+00
•				
•				
•				
Po-209	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pt-193	0.000E+00	0.000E+00	0.000E+00	0.000E+00

PATHWAY 1

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                                                    GROUNDWATER TO RIVER
NUCLIDE CONCENTRATIONS IN RIVER  (Ci/m**3)
 NUCLIDE/TIME          1.        3.        6.        9.       12.       15.       18.       21.       24.       27.       30.       35.
40.       45.       50.       55.       60.       65.       70.       75.       80.       85.       90.       95.      100.      105.
110.      115.      120.      125.      130.      135.      140.      145.      150.      155.      160.      165.      170.      175.
180.      185.      190.      195.      200.      205.      210.      215.      220.      225.      230.      235.      240.      245.
250.      255.      260.      265.      270.      275.      280.      285.      290.      295.      300.      310.      320.      330.
340.      350.      360.      370.      380.      390.      400.      410.      420.      430.      440.      450.      460.      470.
480.      490.      500.      510.      520.      530.      540.      550.      560.      570.      580.      590.      600.      610.
620.      630.      640.      650.      660.      670.      680.      690.      700.      720.      740.      760.      780.      800.
825.      850.      875.      900.      925.      950.      975.     1000.
    Ac-227         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
    Ag-108m        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   1.7E-20   1.4E-19   1.0E-18   6.9E-18   4.1E-17   2.3E-16   1.1E-15
    Al-26          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
    Am-242m        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   1.7E-20   5.2E-20
1.5E-19   3.9E-19   1.0E-18   2.5E-18   6.0E-18   1.4E-17   3.1E-17   6.6E-17   1.4E-16   2.8E-16   5.6E-16   1.1E-15   2.0E-15   3.7E-15
6.6E-15   1.2E-14   2.0E-14   3.4E-14   5.6E-14   9.2E-14   1.5E-13   2.3E-13   3.6E-13   8.3E-13   1.8E-12   3.7E-12   7.4E-12   1.4E-11
3.0E-11   6.0E-11   1.1E-10   2.0E-10   3.5E-10   5.9E-10   9.4E-10   1.5E-09
    Am-243         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   1.4E-20   4.9E-20   1.6E-19   5.0E-19
1.5E-18   4.2E-18   1.1E-17   2.9E-17   7.4E-17   1.8E-16   4.2E-16   9.4E-16   2.1E-15   4.4E-15   9.1E-15   1.8E-14   3.6E-14   7.0E-14
1.3E-13   2.4E-13   4.4E-13   7.8E-13   1.4E-12   2.3E-12   3.9E-12   6.4E-12   1.0E-11   2.7E-11   6.4E-11   1.5E-10   3.2E-10   6.7E-10
1.6E-09   3.6E-09   7.7E-09   1.6E-08   3.1E-08   5.7E-08   1.0E-07   1.8E-07
    Ba-133         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
    Be-10          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   1.5E-20   1.1E-19   7.4E-19   4.4E-18   2.4E-17   1.2E-16   5.5E-16
    Bi-207         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   1.9E-20   1.1E-19   5.7E-19   2.7E-18   1.1E-17   4.5E-17   1.6E-16   5.5E-16   1.7E-15   5.1E-15   1.4E-14   3.7E-14   9.3E-14
2.2E-13   5.1E-13   1.1E-12   2.3E-12   4.6E-12   9.0E-12   1.7E-11   3.1E-11   5.4E-11   9.3E-11   1.5E-10   2.5E-10   4.0E-10   6.2E-10
9.3E-10   1.4E-09   2.0E-09   2.9E-09   4.0E-09   5.5E-09   7.4E-09   9.9E-09   1.3E-08   2.1E-08   3.3E-08   4.9E-08   6.9E-08   9.3E-08
1.3E-07   1.7E-07   2.1E-07   2.4E-07   2.8E-07   3.0E-07   3.1E-07   3.2E-07
    Bi-210m        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   2.0E-20   1.2E-19   6.3E-19   3.1E-18   1.4E-17   5.8E-17   2.3E-16   8.4E-16   2.9E-15   9.5E-15   3.0E-14
8.8E-14   2.5E-13   6.7E-13   1.8E-12   4.4E-12   1.1E-11   2.5E-11   5.6E-11   1.2E-10   2.6E-10   5.5E-10   1.1E-09   2.2E-09   4.2E-09
7.9E-09   1.5E-08   2.6E-08   4.7E-08   8.2E-08   1.4E-07   2.4E-07   3.9E-07   6.3E-07   1.6E-06   3.9E-06   8.9E-06   1.9E-05   4.1E-05
9.8E-05   2.2E-04   4.7E-04   9.6E-04   1.9E-03   3.5E-03   6.4E-03   1.1E-02
    Bk-247         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
1.3E-20   1.0E-18   3.3E-17   5.3E-16   5.2E-15   3.4E-14   1.7E-13   6.2E-13   1.9E-12   5.1E-12   1.2E-11   2.4E-11   4.3E-11   7.3E-11
1.1E-10   1.6E-10   2.3E-10   2.9E-10   3.6E-10   4.3E-10   4.9E-10   5.4E-10   5.8E-10   6.0E-10   6.1E-10   6.1E-10   5.9E-10   5.6E-10
5.3E-10   4.9E-10   4.4E-10   4.0E-10   3.5E-10   3.1E-10   2.7E-10   2.3E-10   2.0E-10   1.7E-10   1.4E-10   1.2E-10   9.5E-11   7.8E-11
6.4E-11   5.2E-11   4.2E-11   3.3E-11   2.7E-11   2.1E-11   1.7E-11   1.3E-11   1.0E-11   8.2E-12   6.4E-12   3.9E-12   2.3E-12   1.4E-12
8.1E-13   4.7E-13   2.7E-13   1.6E-13   9.0E-14   5.1E-14   2.9E-14   1.6E-14   9.1E-15   5.1E-15   2.8E-15   1.6E-15   8.7E-16   4.8E-16
2.6E-16   1.4E-16   7.8E-17   4.3E-17   2.3E-17   1.3E-17   6.8E-18   3.7E-18   2.0E-18   1.1E-18   5.8E-19   3.1E-19   1.7E-19   8.9E-20
4.8E-20   2.6E-20   1.4E-20   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
    C-14           0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
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0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
   Ca-41        0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 5.5E-19 1.8E-17 3.5E-16 4.4E-15 4.0E-14 2.8E-13 1.5E-12 6.8E-12 2.6E-11 8.5E-11
2.5E-10 6.5E-10 1.6E-09 3.4E-09 7.0E-09 1.3E-08 2.4E-08 4.2E-08 6.9E-08 1.1E-07 1.6E-07 2.4E-07 3.4E-07 4.7E-07
6.4E-07 8.4E-07 1.1E-06 1.3E-06 1.7E-06 2.0E-06 2.4E-06 2.8E-06 3.2E-06 3.6E-06 4.0E-06 4.4E-06 4.8E-06 5.2E-06
5.5E-06 5.8E-06 6.0E-06 6.2E-06 6.3E-06 6.4E-06 6.5E-06 6.5E-06 6.4E-06 6.3E-06 6.2E-06 5.8E-06 5.3E-06 4.8E-06
4.2E-06 3.7E-06 3.1E-06 2.6E-06 2.2E-06 1.8E-06 1.5E-06 1.2E-06 9.4E-07 7.5E-07 5.9E-07 4.6E-07 3.5E-07 2.7E-07
2.1E-07 1.6E-07 1.2E-07 9.0E-08 6.7E-08 5.0E-08 3.7E-08 2.8E-08 2.0E-08 1.5E-08 1.1E-08 8.0E-09 5.9E-09 4.3E-09
3.1E-09 2.2E-09 1.6E-09 1.2E-09 8.4E-10 6.0E-10 4.3E-10 3.1E-10 2.2E-10 1.1E-10 5.6E-11 2.8E-11 1.4E-11 7.0E-12
2.9E-12 1.2E-12 4.9E-13 2.0E-13 8.2E-14 3.3E-14 1.3E-14 5.4E-15
   Cd-113       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.9E-20 4.3E-20 9.4E-20 2.0E-19 4.2E-19 8.4E-19 1.7E-18 3.2E-18
6.0E-18 1.1E-17 2.0E-17 3.6E-17 6.2E-17 1.1E-16 1.8E-16 3.0E-16 4.8E-16 1.2E-15 3.0E-15 6.8E-15 1.5E-14 3.1E-14
7.4E-14 1.7E-13 3.6E-13 7.3E-13 1.4E-12 2.7E-12 4.9E-12 8.6E-12
   Cd-113m      0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 2.5E-20 5.9E-20 1.3E-19 2.8E-19 5.7E-19 1.1E-18
2.0E-18 3.4E-18 5.6E-18 9.0E-18 1.4E-17 2.0E-17 2.9E-17 4.0E-17 5.4E-17 7.1E-17 9.0E-17 1.1E-16 1.3E-16 1.6E-16
1.8E-16 2.1E-16 2.3E-16 2.5E-16 2.6E-16 2.7E-16 2.8E-16 2.9E-16 2.9E-16 2.7E-16 2.4E-16 2.1E-16 1.7E-16 1.3E-16
9.4E-17 6.2E-17 3.9E-17 2.3E-17 1.3E-17 7.3E-18 3.9E-18 2.0E-18
   Cf-249       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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   Cf-250       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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   Cf-251       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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   Cf-252       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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   Cl-36        0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 4.6E-20
1.6E-17 1.4E-15 5.0E-14 8.7E-13 9.0E-12 6.2E-11 3.2E-10 1.2E-09 4.0E-09 1.1E-08 2.6E-08 5.4E-08 1.0E-07 1.8E-07
2.8E-07 4.2E-07 5.9E-07 7.8E-07 9.9E-07 1.2E-06 1.4E-06 1.6E-06 1.7E-06 1.8E-06 1.9E-06 1.9E-06 1.9E-06 1.8E-06
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1.8E-12 9.9E-13 5.5E-13 3.1E-13 1.7E-13 9.4E-14 5.2E-14 2.9E-14 1.6E-14 8.6E-15 4.7E-15 2.6E-15 1.4E-15 7.8E-16
4.2E-16 2.3E-16 1.3E-16 6.8E-17 3.7E-17 2.0E-17 1.1E-17 5.9E-18 3.2E-18 9.4E-19 2.8E-19 8.0E-20 2.3E-20 0.0E+00
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   Cm-243       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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   Cm-245       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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   Cm-246       0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00
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Cm-247		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Cm-248		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Co-60		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Cs-135		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Cs-137		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Eu-152		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Eu-154		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Eu-155		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Fe-55		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Fe-60		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	3.3E-20	1.3E-19	4.6E-19	1.6E-18	5.2E-18	1.6E-17	4.9E-17	1.4E-16	4.0E-16	1.1E-15	2.8E-15	7.0E-15
1.7E-14	4.1E-14	9.4E-14	2.1E-13	4.6E-13	9.9E-13	2.1E-12	4.2E-12	8.5E-12	3.2E-11	1.1E-10	3.7E-10	1.1E-09	3.3E-09
1.1E-08	3.7E-08	1.1E-07	3.2E-07	8.4E-07	2.1E-06	5.1E-06	1.2E-05						
Gd-148		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
H-3		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
3.6E-20	3.1E-17	6.5E-15	4.7E-13	1.5E-11	2.7E-10	3.0E-09	2.3E-08	1.3E-07	5.4E-07	1.9E-06	5.5E-06	1.4E-05	3.0E-05
5.9E-05	1.0E-04	1.7E-04	2.6E-04	3.7E-04	4.9E-04	6.2E-04	7.5E-04	8.7E-04	9.7E-04	1.0E-03	1.1E-03	1.1E-03	1.1E-03
1.0E-03	9.8E-04	9.0E-04	8.0E-04	7.1E-04	6.1E-04	5.2E-04	4.4E-04	3.6E-04	2.9E-04	2.4E-04	1.9E-04	1.5E-04	1.1E-04
8.8E-05	6.7E-05	5.0E-05	3.8E-05	2.8E-05	2.1E-05	1.5E-05	1.1E-05	7.8E-06	5.6E-06	4.0E-06	2.0E-06	9.7E-07	4.6E-07
2.2E-07	1.0E-07	4.6E-08	2.1E-08	9.4E-09	4.1E-09	1.8E-09	7.9E-10	3.4E-10	1.5E-10	6.2E-11	2.6E-11	1.1E-11	4.5E-12

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1.9E-12  7.8E-13  3.2E-13  1.3E-13  5.3E-14  2.2E-14  8.7E-15  3.5E-15  1.4E-15  5.6E-16  2.3E-16  9.0E-17  3.6E-17  1.4E-17
5.6E-18  2.2E-18  8.7E-19  3.4E-19  1.3E-19  5.3E-20  2.1E-20  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Hg-194      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Th-230      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      U-236       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      U-238       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Np-237      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Pu-240      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Pu-241      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Am-241      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  3.5E-20  1.2E-19  3.9E-19  1.2E-18
3.5E-18  9.6E-18  2.6E-17  6.6E-17  1.6E-16  3.9E-16  8.9E-16  2.0E-15  4.3E-15  9.0E-15  1.8E-14  3.6E-14  7.1E-14  1.3E-13
2.5E-13  4.5E-13  8.1E-13  1.4E-12  2.4E-12  4.1E-12  6.7E-12  1.1E-11  1.8E-11  4.3E-11  1.0E-10  2.2E-10  4.7E-10  9.6E-10
2.2E-09  4.8E-09  9.9E-09  1.9E-08  3.6E-08  6.6E-08  1.1E-07  1.9E-07
      Cm-244      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Ra-226      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
      Ho-166m     0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
9.0E-20  7.5E-19  5.5E-18  3.6E-17  2.1E-16  1.1E-15  5.6E-15  2.5E-14
      I-129       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  1.9E-19  4.6E-18  7.8E-17  9.8E-16  9.4E-15  7.3E-14
4.6E-13  2.5E-12  1.1E-11  4.6E-11  1.7E-10  5.4E-10  1.6E-09  4.4E-09  1.1E-08  2.7E-08  5.9E-08  1.3E-07  2.5E-07  4.9E-07
```

9.0E-07	1.6E-06	2.8E-06	4.6E-06	7.4E-06	1.2E-05	1.8E-05	2.6E-05	3.8E-05	5.5E-05	7.6E-05	1.1E-04	1.4E-04	1.9E-04
2.5E-04	3.2E-04	4.1E-04	5.1E-04	6.3E-04	7.8E-04	9.5E-04	1.1E-03	1.4E-03	1.6E-03	1.9E-03	2.5E-03	3.3E-03	4.1E-03
5.1E-03	6.1E-03	7.1E-03	8.2E-03	9.2E-03	1.0E-02	1.1E-02	1.2E-02	1.2E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02
1.3E-02	1.2E-02	1.2E-02	1.1E-02	1.1E-02	9.9E-03	9.2E-03	8.4E-03	7.7E-03	7.0E-03	6.3E-03	5.7E-03	5.1E-03	4.5E-03
4.0E-03	3.5E-03	3.1E-03	2.7E-03	2.4E-03	2.1E-03	1.8E-03	1.5E-03	1.3E-03	9.6E-04	7.0E-04	5.0E-04	3.6E-04	2.5E-04
1.6E-04	1.0E-04	6.3E-05	3.9E-05	2.4E-05	1.5E-05	8.8E-06	5.3E-06						
K-40		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-20	1.6E-18	4.4E-17	8.5E-16	1.2E-14	1.3E-13
1.1E-12	8.2E-12	5.0E-11	2.6E-10	1.2E-09	4.7E-09	1.7E-08	5.7E-08	1.7E-07	4.9E-07	1.3E-06	3.1E-06	7.3E-06	1.6E-05
3.3E-05	6.7E-05	1.3E-04	2.4E-04	4.3E-04	7.4E-04	1.2E-03	2.0E-03	3.2E-03	5.0E-03	7.6E-03	1.1E-02	1.6E-02	2.3E-02
3.3E-02	4.6E-02	6.2E-02	8.3E-02	1.1E-01	1.4E-01	1.8E-01	2.3E-01	3.0E-01	3.7E-01	4.5E-01	6.7E-01	9.6E-01	1.3E+00
1.8E+00	2.4E+00	3.0E+00	3.8E+00	4.6E+00	5.6E+00	6.6E+00	7.7E+00	8.8E+00	9.8E+00	1.1E+01	1.2E+01	1.3E+01	1.4E+01
1.4E+01	1.5E+01	1.6E+01	1.6E+01	1.6E+01	1.6E+01	1.6E+01	1.6E+01	1.5E+01	1.5E+01	1.4E+01	1.4E+01	1.3E+01	1.2E+01
1.2E+01	1.1E+01	1.0E+01	9.4E+00	8.6E+00	7.9E+00	7.2E+00	6.6E+00	6.0E+00	4.9E+00	3.9E+00	3.1E+00	2.4E+00	1.9E+00
1.4E+00	9.6E-01	6.7E-01	4.7E-01	3.2E-01	2.2E-01	1.5E-01	9.8E-02						
Mn-53		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Na-22		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Nb-91		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	1.1E-20	4.5E-20	1.8E-19	7.1E-19	2.6E-18	9.0E-18	3.0E-17	9.6E-17	2.9E-16	8.7E-16	2.5E-15
6.8E-15	1.8E-14	4.7E-14	1.2E-13	2.8E-13	6.7E-13	1.5E-12	3.5E-12	7.6E-12	3.4E-11	1.4E-10	5.4E-10	1.9E-09	6.4E-09
2.6E-08	9.8E-08	3.4E-07	1.1E-06	3.3E-06	9.4E-06	2.5E-05	6.4E-05						
Nb-92		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-20	3.1E-20	9.0E-20
2.5E-19	6.7E-19	1.7E-18	4.4E-18	1.1E-17	2.6E-17	6.0E-17	1.4E-16	3.0E-16	1.4E-15	5.8E-15	2.3E-14	8.2E-14	2.8E-13
1.2E-12	4.5E-12	1.6E-11	5.4E-11	1.7E-10	4.8E-10	1.3E-09	3.5E-09						
Nb-93m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Nb-94		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-20	3.4E-20	1.6E-19	6.6E-19	2.6E-18	9.3E-18	3.1E-17
1.3E-16	5.1E-16	1.8E-15	6.0E-15	1.9E-14	5.4E-14	1.5E-13	3.9E-13						
Ni-59		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ni-63		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Os-194		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pa-231		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						

```
       Pb-202        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
       Pb-210        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
       Pd-107        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   3.9E-20   1.8E-19   7.6E-19   3.0E-18   1.1E-17   4.1E-17   1.4E-16
4.4E-16   1.4E-15   4.0E-15   1.1E-14   3.0E-14   7.8E-14   2.0E-13   4.8E-13   1.1E-12   2.6E-12   5.7E-12   2.6E-11   1.1E-10   4.1E-10
1.4E-09   4.6E-09   1.4E-08   3.9E-08   1.0E-07   2.6E-07   6.3E-07   1.5E-06   3.2E-06   6.8E-06   1.4E-05   2.7E-05   5.2E-05   9.7E-05
1.7E-04   3.1E-04   5.2E-04   8.8E-04   1.4E-03   2.3E-03   3.6E-03   5.6E-03   8.4E-03   1.3E-02   1.8E-02   2.7E-02   3.8E-02   5.3E-02
7.4E-02   1.0E-01   1.4E-01   1.8E-01   2.4E-01   3.2E-01   4.1E-01   5.3E-01   6.8E-01   1.1E+00   1.6E+00   2.5E+00   3.6E+00   5.1E+00
7.6E+00  1.1E+01  1.6E+01  2.2E+01  2.9E+01  3.8E+01  4.9E+01  6.1E+01
       Pm-145        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
       Pm-147        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
       Po-208        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
       Po-209        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
       Pt-193        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   8.0E-20   6.8E-19   5.0E-18
3.2E-17   1.9E-16   9.6E-16   4.5E-15   1.9E-14   7.6E-14   2.8E-13   9.3E-13   3.0E-12   8.8E-12   2.5E-11   6.6E-11   1.7E-10   4.1E-10
9.4E-10   2.1E-09   4.5E-09   9.2E-09   1.8E-08   3.5E-08   6.6E-08   1.2E-07   2.1E-07   3.6E-07   6.1E-07   9.9E-07   1.6E-06   2.5E-06
3.8E-06   5.8E-06   8.5E-06   1.2E-05   1.8E-05   2.5E-05   3.5E-05   4.7E-05   6.3E-05   1.1E-04   1.8E-04   2.9E-04   4.4E-04   6.5E-04
9.9E-04  1.4E-03  2.0E-03  2.6E-03  3.4E-03  4.2E-03  5.0E-03  5.7E-03
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PATHRAE-RAD(PC)  Version 2.2d  February 1995
  Date: 11-29-2007
  Time: 18:25:11
EnergySolutions Class A South cell side slope, vertical/vadose, lim conc, part 2
*****  Mirror Image of Input Files  *****
-- Input File:  ABCDEF.DAT
EnergySolutions Class A South cell side slope, vertical/vadose, lim conc, part 2, S28Lb
118,1.,3.,6.,9.,12.,15.,18.,21.,24.,27.,30.,35.,40.,45.,50.,55.,60.,65.,70.,75.,80.,85.,90.,95.,100.,105.,110.,115.,120.,125.,130.,1
35,0,1
1,2
0,1.,1.,2.86E-03,2.86E-03,3.64,0
1558.,0.100,0,0,0.308,3.34E-02,97.4,0
1,0,0,0,0,0
0,1.,1.,3.64,0,1800.,1.,0,0,0
0,0,0,0.0,1.
0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0
0,0
1,0,1,0
0.00286,0.026,0.109,0,0,1.,0,1.,0,0.355

-- Input File:  BRCDCF.DAT
158,Pu-236  0,0,0,0,0,0,0
159,Pu-238  0,0,0,0,0,0,0
160,Pu-239  0,0,0,0,0,0,0
161,Pu-242  0,0,0,0,0,0,0
162,Pu-244  0,0,0,0,0,0,0
163,Ra-228  0,0,0,0,0,0,0
164,Re-187  0,0,0,0,0,0,0
165,Se-79   0,0,0,0,0,0,0
166,Si-32   0,0,0,0,0,0,0
167,Sm-151  0,0,0,0,0,0,0
168,Sn-121m 0,0,0,0,0,0,0
169,Sn-126  0,0,0,0,0,0,0
170,Sr-90   0,0,0,0,0,0,0
171,Tb-157  0,0,0,0,0,0,0
172,Tb-158  0,0,0,0,0,0,0
173,Tc-99   0,0,0,0,0,0,0
174,Te-123  0,0,0,0,0,0,0
175,Th-229  0,0,0,0,0,0,0
176,Th-232  0,0,0,0,0,0,0
177,Ti-44   0,0,0,0,0,0,0
178,Tl-204  0,0,0,0,0,0,0
179,Tm-170  0,0,0,0,0,0,0
180,U-232   0,0,0,0,0,0,0
181,U-233   0,0,0,0,0,0,0
182,U-234   0,0,0,0,0,0,0
183,U-235   0,0,0,0,0,0,0
184,V-50    0,0,0,0,0,0,0
185,Zr-93   0,0,0,0,0,0,0
186,Ks-20   0,0,0,0,0,0,0
187,Ks-21   0,0,0,0,0,0,0
188,Ks-22   0,0,0,0,0,0,0
189,Ks-23   0,0,0,0,0,0,0
190,Ks-24   0,0,0,0,0,0,0
191,Ks-25   0,0,0,0,0,0,0
192,Ks-26   0,0,0,0,0,0,0
-- Input File:  INVNTRY.DAT
158,2.86E+00,9.00E-04,0,0,0,0,0
159,8.77E+01,1.80E-02,0,0,0,0,0
160,2.41E+04,1.80E-02,0,0,0,0,0
161,3.73E+05,1.80E-02,0,0,0,0,0
162,8.08E+07,9.00E-04,0,0,0,0,0
163,5.75E+00,4.90E+08,0,0,0,0,0
164,4.35E+10,1.00E-02,0,0,0,0,0
165,6.50E+04,1.25E+05,0,0,0,0,0
166,1.72E+02,1.17E+08,0,0,0,0,0
167,9.00E+01,4.74E+07,0,0,0,0,0
168,5.50E+01,9.68E+07,0,0,0,0,0
169,1.00E+05,5.11E+04,0,0,0,0,0
170,2.88E+01,4.50E-02,0,0,0,0,0
171,7.10E+01,2.70E+07,0,0,0,0,0
172,1.80E+02,2.70E+07,0,0,0,0,0
173,2.11E+05,1.40E-01,0,0,0,0,0
174,1.00E+13,5.24E-04,0,0,0,0,0
175,7.88E+03,3.83E+05,0,0,0,0,0
176,1.41E+10,1.98E-01,0,0,0,0,0
177,6.30E+01,2.81E+08,0,0,0,0,0
178,3.78E+00,7.92E+02,0,0,0,0,0
179,3.52E-01,7.92E+02,0,0,0,0,0
180,6.89E+01,3.97E+07,0,0,0,0,0
181,1.59E+05,1.35E-01,0,0,0,0,0
182,2.46E+05,1.12E+04,0,0,0,0,0
183,7.04E+08,3.42E-03,0,0,0,0,0
184,1.40E+17,9.20E-08,0,0,0,0,0
185,1.53E+06,4.53E+03,0,0,0,0,0
186,1.00E+00,7.92E+02,0,0,0,0,0
187,1.00E+00,7.92E+02,0,0,0,0,0
188,1.00E+00,7.92E+02,0,0,0,0,0
189,1.00E+00,7.92E+02,0,0,0,0,0
190,4.00E+00,7.92E+02,0,0,0,0,0
191,4.00E+00,7.92E+02,0,0,0,0,0
192,2.00E+00,7.92E+02,0,0,0,0,0
-- Input File:  RQSITE.DAT
158,1.58E-04,10.0,10.0
159,1.58E-04,10.0,10.0
160,1.58E-04,10.0,10.0
161,1.58E-04,10.0,10.0
162,1.58E-04,10.0,10.0
163,1.58E-04,10.0,10.0
164,1.47E-02,0.075,0.075
165,1.54E-03,1.0,1.0
166,4.15E-03,0.35,0.35
167,6.40E-04,2.45,2.45
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168,3.18E-05,50.0,50.0
169,3.18E-05,50.0,50.0
170,1.92E-02,0.05,0.05
171,2.43E-04,6.5,6.5
172,2.43E-04,6.5,6.5
173,1.11E-02,0.11,0.11
174,1.24E-03,1.25,1.25
175,1.58E-04,10.0,10.0
176,1.58E-04,10.0,10.0
177,1.58E-04,10.0,10.0
178,8.69E-03,0.15,0.15
179,2.43E-04,6.5,6.5
180,2.63E-04,6.0,6.0
181,2.63E-04,6.0,6.0
182,2.63E-04,6.0,6.0
183,2.63E-04,6.0,6.0
184,1.58E-04,10.0,10.0
185,1.58E-04,10.0,10.0
186,4.70E-02,0.001,0.001
187,3.71E-02,0.01,0.01
188,1.20E-02,0.1,0.1
189,1.54E-03,1.0,1.0
190,3.18E-05,50.0,50.0
191,1.59E-05,100.0,100.0
192,1.54E-03,1.0,1.0

-- Input File:  UPTAKE.DAT
2.86E-03,3.55E-01,1.558
0,0,0,0,0
0,0,0
0,0,0,0
0,0,0,0,0
0,0,0,0,0,730.,0
158,0.00E+00,0.0,0.0,0,0,0,0
159,0.00E+00,0.0,0.0,0,0,0,0
160,0.00E+00,0.0,0.0,0,0,0,0
161,0.00E+00,0.0,0.0,0,0,0,0
162,0.00E+00,0.0,0.0,0,0,0,0
163,0.00E+00,0.0,0.0,0,0,0,0
164,0.00E+00,0.0,0.0,0,0,0,0
165,0.00E+00,0.0,0.0,0,0,0,0
166,0.00E+00,0.0,0.0,0,0,0,0
167,0.00E+00,0.0,0.0,0,0,0,0
168,0.00E+00,0.0,0.0,0,0,0,0
169,0.00E+00,0.0,0.0,0,0,0,0
170,0.00E+00,0.0,0.0,0,0,0,0
171,0.00E+00,0.0,0.0,0,0,0,0
172,0.00E+00,0.0,0.0,0,0,0,0
173,0.00E+00,0.0,0.0,0,0,0,0
174,0.00E+00,0.0,0.0,0,0,0,0
175,0.00E+00,0.0,0.0,0,0,0,0
176,0.00E+00,0.0,0.0,0,0,0,0
177,0.00E+00,0.0,0.0,0,0,0,0
178,0.00E+00,0.0,0.0,0,0,0,0
179,0.00E+00,0.0,0.0,0,0,0,0
180,0.00E+00,0.0,0.0,0,0,0,0
181,0.00E+00,0.0,0.0,0,0,0,0
182,0.00E+00,0.0,0.0,0,0,0,0
183,0.00E+00,0.0,0.0,0,0,0,0
184,0.00E+00,0.0,0.0,0,0,0,0
185,0.00E+00,0.0,0.0,0,0,0,0
186,0.00E+00,0.0,0.0,0,0,0,0
187,0.00E+00,0.0,0.0,0,0,0,0
188,0.00E+00,0.0,0.0,0,0,0,0
189,0.00E+00,0.0,0.0,0,0,0,0
190,0.00E+00,0.0,0.0,0,0,0,0
191,0.00E+00,0.0,0.0,0,0,0,0
192,0.00E+00,0.0,0.0,0,0,0,0
1
                      TOTAL EQUIVALENT UPTAKE FACTORS FOR PATHRAE
               UT(J,1)   UT(J,2)   UT(J,3)   UT(J,4)   UT(J,5)   UT(J,6)
                RIVER     WELL     EROSION   BATHTUB  SPILLAGE    FOOD
NUCLIDE          L/YR      L/YR      L/YR      L/YR      L/YR     KG/YR
  Pu-236      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Pu-238      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  •
  •
  •
  Ks-25       0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Ks-26       0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
************  PATHRAE INPUT SUMMARY  **********
THERE ARE 80 ISOTOPES IN THE DOSE FACTOR LIBRARY
NUMBER OF TIMES FOR CALCULATION IS118
YEARS TO BE CALCULATED ARE ...
     1.00      3.00      6.00      9.00     12.00
    15.00     18.00     21.00     24.00     27.00
    30.00     35.00     40.00     45.00     50.00
    55.00     60.00     65.00     70.00     75.00
    80.00     85.00     90.00     95.00    100.00
   105.00    110.00    115.00    120.00    125.00
   130.00    135.00    140.00    145.00    150.00
   155.00    160.00    165.00    170.00    175.00
   180.00    185.00    190.00    195.00    200.00
   205.00    210.00    215.00    220.00    225.00
   230.00    235.00    240.00    245.00    250.00
   255.00    260.00    265.00    270.00    275.00
   280.00    285.00    290.00    295.00    300.00
   310.00    320.00    330.00    340.00    350.00
   360.00    370.00    380.00    390.00    400.00
   410.00    420.00    430.00    440.00    450.00
   460.00    470.00    480.00    490.00    500.00
   510.00    520.00    530.00    540.00    550.00
   560.00    570.00    580.00    590.00    600.00
   610.00    620.00    630.00    640.00    650.00
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   660.00   670.00   680.00   690.00   700.00
   720.00   740.00   760.00   780.00   800.00
   825.00   850.00   875.00   900.00   925.00
   950.00   975.00  1000.00
THERE ARE  35 ISOTOPES IN THE INVENTORY FILE
THE VALUE OF IFLAG IS 0
NUMBER OF PATHWAYS IS  1
           PATHWAY            TYPE OF USAGE
                            FOR UPTAKE FACTORS
   1  GROUNDWATER TO RIVER          2
TIME OF OPERATION OF WASTE FACILITY IN YEARS                  0.
LENGTH OF REPOSITORY (M)                                      1.
WIDTH OF REPOSITORY (M)                                       1.
RIVER FLOW RATE (M**3/YR)                                     2.86E-03
STREAM FLOW RATE (M**3/YR)                                    2.86E-03
DISTANCE TO RIVER (M)                                         4.
OPERATIONAL SPILLAGE FRACTION                                 0.00E+00
DENSITY OF AQUIFER (KG/M**3)                               1558.
LONGITUDINAL DISPERSIVITY (M)                                 1.00E-01
LATERAL DISPERSION COEFFICIENT -- Y AXIS (M**2/YR)            0.00E+00
NUMBER OF MESH POINTS FOR DISPERSION CALCULATION              1
FLAG FOR GAMMA PATHWAY OPTIONS                                0
FLAG FOR GAMMA BUILDUP CALCULATION                            0
FLAG FOR ATMOSPHERIC PATHWAY                                  0
COVER THICKNESS OVER WASTE (M)                                 .00
THICKNESS OF WASTE IN PITS (M)                                1.00
TOTAL WASTE VOLUME (M**3)                                     1.000E+00
DISTANCE TO WELL -- X COORDINATE (M)                          4.
DISTANCE TO WELL -- Y COORDINATE (M)                          0.
DENSITY OF WASTE (KG/M**3)                                 1800.
FRACTION OF FOOD CONSUMED THAT IS GROWN ON SITE               1.000
FRACTION OF YEAR SPENT IN DIRECT RADIATION FIELD               .000
DEPTH OF PLANT ROOT ZONE (M)                                   .000
AREAL DENSITY OF PLANTS (KG/M**2)                              .000
AVERAGE DUST LOADING IN AIR (KG/M**3)                         0.00E+00
ANNUAL ADULT BREATHING RATE (M**3/YR)                         0.
FRACTION OF YEAR EXPOSED TO DUST                               .000
CANISTER LIFETIME (YEARS)                                     0.
INVENTORY SCALING FACTOR                                      1.00E+00
HEIGHT OF ROOMS IN RECLAIMER HOUSE (CM)                       0.
AIR CHANGE RATE IN RECLAIMER HOUSE (CHANGES/SEC)              0.00E+00
RADON EMANATING POWER OF THE WASTE                            0.00E+00
DIFFUSION COEFF. OF RADON IN WASTE (CM**2/SEC)                0.00E+00
DIFFUSION COEFF. OF RN IN CONCRETE (CM**2/SEC)                0.00E+00
THICKNESS OF CONCRETE SLAB FLOOR (CM)                          .0
DIFFUSION COEFF. OF RADON IN COVER (CM**2/SEC)                0.00E+00
ATMOSPHERIC STABILITY CLASS                                   0
AVERAGE WIND SPEED (M/S)                                       .00
FRACTION OF TIME WIND BLOWS TOWARD RECEPTOR                    .0000
RECEPTOR DISTANCE FOR ATMOSPHERIC PATHWAY (M)                  .0
DUST RESUSPENSION RATE FOR OFFSITE TRANSPORT (M**3/S)         0.00E+00
DEPOSITION VELOCITY (M/S)                                      .0000
STACK HEIGHT (M)                                               .0
STACK INSIDE DIAMETER (M)                                      .00
STACK GAS VELOCITY (M/S)                                       .0
HEAT EMISSION RATE FROM BURNING (CAL/S)                       0.00E+00
DECAY CHAIN FLAGS                           0   0   0   0   0   0   0
FLAG FOR INPUT SUMMARY PRINTOUT                               1
FLAG FOR DIRECTION OF TRENCH FILLING                          1
FLAG FOR GROUNDWATER PATHWAY OPTIONS                          0
AMOUNT OF WATER PERCOLATING THROUGH WASTE ANNUALLY (M)        2.86E-03
DEGREE OF SOIL SATURATION                                      .308
RESIDUAL SOIL SATURATION                                       .033
PERMEABILITY OF VERTICAL ZONE (M/YR)                         97.40
SOIL NUMBER                                                    .000
POROSITY OF AQUIFER                                            .11
POROSITY OF UNSATURATED ZONE                                   .36
DISTANCE FROM AQUIFER TO WASTE (M)                             .0
AVERAGE VERTICAL GROUNDWATER VELOCITY (M/YR)                  2.62E-02
HORIZONTAL VELOCITY OF AQUIFER (M/YR)                          .0
LENGTH OF PERFORATED WELL CASING (M)                          1.000
SURFACE EROSION RATE (M/YR)                                   0.000E+00
LEACH RATE SCALING FACTOR                                     1.000E+00
ANNUAL RUNOFF OF PRECIPITATION (M)                            0.00E+00
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NUCLIDE	INGESTION DOSE FACTORS (MREM/PCI)	INHALATION DOSE FACTORS (MREM/PCI)	DIRECT GAMMA DOSE FACTORS (MREM-M2/PCI-YR)	HALF LIFE (YR)
Pu-236	0.000E+00	0.000E+00	0.000E+00	2.860E+00
Pu-238	0.000E+00	0.000E+00	0.000E+00	8.770E+01
Pu-239	0.000E+00	0.000E+00	0.000E+00	2.410E+04
Pu-242	0.000E+00	0.000E+00	0.000E+00	3.730E+05
Pu-244	0.000E+00	0.000E+00	0.000E+00	8.080E+07
Ra-228	0.000E+00	0.000E+00	0.000E+00	5.750E+00
Re-187	0.000E+00	0.000E+00	0.000E+00	4.350E+10
Se-79	0.000E+00	0.000E+00	0.000E+00	6.500E+04
Si-32	0.000E+00	0.000E+00	0.000E+00	1.720E+02
Sm-151	0.000E+00	0.000E+00	0.000E+00	9.000E+01
Sn-121m	0.000E+00	0.000E+00	0.000E+00	5.500E+01
Sn-126	0.000E+00	0.000E+00	0.000E+00	1.000E+05
Sr-90	0.000E+00	0.000E+00	0.000E+00	2.880E+01
Tb-157	0.000E+00	0.000E+00	0.000E+00	7.100E+01
Tb-158	0.000E+00	0.000E+00	0.000E+00	1.800E+02
Tc-99	0.000E+00	0.000E+00	0.000E+00	2.110E+05
Te-123	0.000E+00	0.000E+00	0.000E+00	1.000E+13
Th-229	0.000E+00	0.000E+00	0.000E+00	7.880E+03
Th-232	0.000E+00	0.000E+00	0.000E+00	1.410E+10
Ti-44	0.000E+00	0.000E+00	0.000E+00	6.300E+01
Tl-204	0.000E+00	0.000E+00	0.000E+00	3.780E+00
Tm-170	0.000E+00	0.000E+00	0.000E+00	3.520E-01
U-232	0.000E+00	0.000E+00	0.000E+00	6.890E+01
U-233	0.000E+00	0.000E+00	0.000E+00	1.590E+05
U-234	0.000E+00	0.000E+00	0.000E+00	2.460E+05
U-235	0.000E+00	0.000E+00	0.000E+00	7.040E+08
V-50	0.000E+00	0.000E+00	0.000E+00	1.400E+17
Zr-93	0.000E+00	0.000E+00	0.000E+00	1.530E+06

Ks-20	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-21	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-22	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-23	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-24	0.000E+00	0.000E+00	0.000E+00	4.000E+00
Ks-25	0.000E+00	0.000E+00	0.000E+00	4.000E+00
Ks-26	0.000E+00	0.000E+00	0.000E+00	2.000E+00

NUCLIDE	VOLATILITY FRACTION	GAMMA ENERGY (MEV)	GAMMA ATTENUATION (1/M)
Pu-236	0.000E+00	0.000E+00	0.000E+00
•			
•			
•			
Ks-25	0.000E+00	0.000E+00	0.000E+00
Ks-26	0.000E+00	0.000E+00	0.000E+00

NUCLIDE	INPUT LEACH RATE (1/YR)	FINAL LEACH RATE (1/YR)	SOLUBILITY (MOLE/L)	INPUT INVENTORY (CI)
Pu-236	1.580E-04	1.580E-04	0.000E+00	9.000E-04
Pu-238	1.580E-04	1.580E-04	0.000E+00	1.800E-02
Pu-239	1.580E-04	1.580E-04	0.000E+00	1.800E-02
Pu-242	1.580E-04	1.580E-04	0.000E+00	1.800E-02
Pu-244	1.580E-04	1.580E-04	0.000E+00	9.000E-04
Ra-228	1.580E-04	1.580E-04	0.000E+00	4.900E+08
Re-187	1.470E-02	1.470E-02	0.000E+00	1.000E-02
Se-79	1.540E-03	1.540E-03	0.000E+00	1.250E+05
Si-32	4.150E-03	4.150E-03	0.000E+00	1.170E+08
Sm-151	6.400E-04	6.400E-04	0.000E+00	4.740E+07
Sn-121m	3.180E-05	3.180E-05	0.000E+00	9.680E+07
Sn-126	3.180E-05	3.180E-05	0.000E+00	5.110E+04
Sr-90	1.920E-02	1.920E-02	0.000E+00	4.500E-02
Tb-157	2.430E-04	2.430E-04	0.000E+00	2.700E+07
Tb-158	2.430E-04	2.430E-04	0.000E+00	2.700E+07
Tc-99	1.110E-02	1.110E-02	0.000E+00	1.400E-01
Te-123	1.240E-03	1.240E-03	0.000E+00	5.240E-04
Th-229	1.580E-04	1.580E-04	0.000E+00	3.830E+05
Th-232	1.580E-04	1.580E-04	0.000E+00	1.980E-01
Ti-44	1.580E-04	1.580E-04	0.000E+00	2.810E+08
Tl-204	8.690E-03	8.690E-03	0.000E+00	7.920E+02
Tm-170	2.430E-04	2.430E-04	0.000E+00	7.920E+02
U-232	2.630E-04	2.630E-04	0.000E+00	3.970E+07
U-233	2.630E-04	2.630E-04	0.000E+00	1.350E-01
U-234	2.630E-04	2.630E-04	0.000E+00	1.120E+04
U-235	2.630E-04	2.630E-04	0.000E+00	3.420E-03
V-50	1.580E-04	1.580E-04	0.000E+00	9.200E-08
Zr-93	1.580E-04	1.580E-04	0.000E+00	4.530E+03
Ks-20	4.700E-02	4.700E-02	0.000E+00	7.920E+02
Ks-21	3.710E-02	3.710E-02	0.000E+00	7.920E+02
Ks-22	1.200E-02	1.200E-02	0.000E+00	7.920E+02
Ks-23	1.540E-03	1.540E-03	0.000E+00	7.920E+02
Ks-24	3.180E-05	3.180E-05	0.000E+00	7.920E+02
Ks-25	1.590E-05	1.590E-05	0.000E+00	7.920E+02
Ks-26	1.540E-03	1.540E-03	0.000E+00	7.920E+02

NUCLIDE	AQUIFER SORPTION	AQUIFER RETARDATION	VERTICAL SORPTION	VERTICAL RETARDATION
Pu-236	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Pu-238	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Pu-239	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Pu-242	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Pu-244	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Ra-228	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Re-187	7.500E-02	2.072E+00	7.500E-02	2.069E+00
Se-79	1.000E+00	1.529E+01	1.000E+00	1.525E+01
Si-32	3.500E-01	6.003E+00	3.500E-01	5.987E+00
Sm-151	2.450E+00	3.602E+01	2.450E+00	3.591E+01
Sn-121m	5.000E+01	7.157E+02	5.000E+01	7.135E+02
Sn-126	5.000E+01	7.157E+02	5.000E+01	7.135E+02
Sr-90	5.000E-02	1.715E+00	5.000E-02	1.712E+00
Tb-157	6.500E+00	9.391E+01	6.500E+00	9.362E+01
Tb-158	6.500E+00	9.391E+01	6.500E+00	9.362E+01
Tc-99	1.100E-01	2.572E+00	1.100E-01	2.567E+00
Te-123	1.250E+00	1.887E+01	1.250E+00	1.881E+01
Th-229	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Th-232	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Ti-44	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Tl-204	1.500E-01	3.144E+00	1.500E-01	3.137E+00
Tm-170	6.500E+00	9.391E+01	6.500E+00	9.362E+01
U-232	6.000E+00	8.676E+01	6.000E+00	8.649E+01
U-233	6.000E+00	8.676E+01	6.000E+00	8.649E+01
U-234	6.000E+00	8.676E+01	6.000E+00	8.649E+01
U-235	6.000E+00	8.676E+01	6.000E+00	8.649E+01
V-50	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Zr-93	1.000E+01	1.439E+02	1.000E+01	1.435E+02
Ks-20	1.000E-03	1.014E+00	1.000E-03	1.014E+00
Ks-21	1.000E-02	1.143E+00	1.000E-02	1.142E+00
Ks-22	1.000E-01	2.429E+00	1.000E-01	2.425E+00
Ks-23	1.000E+00	1.529E+01	1.000E+00	1.525E+01
Ks-24	5.000E+01	7.157E+02	5.000E+01	7.135E+02
Ks-25	1.000E+02	1.430E+03	1.000E+02	1.426E+03
Ks-26	1.000E+00	1.529E+01	1.000E+00	1.525E+01

BIOACCUMULATION FACTORS

NUCLIDE	SOIL-PLANT Bv	SOIL-PLANT Br	FORAGE-MILK Fm (D/L)	FORAGE-MEAT Ff (D/KG)
Pu-236	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00
•				
•				
•				
Ks-25	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ks-26	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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                                                  PATHWAY  1
                                              GROUNDWATER TO RIVER
NUCLIDE CONCENTRATIONS IN RIVER  (Ci/m**3)
  NUCLIDE/TIME           1.         3.         6.         9.        12.        15.        18.        21.        24.        27.        30.        35.
40.        45.        50.        55.        60.        65.        70.        75.        80.        85.        90.        95.       100.       105.
110.       115.       120.       125.       130.       135.       140.       145.       150.       155.       160.       165.       170.       175.
180.       185.       190.       195.       200.       205.       210.       215.       220.       225.       230.       235.       240.       245.
250.       255.       260.       265.       270.       275.       280.       285.       290.       295.       300.       310.       320.       330.
340.       350.       360.       370.       380.       390.       400.       410.       420.       430.       440.       450.       460.       470.
480.       490.       500.       510.       520.       530.       540.       550.       560.       570.       580.       590.       600.       610.
620.       630.       640.       650.       660.       670.       680.       690.       700.       720.       740.       760.       780.       800.
825.      850.      875.      900.      925.      950.      975.     1000.
     Pu-236          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pu-238          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pu-239          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pu-242          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pu-244          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Ra-228          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Re-187          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    1.1E-19    8.0E-18    3.0E-16    7.0E-15    1.1E-13    1.2E-12    9.6E-12    6.3E-11    3.4E-10    1.5E-09
5.8E-09    2.0E-08    6.0E-08    1.7E-07    4.2E-07    9.8E-07    2.1E-06    4.3E-06    8.4E-06    1.5E-05    2.7E-05    4.5E-05    7.3E-05    1.1E-04
1.7E-04    2.6E-04    3.7E-04    5.1E-04    7.0E-04    9.4E-04    1.2E-03    1.6E-03    2.0E-03    2.5E-03    3.1E-03    3.7E-03    4.4E-03    5.2E-03
6.1E-03    7.0E-03    7.9E-03    8.9E-03    9.9E-03    1.1E-02    1.2E-02    1.3E-02    1.4E-02    1.5E-02    1.6E-02    1.7E-02    1.8E-02    1.9E-02
1.9E-02    1.9E-02    1.9E-02    1.8E-02    1.7E-02    1.6E-02    1.5E-02    1.3E-02    1.2E-02    1.0E-02    9.2E-03    8.0E-03    6.9E-03    5.9E-03
5.0E-03    4.2E-03    3.5E-03    2.9E-03    2.4E-03    2.0E-03    1.6E-03    1.3E-03    1.0E-03    8.4E-04    6.8E-04    5.4E-04    4.3E-04    3.4E-04
2.7E-04    2.1E-04    1.7E-04    1.3E-04    1.0E-04    7.9E-05    6.2E-05    4.8E-05    3.7E-05    2.2E-05    1.3E-05    7.7E-06    4.5E-06    2.6E-06
1.3E-06   6.5E-07   3.2E-07   1.6E-07   7.8E-08   3.8E-08   1.8E-08   8.9E-09
     Se-79           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    5.3E-20    3.8E-19    2.5E-18    1.4E-17    7.6E-17    3.7E-16    1.7E-15    7.1E-15    2.8E-14    1.0E-13    3.5E-13    1.2E-12    3.6E-12
1.1E-11    3.0E-11    8.2E-11    2.1E-10    5.4E-10    1.3E-09    3.0E-09    6.9E-09    1.5E-08    3.2E-08    6.7E-08    1.3E-07    2.7E-07    5.1E-07
9.7E-07    1.8E-06    3.2E-06    5.7E-06    9.9E-06    1.7E-05    2.9E-05    4.7E-05    7.7E-05    2.0E-04    4.7E-04    1.1E-03    2.4E-03    5.0E-03
1.2E-02   2.7E-02   5.7E-02   1.2E-01   2.3E-01   4.3E-01   7.8E-01   1.4E+00
     Si-32           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    7.1E-20    1.4E-18    2.2E-17    2.9E-16    3.1E-15    2.9E-14    2.3E-13    1.6E-12    9.7E-12    5.4E-11    2.7E-10
1.2E-09    5.0E-09    1.9E-08    6.9E-08    2.3E-07    7.3E-07    2.2E-06    6.1E-06    1.6E-05    4.2E-05    1.0E-04    2.4E-04    5.4E-04    1.2E-03
2.5E-03    5.1E-03    1.0E-02    1.9E-02    3.7E-02    6.7E-02    1.2E-01    2.1E-01    3.6E-01    6.0E-01    9.8E-01    2.5E+00    6.0E+00    1.3E+01
2.9E+01    5.8E+01    1.1E+02    2.1E+02    3.7E+02    6.3E+02    1.0E+03    1.7E+03    2.6E+03    4.0E+03    5.9E+03    8.6E+03    1.2E+04    1.7E+04
2.3E+04    3.1E+04    4.1E+04    5.3E+04    6.8E+04    8.6E+04    1.1E+05    1.3E+05    1.6E+05    1.9E+05    2.3E+05    2.7E+05    3.1E+05    3.6E+05
4.1E+05    4.7E+05    5.3E+05    5.9E+05    6.5E+05    7.2E+05    7.9E+05    8.6E+05    9.4E+05    1.1E+06    1.2E+06    1.3E+06    1.5E+06    1.6E+06
1.7E+06   1.7E+06   1.7E+06   1.7E+06   1.7E+06   1.6E+06   1.5E+06   1.4E+06
     Sm-151          0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
1.5E-20   1.0E-19   6.1E-19   3.2E-18   1.5E-17   6.6E-17   2.6E-16   9.6E-16
     Sn-121m         0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
```

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Sn-126		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Sr-90		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	2.9E-19	3.8E-17	2.1E-15	6.2E-14	1.1E-12	1.2E-11	9.6E-11	5.9E-10	2.8E-09	1.1E-08	3.8E-08	1.1E-07
2.9E-07	6.7E-07	1.4E-06	2.8E-06	5.0E-06	8.6E-06	1.4E-05	2.1E-05	3.1E-05	4.3E-05	5.8E-05	7.5E-05	9.4E-05	1.2E-04
1.4E-04	1.6E-04	1.8E-04	2.0E-04	2.2E-04	2.4E-04	2.5E-04	2.6E-04	2.6E-04	2.6E-04	2.6E-04	2.5E-04	2.4E-04	2.3E-04
2.2E-04	2.1E-04	1.9E-04	1.7E-04	1.6E-04	1.4E-04	1.3E-04	1.1E-04	9.8E-05	8.6E-05	7.4E-05	5.5E-05	4.0E-05	2.8E-05
1.9E-05	1.3E-05	8.9E-06	5.9E-06	3.9E-06	2.5E-06	1.6E-06	1.0E-06	6.3E-07	3.9E-07	2.4E-07	1.5E-07	9.1E-08	5.5E-08
3.3E-08	2.0E-08	1.2E-08	6.9E-09	4.1E-09	2.4E-09	1.4E-09	8.1E-10	4.7E-10	2.7E-10	1.6E-10	9.0E-11	5.2E-11	3.0E-11
1.7E-11	9.6E-12	5.4E-12	3.1E-12	1.7E-12	9.8E-13	5.5E-13	3.1E-13	1.7E-13	5.5E-14	1.7E-14	5.3E-15	1.6E-15	5.0E-16
1.1E-16	2.6E-17	5.8E-18	1.3E-18	2.9E-19	6.4E-20	1.4E-20	0.0E+00						
Tb-157		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Tb-158		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Tc-99		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-20	1.7E-18	5.4E-17	1.1E-15	1.6E-14	1.8E-13	1.5E-12	1.0E-11
5.8E-11	2.8E-10	1.2E-09	4.4E-09	1.5E-08	4.4E-08	1.2E-07	3.2E-07	7.6E-07	1.7E-06	3.6E-06	7.3E-06	1.4E-05	2.6E-05
4.6E-05	7.8E-05	1.3E-04	2.1E-04	3.2E-04	4.9E-04	7.2E-04	1.0E-03	1.5E-03	2.0E-03	2.8E-03	3.7E-03	4.9E-03	6.3E-03
8.1E-03	1.0E-02	1.3E-02	1.6E-02	1.9E-02	2.3E-02	2.7E-02	3.2E-02	3.7E-02	4.3E-02	5.0E-02	6.4E-02	8.0E-02	9.8E-02
1.2E-01	1.3E-01	1.5E-01	1.7E-01	1.8E-01	2.0E-01	2.1E-01	2.1E-01	2.2E-01	2.2E-01	2.2E-01	2.1E-01	2.1E-01	2.0E-01
1.9E-01	1.8E-01	1.6E-01	1.5E-01	1.4E-01	1.3E-01	1.1E-01	1.0E-01	9.2E-02	8.1E-02	7.2E-02	6.3E-02	5.5E-02	4.8E-02
4.2E-02	3.6E-02	3.1E-02	2.6E-02	2.2E-02	1.9E-02	1.6E-02	1.4E-02	1.2E-02	8.1E-03	5.6E-03	3.9E-03	2.7E-03	1.8E-03
1.1E-03	6.6E-04	4.0E-04	2.4E-04	1.4E-04	8.1E-05	4.7E-05	2.7E-05						
Te-123		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-20	3.0E-20	7.1E-20	1.6E-19
3.6E-19	7.7E-19	1.6E-18	3.4E-18	6.8E-18	1.3E-17	2.6E-17	4.8E-17	9.0E-17	2.9E-16	8.9E-16	2.6E-15	6.9E-15	1.8E-14
5.4E-14	1.5E-13	4.1E-13	1.0E-12	2.4E-12	5.5E-12	1.2E-11	2.5E-11						
Th-229		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Th-232		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ti-44		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Tl-204		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-20
1.3E-19	3.6E-19	8.7E-19	1.8E-18	3.3E-18	5.3E-18	7.7E-18	1.0E-17	1.2E-17	1.4E-17	1.4E-17	1.4E-17	1.3E-17	1.2E-17
9.7E-18	7.8E-18	6.0E-18	4.4E-18	3.2E-18	2.2E-18	1.5E-18	9.6E-19	6.1E-19	3.8E-19	2.3E-19	1.4E-19	8.0E-20	4.5E-20
2.6E-20	1.4E-20	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Tm-170		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						

U-232		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-233		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-234		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-235		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
V-50		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Zr-93		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-20		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
5.8E-20	1.5E-19	1.5E-19	7.4E-20	2.3E-20	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-21		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-22		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-23		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-24		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-25		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

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0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ks-26         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
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PATHRAE-RAD(PC)  Version 2.2d  February 1995
  Date: 12- 6-2007
  Time: 19: 3:19
EnergySolutions Class A South cell side slope sensitivity, lim.conc, vert., part
*****  Mirror Image of Input Files  *****
--.Input File:  ABCDEF.DAT
EnergySolutions Class A South cell side slope sensitivity, lim.conc, vert., part 1, S59La
118,1.,3.,6.,9.,12.,15.,18.,21.,24.,27.,30.,35.,40.,45.,50.,55.,60.,65.,70.,75.,80.,85.,90.,95.,100.,105.,110.,115.,120.,125.,130.,1
65,0,1
1,2
0,1.,1.,5.95E-03,5.95E-03,3.64,0
1558.,0.100,0,0,0.317,3.34E-02,97.4,0
1,0,0,0,0,0
0,1.,1.,3.64,0,1800.,1.,0,0,0
0,0,0,0.0,1.
0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0
0,0,0,1,0,0,1
1,0,1,0
0.00595,0.053,0.113,0,0,1.,0,1.,0,0.355


-- Input File:  BRCDCF.DAT
101,Ac-227  0,0,0,0,0,0,0
102,Ag-108m 0,0,0,0,0,0,0
103,Al-26   0,0,0,0,0,0,0
48,Am-241   0,0,0,0,0,0,0
104,Am-242m 0,0,0,0,0,0,0
105,Am-243  0,0,0,0,0,0,0
106,Ba-133  0,0,0,0,0,0,0
107,Be-10   0,0,0,0,0,0,0
108,Bi-207  0,0,0,0,0,0,0
109,Bi-210m 0,0,0,0,0,0,0
110,Bk-247  0,0,0,0,0,0,0
111,C-14    0,0,0,0,0,0,0
112,Ca-41   0,0,0,0,0,0,0
113,Cd-113  0,0,0,0,0,0,0
114,Cd-113m 0,0,0,0,0,0,0
115,Cf-249  0,0,0,0,0,0,0
116,Cf-250  0,0,0,0,0,0,0
117,Cf-251  0,0,0,0,0,0,0
118,Cf-252  0,0,0,0,0,0,0
119,Cl-36   0,0,0,0,0,0,0
120,Cm-243  0,0,0,0,0,0,0
50,Cm-244   0,0,0,0,0,0,0
121,Cm-245  0,0,0,0,0,0,0
122,Cm-246  0,0,0,0,0,0,0
123,Cm-247  0,0,0,0,0,0,0
124,Cm-248  0,0,0,0,0,0,0
125,Co-60   0,0,0,0,0,0,0
126,Cs-135  0,0,0,0,0,0,0
127,Cs-137  0,0,0,0,0,0,0
128,Eu-152  0,0,0,0,0,0,0
129,Eu-154  0,0,0,0,0,0,0
130,Eu-155  0,0,0,0,0,0,0
131,Fe-55   0,0,0,0,0,0,0
132,Fe-60   0,0,0,0,0,0,0
133,Gd-148  0,0,0,0,0,0,0
134,H-3     0,0,0,0,0,0,0
135,Hg-194  0,0,0,0,0,0,0
136,Ho-166m 0,0,0,0,0,0,0
137,I-129   0,0,0,0,0,0,0
138,K-40    0,0,0,0,0,0,0
139,Mn-53   0,0,0,0,0,0,0
140,Na-22   0,0,0,0,0,0,0
141,Nb-91   0,0,0,0,0,0,0
142,Nb-92   0,0,0,0,0,0,0
143,Nb-93m  0,0,0,0,0,0,0
144,Nb-94   0,0,0,0,0,0,0
146,Ni-59   0,0,0,0,0,0,0
147,Ni-63   0,0,0,0,0,0,0
42,Np-237   0,0,0,0,0,0,0
148,Os-194  0,0,0,0,0,0,0
149,Pa-231  0,0,0,0,0,0,0
150,Pb-202  0,0,0,0,0,0,0
151,Pb-210  0,0,0,0,0,0,0
152,Pd-107  0,0,0,0,0,0,0
153,Pm-145  0,0,0,0,0,0,0
154,Pm-147  0,0,0,0,0,0,0
155,Po-208  0,0,0,0,0,0,0
156,Po-209  0,0,0,0,0,0,0
157,Pt-193  0,0,0,0,0,0,0
45,Pu-240   0,0,0,0,0,0,0
46,Pu-241   0,0,0,0,0,0,0
55,Ra-226   0,0,0,0,0,0,0
36,Th-230   0,0,0,0,0,0,0
40,U-236    0,0,0,0,0,0,0
41,U-238    0,0,0,0,0,0,0
-- Input File:  INVNTRY.DAT
101,2.18E+01,1.30E+08,0,0,0,0,0
102,4.18E+02,4.69E+07,0,0,0,0,0
103,7.40E+05,3.72E-02,0,0,0,0,0
48,4.32E+02,1.80E-02,0,0,0,0,0
104,1.41E+02,1.80E-02,0,0,0,0,0
105,7.37E+03,1.80E-02,0,0,0,0,0
106,1.05E+01,4.61E+08,0,0,0,0,0
107,1.51E+06,3.96E+04,0,0,0,0,0
108,3.16E+01,9.66E+07,0,0,0,0,0
109,3.04E+06,1.02E+03,0,0,0,0,0
110,1.40E+03,1.64E-10,0,0,0,0,0
111,5.73E+03,1.30E+01,0,0,0,0,0
112,1.03E+05,2.39E-06,0,0,0,0,0
113,9.30E+15,7.75E-07,0,0,0,0,0
114,1.41E+01,4.04E+08,0,0,0,0,0
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115,3.51E+02,1.80E-02,0,0,0,0,0
116,1.31E+01,9.00E-04,0,0,0,0,0
117,8.98E+02,1.80E-02,0,0,0,0,0
118,2.65E+00,7.92E+02,0,0,0,0,0
119,3.01E+05,4.87E-07,0,0,0,0,0
120,2.91E+01,1.80E-02,0,0,0,0,0
50,1.81E+01,1.80E-02,0,0,0,0,0
121,8.50E+03,1.80E-02,0,0,0,0,0
122,4.73E+03,1.80E-02,0,0,0,0,0
123,1.56E+07,1.80E-02,0,0,0,0,0
124,3.40E+05,1.80E-02,0,0,0,0,0
125,5.27E+00,7.92E+02,0,0,0,0,0
126,2.30E+06,2.07E+03,0,0,0,0,0
127,3.01E+01,1.13E+00,0,0,0,0,0
128,1.35E+01,3.11E+08,0,0,0,0,0
129,8.59E+00,4.87E+08,0,0,0,0,0
130,4.76E+00,7.92E+02,0,0,0,0,0
131,2.73E+00,7.92E+02,0,0,0,0,0
132,1.50E+06,7.15E+03,0,0,0,0,0
133,7.46E+01,5.80E+07,0,0,0,0,0
134,1.23E+01,4.50E+01,0,0,0,0,0
135,4.44E+02,6.38E+06,0,0,0,0,0
136,1.20E+03,3.24E+06,0,0,0,0,0
137,1.57E+07,1.20E-07,0,0,0,0,0
138,1.28E+09,8.10E-05,0,0,0,0,0
139,3.74E+06,3.24E+03,0,0,0,0,0
140,2.60E+00,7.92E+02,0,0,0,0,0
141,6.80E+02,1.04E+07,0,0,0,0,0
142,3.47E+07,2.02E+02,0,0,0,0,0
143,1.61E+01,4.74E+08,0,0,0,0,0
144,2.03E+04,2.34E-02,0,0,0,0,0
146,7.60E+04,2.52E+01,0,0,0,0,0
147,1.00E+02,3.96E+00,0,0,0,0,0
42,2.14E+06,1.80E-02,0,0,0,0,0
148,6.00E+00,5.53E+08,0,0,0,0,0
149,3.28E+04,8.46E+04,0,0,0,0,0
150,5.25E+04,6.12E+03,0,0,0,0,0
151,2.23E+01,1.37E+08,0,0,0,0,0
152,6.50E+06,9.18E+02,0,0,0,0,0
153,1.77E+01,2.52E+08,0,0,0,0,0
154,2.62E+00,7.92E+02,0,0,0,0,0
155,2.90E+00,7.92E+02,0,0,0,0,0
156,1.02E+02,3.02E+07,0,0,0,0,0
157,5.00E+01,6.66E+07,0,0,0,0,0
55,1.60E+03,1.80E-02,0,0,0,0,0
45,6.56E+03,1.80E-02,0,0,0,0,0
46,1.44E+01,6.30E-01,0,0,0,0,0
36,7.54E+04,3.71E+04,0,0,0,0,0
40,2.34E+07,1.16E+02,0,0,0,0,0
41,4.47E+09,6.05E-01,0,0,0,0,0
-- Input File:  RQSITE.DAT
101,7.29E-04,4.5,4.5
102,1.21E-03,2.7,2.7
103,2.20E-04,15.0,15.0
48,3.19E-03,1.0,1.0
104,3.19E-03,1.0,1.0
105,3.19E-03,1.0,1.0
106,3.29E-04,10.0,10.0
107,1.30E-03,2.5,2.5
108,3.19E-03,1.0,1.0
109,3.19E-03,1.0,1.0
110,8.78E-02,0.001,0.001
111,3.86E-04,8.52,8.52
112,3.81E-02,0.05,0.05
113,3.19E-03,1.0,1.0
114,3.19E-03,1.0,1.0
115,1.62E-03,2.0,2.0
116,1.62E-03,2.0,2.0
117,1.62E-03,2.0,2.0
118,1.62E-03,2.0,2.0
119,8.44E-02,0.0025,0.0025
120,3.54E-05,93.3,93.3
50,3.54E-05,93.3,93.3
121,3.54E-05,93.3,93.3
122,3.54E-05,93.3,93.3
123,3.54E-05,93.3,93.3
124,3.54E-05,93.3,93.3
125,8.93E-06,370.0,370.0
126,2.48E-05,133.0,133.0
127,2.48E-05,133.0,133.0
128,5.06E-04,6.5,6.5
129,5.06E-04,6.5,6.5
130,5.06E-04,6.5,6.5
131,2.30E-03,1.4,1.4
132,2.30E-03,1.4,1.4
133,5.06E-04,6.5,6.5
134,4.31E-02,0.04,0.04
135,3.29E-04,10.0,10.0
136,1.30E-03,2.5,2.5
137,2.11E-02,0.12,0.12
138,1.77E-02,0.15,0.15
139,5.14E-04,6.4,6.4
140,3.19E-03,1.0,1.0
141,2.02E-03,1.6,1.6
142,2.02E-03,1.6,1.6
143,2.02E-03,1.6,1.6
144,2.02E-03,1.6,1.6
146,3.29E-04,10.0,10.0
147,3.29E-04,10.0,10.0
42,1.09E-03,3.0,3.0
148,7.29E-04,4.5,4.5
149,5.97E-04,5.5,5.5
150,1.74E-04,19.0,19.0
151,1.74E-04,19.0,19.0
152,5.63E-03,0.55,0.55
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153,5.06E-04,6.5,6.5
154,5.06E-04,6.5,6.5
155,3.66E-04,9.0,9.0
156,3.66E-04,9.0,9.0
157,3.53E-03,0.9,0.9
45,3.29E-04,10.0,10.0
46,3.29E-04,10.0,10.0
36,3.29E-04,10.0,10.0
55,3.29E-04,9.99,9.99
40,5.48E-04,6.0,6.0
41,5.48E-04,6.0,6.0
-- Input File:  UPTAKE.DAT
5.95E-03,3.55E-01,1.558
0,0,0,0,0
0,0,0
0,0,0,0
0,0,0,0,0
0,0,0,0,0,730.,0
101,0.00E+00,0.0,0.0,0,0,0,0
102,0.00E+00,0.0,0.0,0,0,0,0
103,0.00E+00,0.0,0.0,0,0,0,0
48,0.00E+00,0.0,0.0,0,0,0,0
104,0.00E+00,0.0,0.0,0,0,0,0
105,0.00E+00,0.0,0.0,0,0,0,0
106,0.00E+00,0.0,0.0,0,0,0,0
107,0.00E+00,0.0,0.0,0,0,0,0
108,0.00E+00,0.0,0.0,0,0,0,0
109,0.00E+00,0.0,0.0,0,0,0,0
110,0.00E+00,0.0,0.0,0,0,0,0
111,0.00E+00,0.0,0.0,0,0,0,0
112,0.00E+00,0.0,0.0,0,0,0,0
113,0.00E+00,0.0,0.0,0,0,0,0
114,0.00E+00,0.0,0.0,0,0,0,0
115,0.00E+00,0.0,0.0,0,0,0,0
116,0.00E+00,0.0,0.0,0,0,0,0
117,0.00E+00,0.0,0.0,0,0,0,0
118,0.00E+00,0.0,0.0,0,0,0,0
119,0.00E+00,0.0,0.0,0,0,0,0
120,0.00E+00,0.0,0.0,0,0,0,0
50,0.00E+00,0.0,0.0,0,0,0,0
121,0.00E+00,0.0,0.0,0,0,0,0
122,0.00E+00,0.0,0.0,0,0,0,0
123,0.00E+00,0.0,0.0,0,0,0,0
124,0.00E+00,0.0,0.0,0,0,0,0
125,0.00E+00,0.0,0.0,0,0,0,0
126,0.00E+00,0.0,0.0,0,0,0,0
127,0.00E+00,0.0,0.0,0,0,0,0
128,0.00E+00,0.0,0.0,0,0,0,0
129,0.00E+00,0.0,0.0,0,0,0,0
130,0.00E+00,0.0,0.0,0,0,0,0
131,0.00E+00,0.0,0.0,0,0,0,0
132,0.00E+00,0.0,0.0,0,0,0,0
133,0.00E+00,0.0,0.0,0,0,0,0
134,0.00E+00,0.0,0.0,0,0,0,0
135,0.00E+00,0.0,0.0,0,0,0,0
136,0.00E+00,0.0,0.0,0,0,0,0
137,0.00E+00,0.0,0.0,0,0,0,0
138,0.00E+00,0.0,0.0,0,0,0,0
139,0.00E+00,0.0,0.0,0,0,0,0
140,0.00E+00,0.0,0.0,0,0,0,0
141,0.00E+00,0.0,0.0,0,0,0,0
142,0.00E+00,0.0,0.0,0,0,0,0
143,0.00E+00,0.0,0.0,0,0,0,0
144,0.00E+00,0.0,0.0,0,0,0,0
146,0.00E+00,0.0,0.0,0,0,0,0
147,0.00E+00,0.0,0.0,0,0,0,0
42,0.00E+00,0.0,0.0,0,0,0,0
148,0.00E+00,0.0,0.0,0,0,0,0
149,0.00E+00,0.0,0.0,0,0,0,0
150,0.00E+00,0.0,0.0,0,0,0,0
151,0.00E+00,0.0,0.0,0,0,0,0
152,0.00E+00,0.0,0.0,0,0,0,0
153,0.00E+00,0.0,0.0,0,0,0,0
154,0.00E+00,0.0,0.0,0,0,0,0
155,0.00E+00,0.0,0.0,0,0,0,0
156,0.00E+00,0.0,0.0,0,0,0,0
157,0.00E+00,0.0,0.0,0,0,0,0
45,0.00E+00,0.0,0.0,0,0,0,0
46,0.00E+00,0.0,0.0,0,0,0,0
55,0.00E+00,0.0,0.0,0,0,0,0
36,0.00E+00,0.0,0.0,0,0,0,0
40,0.00E+00,0.0,0.0,0,0,0,0
41,0.00E+00,0.0,0.0,0,0,0,0
1
                    TOTAL EQUIVALENT UPTAKE FACTORS FOR PATHRAE
               UT(J,1)   UT(J,2)   UT(J,3)   UT(J,4)   UT(J,5)   UT(J,6)
                RIVER     WELL     EROSION   BATHTUB  SPILLAGE    FOOD
NUCLIDE         L/YR      L/YR      L/YR      L/YR      L/YR      KG/YR
  Ac-227      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Ag-108m     0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  •
  •
  •
  Po-209      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Pt-193      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
**********  PATHRAE INPUT SUMMARY  **********
THERE ARE 80 ISOTOPES IN THE DOSE FACTOR LIBRARY
NUMBER OF TIMES FOR CALCULATION IS118
YEARS TO BE CALCULATED ARE ...
     1.00      3.00      6.00      9.00     12.00
    15.00     18.00     21.00     24.00     27.00
    30.00     35.00     40.00     45.00     50.00
    55.00     60.00     65.00     70.00     75.00
    80.00     85.00     90.00     95.00    100.00
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     105.00    110.00    115.00    120.00    125.00
     130.00    135.00    140.00    145.00    150.00
     155.00    160.00    165.00    170.00    175.00
     180.00    185.00    190.00    195.00    200.00
     205.00    210.00    215.00    220.00    225.00
     230.00    235.00    240.00    245.00    250.00
     255.00    260.00    265.00    270.00    275.00
     280.00    285.00    290.00    295.00    300.00
     310.00    320.00    330.00    340.00    350.00
     360.00    370.00    380.00    390.00    400.00
     410.00    420.00    430.00    440.00    450.00
     460.00    470.00    480.00    490.00    500.00
     510.00    520.00    530.00    540.00    550.00
     560.00    570.00    580.00    590.00    600.00
     610.00    620.00    630.00    640.00    650.00
     660.00    670.00    680.00    690.00    700.00
     720.00    740.00    760.00    780.00    800.00
     825.00    850.00    875.00    900.00    925.00
     950.00    975.00   1000.00
THERE ARE  65 ISOTOPES IN THE INVENTORY FILE
THE VALUE OF IFLAG IS 0
NUMBER OF PATHWAYS IS  1
           PATHWAY             TYPE OF USAGE
                              FOR UPTAKE FACTORS
   1  GROUNDWATER TO RIVER           2
TIME OF OPERATION OF WASTE FACILITY IN YEARS                        0.
LENGTH OF REPOSITORY (M)                                            1.
WIDTH OF REPOSITORY (M)                                             1.
RIVER FLOW RATE (M**3/YR)                                           5.95E-03
STREAM FLOW RATE (M**3/YR)                                          5.95E-03
DISTANCE TO RIVER (M)                                               4.
OPERATIONAL SPILLAGE FRACTION                                       0.00E+00
DENSITY OF AQUIFER (KG/M**3)                                     1558.
LONGITUDINAL DISPERSIVITY (M)                                       1.00E-01
LATERAL DISPERSION COEFFICIENT -- Y AXIS (M**2/YR)                  0.00E+00
NUMBER OF MESH POINTS FOR DISPERSION CALCULATION                    1
FLAG FOR GAMMA PATHWAY OPTIONS                                      0
FLAG FOR GAMMA BUILDUP CALCULATION                                  0
FLAG FOR ATMOSPHERIC PATHWAY                                        0
COVER THICKNESS OVER WASTE (M)                                       .00
THICKNESS OF WASTE IN PITS (M)                                      1.00
TOTAL WASTE VOLUME (M**3)                                           1.000E+00
DISTANCE TO WELL -- X COORDINATE (M)                                4.
DISTANCE TO WELL -- Y COORDINATE (M)                                0.
DENSITY OF WASTE (KG/M**3)                                       1800.
FRACTION OF FOOD CONSUMED THAT IS GROWN ON SITE                     1.000
FRACTION OF YEAR SPENT IN DIRECT RADIATION FIELD                     .000
DEPTH OF PLANT ROOT ZONE (M)                                         .000
AREAL DENSITY OF PLANTS (KG/M**2)                                    .000
AVERAGE DUST LOADING IN AIR (KG/M**3)                               0.00E+00
ANNUAL ADULT BREATHING RATE (M**3/YR)                               0.
FRACTION OF YEAR EXPOSED TO DUST                                     .000
CANISTER LIFETIME (YEARS)                                           0.
INVENTORY SCALING FACTOR                                            1.00E+00
HEIGHT OF ROOMS IN RECLAIMER HOUSE (CM)                             0.
AIR CHANGE RATE IN RECLAIMER HOUSE (CHANGES/SEC)                    0.00E+00
RADON EMANATING POWER OF THE WASTE                                  0.00E+00

DIFFUSION COEFF. OF RADON IN WASTE (CM**2/SEC)                      0.00E+00
DIFFUSION COEFF. OF RN IN CONCRETE (CM**2/SEC)                      0.00E+00
THICKNESS OF CONCRETE SLAB FLOOR (CM)                                .0
DIFFUSION COEFF. OF RADON IN COVER (CM**2/SEC)                      0.00E+00
ATMOSPHERIC STABILITY CLASS                                         0
AVERAGE WIND SPEED (M/S)                                             .00
FRACTION OF TIME WIND BLOWS TOWARD RECEPTOR                          .0000
RECEPTOR DISTANCE FOR ATMOSPHERIC PATHWAY (M)                        .0
DUST RESUSPENSION RATE FOR OFFSITE TRANSPORT (M**3/S)               0.00E+00
DEPOSITION VELOCITY (M/S)                                            .0000
STACK HEIGHT (M)                                                     .0
STACK INSIDE DIAMETER (M)                                            .00
STACK GAS VELOCITY (M/S)                                             .0
HEAT EMISSION RATE FROM BURNING (CAL/S)                             0.00E+00
DECAY CHAIN FLAGS                                 0   0   0   1   0   0   1
FLAG FOR INPUT SUMMARY PRINTOUT                                     1
FLAG FOR DIRECTION OF TRENCH FILLING                                1
FLAG FOR GROUNDWATER PATHWAY OPTIONS                                0
AMOUNT OF WATER PERCOLATING THROUGH WASTE ANNUALLY (M)              5.95E-03
DEGREE OF SOIL SATURATION                                            .317
RESIDUAL SOIL SATURATION                                             .033
PERMEABILITY OF VERTICAL ZONE (M/YR)                              97.40
SOIL NUMBER                                                          .000
POROSITY OF AQUIFER                                                  .11
POROSITY OF UNSATURATED ZONE                                         .36
DISTANCE FROM AQUIFER TO WASTE (M)                                   .0
AVERAGE VERTICAL GROUNDWATER VELOCITY (M/YR)                        5.29E-02
HORIZONTAL VELOCITY OF AQUIFER (M/YR)                                .1
LENGTH OF PERFORATED WELL CASING (M)                                1.000
SURFACE EROSION RATE (M/YR)                                         0.000E+00
LEACH RATE SCALING FACTOR                                           1.000E+00
ANNUAL RUNOFF OF PRECIPITATION (M)                                  0.00E+00
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NUCLIDE	INGESTION DOSE FACTORS (MREM/PCI)	INHALATION DOSE FACTORS (MREM/PCI)	DIRECT GAMMA DOSE FACTORS (MREM-M2/PCI-YR)	HALF LIFE (YR)
Ac-227	0.000E+00	0.000E+00	0.000E+00	2.180E+01
Ag-108m	0.000E+00	0.000E+00	0.000E+00	4.180E+02
Al-26	0.000E+00	0.000E+00	0.000E+00	7.400E+05
Am-242m	0.000E+00	0.000E+00	0.000E+00	1.410E+02
Am-243	0.000E+00	0.000E+00	0.000E+00	7.370E+03
Ba-133	0.000E+00	0.000E+00	0.000E+00	1.050E+01
Be-10	0.000E+00	0.000E+00	0.000E+00	1.510E+06
Bi-207	0.000E+00	0.000E+00	0.000E+00	3.160E+01
Bi-210m	0.000E+00	0.000E+00	0.000E+00	3.040E+06
Bk-247	0.000E+00	0.000E+00	0.000E+00	1.400E+03
C-14	0.000E+00	0.000E+00	0.000E+00	5.730E+03
Ca-41	0.000E+00	0.000E+00	0.000E+00	1.030E+05

Cd-113	0.000E+00	0.000E+00	0.000E+00	9.300E+15
Cd-113m	0.000E+00	0.000E+00	0.000E+00	1.410E+01
Cf-249	0.000E+00	0.000E+00	0.000E+00	3.510E+02
Cf-250	0.000E+00	0.000E+00	0.000E+00	1.310E+01
Cf-251	0.000E+00	0.000E+00	0.000E+00	8.980E+02
Cf-252	0.000E+00	0.000E+00	0.000E+00	2.650E+00
Cl-36	0.000E+00	0.000E+00	0.000E+00	3.010E+05
Cm-243	0.000E+00	0.000E+00	0.000E+00	2.910E+01
Cm-245	0.000E+00	0.000E+00	0.000E+00	8.500E+03
Cm-246	0.000E+00	0.000E+00	0.000E+00	4.730E+03
Cm-247	0.000E+00	0.000E+00	0.000E+00	1.560E+07
Cm-248	0.000E+00	0.000E+00	0.000E+00	3.400E+05
Co-60	0.000E+00	0.000E+00	0.000E+00	5.270E+00
Cs-135	0.000E+00	0.000E+00	0.000E+00	2.300E+06
Cs-137	0.000E+00	0.000E+00	0.000E+00	3.010E+01
Eu-152	0.000E+00	0.000E+00	0.000E+00	1.350E+01
Eu-154	0.000E+00	0.000E+00	0.000E+00	8.590E+00
Eu-155	0.000E+00	0.000E+00	0.000E+00	4.760E+00
Fe-55	0.000E+00	0.000E+00	0.000E+00	2.730E+00
Fe-60	0.000E+00	0.000E+00	0.000E+00	1.500E+06
Gd-148	0.000E+00	0.000E+00	0.000E+00	7.460E+01
H-3	0.000E+00	0.000E+00	0.000E+00	1.230E+01
Hg-194	0.000E+00	0.000E+00	0.000E+00	4.440E+02
Th-230	0.000E+00	0.000E+00	0.000E+00	7.540E+04
U-236	0.000E+00	0.000E+00	0.000E+00	2.340E+07
U-238	0.000E+00	0.000E+00	0.000E+00	4.470E+09
Np-237	0.000E+00	0.000E+00	0.000E+00	2.140E+06
Pu-240	0.000E+00	0.000E+00	0.000E+00	6.560E+03
Pu-241	0.000E+00	0.000E+00	0.000E+00	1.440E+01
Am-241	0.000E+00	0.000E+00	0.000E+00	4.320E+02
Cm-244	0.000E+00	0.000E+00	0.000E+00	1.810E+01
Ra-226	0.000E+00	0.000E+00	0.000E+00	1.600E+03
Ho-166m	0.000E+00	0.000E+00	0.000E+00	1.200E+03
I-129	0.000E+00	0.000E+00	0.000E+00	1.570E+07
K-40	0.000E+00	0.000E+00	0.000E+00	1.280E+09
Mn-53	0.000E+00	0.000E+00	0.000E+00	3.740E+06
Na-22	0.000E+00	0.000E+00	0.000E+00	2.600E+00
Nb-91	0.000E+00	0.000E+00	0.000E+00	6.800E+02
Nb-92	0.000E+00	0.000E+00	0.000E+00	3.470E+07
Nb-93m	0.000E+00	0.000E+00	0.000E+00	1.610E+01
Nb-94	0.000E+00	0.000E+00	0.000E+00	2.030E+04
Ni-59	0.000E+00	0.000E+00	0.000E+00	7.600E+04
Ni-63	0.000E+00	0.000E+00	0.000E+00	1.000E+02
Os-194	0.000E+00	0.000E+00	0.000E+00	6.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	3.280E+04
Pb-202	0.000E+00	0.000E+00	0.000E+00	5.250E+04
Pb-210	0.000E+00	0.000E+00	0.000E+00	2.230E+01
Pd-107	0.000E+00	0.000E+00	0.000E+00	6.500E+06
Pm-145	0.000E+00	0.000E+00	0.000E+00	1.770E+01
Pm-147	0.000E+00	0.000E+00	0.000E+00	2.620E+00
Po-208	0.000E+00	0.000E+00	0.000E+00	2.900E+00
Po-209	0.000E+00	0.000E+00	0.000E+00	1.020E+02
Pt-193	0.000E+00	0.000E+00	0.000E+00	5.000E+01

NUCLIDE	VOLATILITY FRACTION	GAMMA ENERGY (MEV)	GAMMA ATTENUATION (1/M)
Ac-227	0.000E+00	0.000E+00	0.000E+00
Ag-108m	0.000E+00	0.000E+00	0.000E+00
•			
•			
•			
Po-209	0.000E+00	0.000E+00	0.000E+00
Pt-193	0.000E+00	0.000E+00	0.000E+00

NUCLIDE	INPUT LEACH RATE (1/YR)	FINAL LEACH RATE (1/YR)	SOLUBILITY (MOLE/L)	INPUT INVENTORY (CI)
Ac-227	7.290E-04	7.290E-04	0.000E+00	1.300E+08
Ag-108m	1.210E-03	1.210E-03	0.000E+00	4.690E+07
Al-26	2.200E-04	2.200E-04	0.000E+00	3.720E-02
Am-242m	3.190E-03	3.190E-03	0.000E+00	1.800E-02
Am-243	3.190E-03	3.190E-03	0.000E+00	1.800E-02
Ba-133	3.290E-04	3.290E-04	0.000E+00	4.610E+08
Be-10	1.300E-03	1.300E-03	0.000E+00	3.960E+04
Bi-207	3.190E-03	3.190E-03	0.000E+00	9.660E+07
Bi-210m	3.190E-03	3.190E-03	0.000E+00	1.020E+03
Bk-247	8.780E-02	8.780E-02	0.000E+00	1.640E-10
C-14	3.860E-04	3.860E-04	0.000E+00	1.300E+01
Ca-41	3.810E-02	3.810E-02	0.000E+00	2.390E-06
Cd-113	3.190E-03	3.190E-03	0.000E+00	7.750E-07
Cd-113m	3.190E-03	3.190E-03	0.000E+00	4.040E+08
Cf-249	1.620E-03	1.620E-03	0.000E+00	1.800E-02
Cf-250	1.620E-03	1.620E-03	0.000E+00	9.000E-04
Cf-251	1.620E-03	1.620E-03	0.000E+00	1.800E-02
Cf-252	1.620E-03	1.620E-03	0.000E+00	7.920E+02
Cl-36	8.440E-02	8.440E-02	0.000E+00	4.870E-07
Cm-243	3.540E-05	3.540E-05	0.000E+00	1.800E-02
Cm-245	3.540E-05	3.540E-05	0.000E+00	1.800E-02
Cm-246	3.540E-05	3.540E-05	0.000E+00	1.800E-02
Cm-247	3.540E-05	3.540E-05	0.000E+00	1.800E-02
Cm-248	3.540E-05	3.540E-05	0.000E+00	1.800E-02
Co-60	8.930E-06	8.930E-06	0.000E+00	7.920E+02
Cs-135	2.480E-05	2.480E-05	0.000E+00	2.070E+03
Cs-137	2.480E-05	2.480E-05	0.000E+00	1.130E+00
Eu-152	5.060E-04	5.060E-04	0.000E+00	3.110E+08
Eu-154	5.060E-04	5.060E-04	0.000E+00	4.870E+08
Eu-155	5.060E-04	5.060E-04	0.000E+00	7.920E+02
Fe-55	2.300E-03	2.300E-03	0.000E+00	7.920E+02
Fe-60	2.300E-03	2.300E-03	0.000E+00	7.150E+03
Gd-148	5.060E-04	5.060E-04	0.000E+00	5.800E+07
H-3	4.310E-02	4.310E-02	0.000E+00	4.500E+01
Hg-194	3.290E-04	3.290E-04	0.000E+00	6.380E+06
Th-230	3.290E-04	3.290E-04	0.000E+00	3.710E+04
U-236	5.480E-04	5.480E-04	0.000E+00	1.160E+02
U-238	5.480E-04	5.480E-04	0.000E+00	6.050E-01
Np-237	1.090E-03	1.090E-03	0.000E+00	1.800E-02

Pu-240	3.290E-04	3.290E-04	0.000E+00	1.800E-02
Pu-241	3.290E-04	3.290E-04	0.000E+00	6.300E-01
Am-241	3.190E-03	3.190E-03	0.000E+00	1.800E-02
Cm-244	3.540E-05	3.540E-05	0.000E+00	1.800E-02
Ra-226	3.290E-04	3.290E-04	0.000E+00	1.800E-02
Ho-166m	1.300E-03	1.300E-03	0.000E+00	3.240E+06
I-129	2.110E-02	2.110E-02	0.000E+00	1.200E-07
K-40	1.770E-02	1.770E-02	0.000E+00	8.100E-05
Mn-53	5.140E-04	5.140E-04	0.000E+00	3.240E+03
Na-22	3.190E-03	3.190E-03	0.000E+00	7.920E+02
Nb-91	2.020E-03	2.020E-03	0.000E+00	1.040E+07
Nb-92	2.020E-03	2.020E-03	0.000E+00	2.020E+02
Nb-93m	2.020E-03	2.020E-03	0.000E+00	4.740E+08
Nb-94	2.020E-03	2.020E-03	0.000E+00	2.340E-02
Ni-59	3.290E-04	3.290E-04	0.000E+00	2.520E+01
Ni-63	3.290E-04	3.290E-04	0.000E+00	3.960E+00
Os-194	7.290E-04	7.290E-04	0.000E+00	5.530E+08
Pa-231	5.970E-04	5.970E-04	0.000E+00	8.460E+04
Pb-202	1.740E-04	1.740E-04	0.000E+00	6.120E+03
Pb-210	1.740E-04	1.740E-04	0.000E+00	1.370E+08
Pd-107	5.630E-03	5.630E-03	0.000E+00	9.180E+02
Pm-145	5.060E-04	5.060E-04	0.000E+00	2.520E+08
Pm-147	5.060E-04	5.060E-04	0.000E+00	7.920E+02
Po-208	3.660E-04	3.660E-04	0.000E+00	7.920E+02
Po-209	3.660E-04	3.660E-04	0.000E+00	3.020E+07
Pt-193	3.530E-03	3.530E-03	0.000E+00	6.660E+07

NUCLIDE	AQUIFER SORPTION	AQUIFER RETARDATION	VERTICAL SORPTION	VERTICAL RETARDATION
Ac-227	4.500E+00	6.304E+01	4.500E+00	6.330E+01
Ag-108m	2.700E+00	3.823E+01	2.700E+00	3.838E+01
Al-26	1.500E+01	2.078E+02	1.500E+01	2.087E+02
Am-242m	1.000E+00	1.479E+01	1.000E+00	1.484E+01
Am-243	1.000E+00	1.479E+01	1.000E+00	1.484E+01
Ba-133	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Be-10	2.500E+00	3.547E+01	2.500E+00	3.561E+01
Bi-207	1.000E+00	1.479E+01	1.000E+00	1.484E+01
Bi-210m	1.000E+00	1.479E+01	1.000E+00	1.484E+01
Bk-247	1.000E-03	1.014E+00	1.000E-03	1.014E+00
C-14	8.520E+00	1.185E+02	8.520E+00	1.190E+02
Ca-41	5.000E-02	1.689E+00	5.000E-02	1.692E+00
Cd-113	1.000E+00	1.479E+01	1.000E+00	1.484E+01
Cd-113m	1.000E+00	1.479E+01	1.000E+00	1.484E+01
Cf-249	2.000E+00	2.858E+01	2.000E+00	2.869E+01
Cf-250	2.000E+00	2.858E+01	2.000E+00	2.869E+01
Cf-251	2.000E+00	2.858E+01	2.000E+00	2.869E+01
Cf-252	2.000E+00	2.858E+01	2.000E+00	2.869E+01
Cl-36	2.500E-03	1.034E+00	2.500E-03	1.035E+00
Cm-243	9.330E+01	1.287E+03	9.330E+01	1.293E+03
Cm-245	9.330E+01	1.287E+03	9.330E+01	1.293E+03
Cm-246	9.330E+01	1.287E+03	9.330E+01	1.293E+03
Cm-247	9.330E+01	1.287E+03	9.330E+01	1.293E+03
Cm-248	9.330E+01	1.287E+03	9.330E+01	1.293E+03
Co-60	3.700E+02	5.102E+03	3.700E+02	5.123E+03
Cs-135	1.330E+02	1.835E+03	1.330E+02	1.842E+03
Cs-137	1.330E+02	1.835E+03	1.330E+02	1.842E+03
Eu-152	6.500E+00	9.062E+01	6.500E+00	9.099E+01
Eu-154	6.500E+00	9.062E+01	6.500E+00	9.099E+01
Eu-155	6.500E+00	9.062E+01	6.500E+00	9.099E+01
Fe-55	1.400E+00	2.030E+01	1.400E+00	2.038E+01
Fe-60	1.400E+00	2.030E+01	1.400E+00	2.038E+01
Gd-148	6.500E+00	9.062E+01	6.500E+00	9.099E+01
H-3	4.000E-02	1.552E+00	4.000E-02	1.554E+00
Hg-194	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Th-230	1.000E+01	1.389E+02	1.000E+01	1.394E+02
U-236	6.000E+00	8.373E+01	6.000E+00	8.407E+01
U-238	6.000E+00	8.373E+01	6.000E+00	8.407E+01
Np-237	3.000E+00	4.236E+01	3.000E+00	4.253E+01
Pu-240	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Pu-241	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Am-241	1.000E+00	1.479E+01	1.000E+00	1.484E+01
Cm-244	9.330E+01	1.287E+03	9.330E+01	1.293E+03
Ra-226	9.990E+00	1.387E+02	9.990E+00	1.393E+02
Ho-166m	2.500E+00	3.547E+01	2.500E+00	3.561E+01
I-129	1.200E-01	2.655E+00	1.200E-01	2.661E+00
K-40	1.500E-01	3.068E+00	1.500E-01	3.077E+00
Mn-53	6.400E+00	8.924E+01	6.400E+00	8.961E+01
Na-22	1.000E+00	1.479E+01	1.000E+00	1.484E+01
Nb-91	1.600E+00	2.306E+01	1.600E+00	2.315E+01
Nb-92	1.600E+00	2.306E+01	1.600E+00	2.315E+01
Nb-93m	1.600E+00	2.306E+01	1.600E+00	2.315E+01
Nb-94	1.600E+00	2.306E+01	1.600E+00	2.315E+01
Ni-59	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Ni-63	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Os-194	4.500E+00	6.304E+01	4.500E+00	6.330E+01
Pa-231	5.500E+00	7.683E+01	5.500E+00	7.715E+01
Pb-202	1.900E+01	2.630E+02	1.900E+01	2.640E+02
Pb-210	1.900E+01	2.630E+02	1.900E+01	2.640E+02
Pd-107	5.500E-01	8.583E+00	5.500E-01	8.615E+00
Pm-145	6.500E+00	9.062E+01	6.500E+00	9.099E+01
Pm-147	6.500E+00	9.062E+01	6.500E+00	9.099E+01
Po-208	9.000E+00	1.251E+02	9.000E+00	1.256E+02
Po-209	9.000E+00	1.251E+02	9.000E+00	1.256E+02
Pt-193	9.000E-01	1.341E+01	9.000E-01	1.346E+01

BIOACCUMULATION FACTORS

NUCLIDE	SOIL-PLANT Bv	SOIL-PLANT Br	FORAGE-MILK Fm (D/L)	FORAGE-MEAT Ff (D/KG)
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ag-108m	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Al-26	0.000E+00	0.000E+00	0.000E+00	0.000E+00
•				
•				
•				
Po-209	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pt-193	0.000E+00	0.000E+00	0.000E+00	0.000E+00

```
                                                  PATHWAY  1
                                              GROUNDWATER TO RIVER
NUCLIDE CONCENTRATIONS IN RIVER   (Ci/m**3)
  NUCLIDE/TIME           1.         3.         6.         9.        12.        15.        18.        21.        24.        27.        30.        35.
40.        45.        50.        55.        60.        65.        70.        75.        80.        85.        90.        95.       100.       105.
110.       115.       120.       125.       130.       135.       140.       145.       150.       155.       160.       165.       170.       175.
180.       185.       190.       195.       200.       205.       210.       215.       220.       225.       230.       235.       240.       245.
250.       255.       260.       265.       270.       275.       280.       285.       290.       295.       300.       310.       320.       330.
340.       350.       360.       370.       380.       390.       400.       410.       420.       430.       440.       450.       460.       470.
480.       490.       500.       510.       520.       530.       540.       550.       560.       570.       580.       590.       600.       610.
620.       630.       640.       650.       660.       670.       680.       690.       700.       720.       740.       760.       780.       800.
825.       850.       875.       900.       925.       950.       975.      1000.
    Ac-227            0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
    Ag-108m           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    2.2E-20    1.4E-19    8.0E-19    4.2E-18    2.1E-17    9.6E-17    4.1E-16    1.6E-15
6.2E-15    2.2E-14    7.5E-14    2.4E-13    7.5E-13    2.2E-12    6.2E-12    1.7E-11    4.4E-11    1.1E-10    2.7E-10    6.5E-10    1.5E-09    3.3E-09
7.2E-09    1.5E-08    3.1E-08    6.3E-08    1.2E-07    2.4E-07    4.5E-07    8.4E-07    1.5E-06    4.8E-06    1.4E-05    3.9E-05    1.0E-04    2.5E-04
7.2E-04    1.9E-03    4.9E-03    1.2E-02    2.7E-02    5.7E-02    1.2E-01    2.3E-01
    Al-26             0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
    Am-242m           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    2.6E-20    8.8E-20    2.8E-19    8.3E-19    2.4E-18    6.5E-18    1.7E-17
4.2E-17    1.0E-16    2.4E-16    5.3E-16    1.2E-15    2.4E-15    5.0E-15    1.0E-14    1.9E-14    3.7E-14    6.8E-14    2.2E-13    6.5E-13    1.8E-12
4.6E-12    1.1E-11    2.6E-11    5.6E-11    1.2E-10    2.3E-10    4.4E-10    8.0E-10    1.4E-09    2.4E-09    4.1E-09    6.6E-09    1.0E-08    1.6E-08
2.4E-08    3.6E-08    5.1E-08    7.3E-08    1.0E-07    1.4E-07    1.9E-07    2.5E-07    3.2E-07    4.1E-07    5.3E-07    6.6E-07    8.2E-07    1.0E-06
1.2E-06    1.5E-06    1.8E-06    2.1E-06    2.4E-06    2.8E-06    3.2E-06    3.7E-06    4.2E-06    5.3E-06    6.5E-06    7.9E-06    9.3E-06    1.1E-05
1.3E-05    1.4E-05    1.6E-05    1.7E-05    1.8E-05    1.9E-05    2.0E-05    2.0E-05
    Am-243            0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    2.0E-20    7.4E-20    2.5E-19    8.2E-19    2.5E-18    7.4E-18    2.1E-17    5.5E-17
1.4E-16    3.5E-16    8.3E-16    1.9E-15    4.3E-15    9.2E-15    1.9E-14    3.9E-14    7.9E-14    1.5E-13    2.9E-13    9.8E-13    3.0E-12    8.8E-12
2.4E-11    6.0E-11    1.5E-10    3.3E-10    7.2E-10    1.5E-09    3.0E-09    5.8E-09    1.1E-08    1.9E-08    3.4E-08    5.8E-08    9.6E-08    1.5E-07
2.4E-07    3.8E-07    5.7E-07    8.5E-07    1.2E-06    1.8E-06    2.5E-06    3.5E-06    4.8E-06    6.5E-06    8.6E-06    1.1E-05    1.5E-05    1.9E-05
2.4E-05    3.1E-05    3.8E-05    4.8E-05    5.8E-05    7.1E-05    8.6E-05    1.0E-04    1.2E-04    1.7E-04    2.3E-04    3.1E-04    4.0E-04    5.1E-04
6.7E-04    8.6E-04    1.1E-03    1.3E-03    1.6E-03    1.9E-03    2.2E-03    2.5E-03
    Ba-133            0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
    Be-10             0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    5.3E-20    2.7E-19    1.3E-18    5.8E-18    2.4E-17    9.3E-17    3.4E-16
1.2E-15    3.9E-15    1.2E-14    3.7E-14    1.1E-13    2.9E-13    7.8E-13    2.0E-12    4.9E-12    1.2E-11    2.7E-11    6.1E-11    1.3E-10    2.8E-10
5.9E-10    1.2E-09    2.4E-09    4.6E-09    8.7E-09    1.6E-08    2.9E-08    5.3E-08    9.3E-08    2.7E-07    7.6E-07    2.0E-06    4.9E-06    1.2E-05
3.2E-05    8.3E-05    2.0E-04    4.6E-04    1.0E-03    2.1E-03    4.3E-03    8.3E-03
    Bi-207            0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    8.4E-20    7.1E-19    5.2E-18    3.4E-17
2.0E-16    1.0E-15    4.9E-15    2.1E-14    8.6E-14    3.2E-13    1.1E-12    3.6E-12    1.1E-11    3.2E-11    8.9E-11    2.3E-10    5.8E-10    1.4E-09
3.2E-09    7.1E-09    1.5E-08    3.1E-08    6.3E-08    1.2E-07    2.3E-07    4.2E-07    7.5E-07    1.3E-06    2.2E-06    6.0E-06    1.5E-05    3.5E-05
7.6E-05    1.6E-04    3.0E-04    5.5E-04    9.6E-04    1.6E-03    2.6E-03    4.0E-03    6.0E-03    8.7E-03    1.2E-02    1.7E-02    2.2E-02    2.9E-02
3.7E-02    4.6E-02    5.6E-02    6.6E-02    7.8E-02    9.0E-02    1.0E-01    1.1E-01    1.2E-01    1.4E-01    1.5E-01    1.5E-01    1.6E-01    1.7E-01
1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.6E-01    1.6E-01    1.5E-01    1.4E-01    1.2E-01    1.0E-01    8.6E-02    7.0E-02
5.4E-02    4.0E-02    2.9E-02    2.1E-02    1.4E-02    9.8E-03    6.5E-03    4.3E-03
    Bi-210m           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    1.7E-20
1.1E-19    6.3E-19    3.3E-18    1.6E-17    7.3E-17    3.0E-16    1.2E-15    4.3E-15    1.5E-14    4.8E-14    1.5E-13    4.3E-13    1.2E-12    3.2E-12
8.2E-12    2.0E-11    4.8E-11    1.1E-10    2.5E-10    5.4E-10    1.1E-09    2.3E-09    4.6E-09    8.9E-09    1.7E-08    5.7E-08    1.8E-07    5.1E-07
1.4E-06    3.5E-06    8.5E-06    1.9E-05    4.2E-05    8.8E-05    1.8E-04    3.4E-04    6.4E-04    1.1E-03    2.0E-03    3.4E-03    5.7E-03    9.2E-03
1.4E-02    2.2E-02    3.4E-02    5.1E-02    7.4E-02    1.1E-01    1.5E-01    2.1E-01    2.9E-01    3.9E-01    5.2E-01    6.8E-01    8.9E-01    1.1E+00
1.5E+00    1.8E+00    2.3E+00    2.9E+00    3.5E+00    4.3E+00    5.2E+00    6.2E+00    7.4E+00    1.0E+01    1.4E+01    1.9E+01    2.4E+01    3.1E+01
4.1E+01    5.3E+01    6.6E+01    8.1E+01    9.8E+01    1.2E+02    1.3E+02    1.5E+02
    Bk-247            0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    1.6E-19    1.6E-17    5.1E-16    7.7E-15    2.2E-13
2.5E-12    1.4E-11    5.0E-11    1.3E-10    2.5E-10    3.9E-10    5.2E-10    6.0E-10    6.3E-10    6.0E-10    5.2E-10    4.3E-10    3.4E-10    2.5E-10
1.8E-10    1.3E-10    8.6E-11    5.7E-11    3.7E-11    2.3E-11    1.5E-11    8.9E-12    5.4E-12    3.2E-12    1.9E-12    1.1E-12    6.5E-13    3.7E-13
2.1E-13    1.2E-13    6.9E-14    3.9E-14    2.2E-14    1.2E-14    6.6E-15    3.7E-15    2.0E-15    1.1E-15    6.0E-16    3.3E-16    1.8E-16    9.6E-17
5.2E-17    2.8E-17    1.5E-17    8.0E-18    4.3E-18    2.3E-18    1.2E-18    6.5E-19    3.5E-19    1.9E-19    9.8E-20    2.8E-20    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
    C-14              0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
```

```
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Ca-41        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  1.6E-20  2.1E-18  1.0E-15
1.0E-13  3.3E-12  4.9E-11  4.3E-10  2.5E-09  1.0E-08  3.4E-08  9.2E-08  2.1E-07  4.2E-07  7.4E-07  1.2E-06  1.8E-06  2.5E-06
3.2E-06  3.9E-06  4.6E-06  5.1E-06  5.4E-06  5.6E-06  5.6E-06  5.4E-06  5.0E-06  4.6E-06  4.2E-06  3.7E-06  3.2E-06  2.7E-06
2.2E-06  1.9E-06  1.5E-06  1.2E-06  9.7E-07  7.7E-07  6.0E-07  4.7E-07  3.6E-07  2.8E-07  2.1E-07  1.6E-07  1.2E-07  8.9E-08
6.6E-08  4.9E-08  3.6E-08  2.6E-08  1.9E-08  1.4E-08  1.0E-08  7.4E-09  5.3E-09  3.8E-09  2.8E-09  1.4E-09  7.1E-10  3.6E-10
1.8E-10  8.8E-11  4.3E-11  2.1E-11  1.0E-11  5.0E-12  2.4E-12  1.2E-12  5.6E-13  2.7E-13  1.3E-13  6.0E-14  2.9E-14  1.3E-14
6.3E-15  3.0E-15  1.4E-15  6.6E-16  3.1E-16  1.4E-16  6.7E-17  3.1E-17  1.5E-17  6.8E-18  3.1E-18  1.5E-18  6.7E-19  3.1E-19
1.4E-19  6.7E-20  3.1E-20  1.4E-20  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cd-113       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  1.5E-20  3.7E-20  8.4E-20  1.9E-19  4.1E-19  8.5E-19  1.7E-18  3.5E-18  6.8E-18  1.3E-17  4.3E-17  1.3E-16  3.9E-16
1.1E-15  2.7E-15  6.5E-15  1.5E-14  3.2E-14  6.7E-14  1.3E-13  2.6E-13  4.8E-13  8.7E-13  1.5E-12  2.6E-12  4.3E-12  7.0E-12
1.1E-11  1.7E-11  2.6E-11  3.8E-11  5.6E-11  8.0E-11  1.1E-10  1.6E-10  2.2E-10  2.9E-10  3.9E-10  5.2E-10  6.7E-10  8.7E-10
1.1E-09  1.4E-09  1.8E-09  2.2E-09  2.7E-09  3.3E-09  3.9E-09  4.7E-09  5.7E-09  7.9E-09  1.1E-08  1.4E-08  1.8E-08  2.4E-08
3.1E-08  4.0E-08  5.0E-08  6.2E-08  7.4E-08  8.8E-08  1.0E-07  1.2E-07
     Cd-113m      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  3.3E-20  2.1E-19  1.2E-18
6.1E-18  2.8E-17  1.2E-16  4.4E-16  1.5E-15  5.0E-15  1.5E-14  4.4E-14  1.2E-13  3.0E-13  7.1E-13  1.6E-12  3.6E-12  7.4E-12
1.5E-11  2.9E-11  5.4E-11  9.7E-11  1.7E-10  2.9E-10  4.7E-10  7.5E-10  1.2E-09  1.8E-09  2.6E-09  5.4E-09  1.0E-08  1.8E-08
3.0E-08  4.7E-08  6.9E-08  9.7E-08  1.3E-07  1.7E-07  2.0E-07  2.4E-07  2.7E-07  3.0E-07  3.2E-07  3.3E-07  3.4E-07  3.4E-07
3.2E-07  3.1E-07  2.8E-07  2.6E-07  2.3E-07  2.0E-07  1.8E-07  1.5E-07  1.3E-07  1.0E-07  8.5E-08  6.8E-08  5.4E-08  4.3E-08
3.4E-08  2.6E-08  2.0E-08  1.5E-08  1.1E-08  8.4E-09  6.2E-09  4.6E-09  3.3E-09  1.7E-09  8.9E-10  4.4E-10  2.1E-10  1.0E-10
4.0E-11  1.5E-11  5.5E-12  2.0E-12  6.9E-13  2.4E-13  8.1E-14  2.7E-14
     Cf-249       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  3.0E-20  1.0E-19  3.3E-19  1.0E-18  2.9E-18  8.0E-18
2.1E-17  5.3E-17  1.3E-16  3.0E-16  6.9E-16  1.5E-15  3.2E-15  6.6E-15  1.3E-14  2.6E-14  4.9E-14  9.1E-14  1.7E-13  2.9E-13
5.1E-13  8.8E-13  1.5E-12  2.4E-12  3.9E-12  6.3E-12  9.8E-12  1.5E-11  2.3E-11  5.2E-11  1.1E-10  2.2E-10  4.3E-10  8.1E-10
1.7E-09  3.3E-09  6.3E-09  1.1E-08  2.0E-08  3.3E-08  5.3E-08  8.4E-08
     Cf-250       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cf-251       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  1.4E-20  5.0E-20  1.7E-19  5.6E-19  1.7E-18  5.0E-18  1.4E-17
3.8E-17  9.6E-17  2.4E-16  5.6E-16  1.3E-15  2.9E-15  6.1E-15  1.3E-14  2.6E-14  5.1E-14  9.9E-14  1.9E-13  3.4E-13  6.1E-13
1.1E-12  1.9E-12  3.2E-12  5.3E-12  8.7E-12  1.4E-11  2.2E-11  3.5E-11  5.4E-11  1.2E-10  2.7E-10  5.6E-10  1.1E-09  2.1E-09
4.6E-09  9.3E-09  1.8E-08  3.4E-08  6.0E-08  1.0E-07  1.7E-07  2.8E-07
     Cf-252       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cl-36        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  3.8E-19  2.2E-16  2.4E-14  8.3E-13  1.4E-11  4.3E-10
5.1E-09  3.1E-08  1.2E-07  3.2E-07  6.4E-07  1.1E-06  1.5E-06  1.8E-06  1.9E-06  1.9E-06  1.7E-06  1.4E-06  1.2E-06  8.9E-07
6.6E-07  4.7E-07  3.3E-07  2.2E-07  1.5E-07  9.4E-08  6.0E-08  3.8E-08  2.3E-08  1.4E-08  8.5E-09  5.1E-09  3.0E-09  1.8E-09
1.0E-09  6.0E-10  3.4E-10  2.0E-10  1.1E-10  6.3E-11  3.6E-11  2.0E-11  1.1E-11  6.2E-12  3.5E-12  1.9E-12  1.1E-12  5.8E-13
3.2E-13  1.8E-13  9.6E-14  5.2E-14  2.8E-14  1.5E-14  8.4E-15  4.6E-15  2.5E-15  1.3E-15  7.2E-16  2.1E-16  6.0E-17  1.7E-17
5.0E-18  1.4E-18  4.1E-19  1.2E-19  3.3E-20  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cm-243       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cm-245       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cm-246       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
```

Cm-247		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Cm-248		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Co-60		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Cs-135		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Cs-137		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Eu-152		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Eu-154		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Eu-155		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Fe-55		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Fe-60		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-20	7.7E-20	3.1E-19
1.1E-18	4.1E-18	1.4E-17	4.4E-17	1.4E-16	4.0E-16	1.1E-15	3.1E-15	8.2E-15	2.1E-14	5.2E-14	2.9E-13	1.4E-12	6.5E-12
2.7E-11	1.0E-10	3.5E-10	1.2E-09	3.5E-09	1.0E-08	2.8E-08	7.2E-08	1.8E-07	4.2E-07	9.4E-07	2.1E-06	4.3E-06	8.8E-06
1.7E-05	3.3E-05	6.1E-05	1.1E-04	1.9E-04	3.4E-04	5.6E-04	9.3E-04	1.5E-03	2.4E-03	3.7E-03	5.7E-03	8.6E-03	1.3E-02
1.9E-02	2.7E-02	3.9E-02	5.4E-02	7.6E-02	1.0E-01	1.4E-01	1.9E-01	2.5E-01	4.4E-01	7.3E-01	1.2E+00	1.8E+00	2.8E+00
4.6E+00	7.2E+00	1.1E+01	1.6E+01	2.3E+01	3.3E+01	4.5E+01	6.0E+01						
Gd-148		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
H-3		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-17	1.7E-14	4.0E-12	2.9E-10	6.1E-08
2.9E-06	5.1E-05	4.4E-04	2.3E-03	8.3E-03	2.2E-02	4.7E-02	8.3E-02	1.3E-01	1.7E-01	2.0E-01	2.3E-01	2.3E-01	2.2E-01
1.9E-01	1.6E-01	1.3E-01	1.0E-01	7.5E-02	5.3E-02	3.7E-02	2.5E-02	1.7E-02	1.1E-02	6.7E-03	4.2E-03	2.6E-03	1.5E-03
9.2E-04	5.4E-04	3.1E-04	1.8E-04	1.0E-04	5.8E-05	3.3E-05	1.8E-05	1.0E-05	5.5E-06	3.0E-06	1.6E-06	8.8E-07	4.7E-07
2.5E-07	1.3E-07	7.1E-08	3.8E-08	2.0E-08	1.0E-08	5.5E-09	2.9E-09	1.5E-09	7.8E-10	4.0E-10	1.1E-10	2.9E-11	7.5E-12
2.0E-12	5.1E-13	1.3E-13	3.4E-14	8.7E-15	2.2E-15	5.6E-16	1.4E-16	3.6E-17	9.0E-18	2.3E-18	5.7E-19	1.4E-19	3.5E-20

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Hg-194		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Th-230		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-236		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-238		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Np-237		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-20	3.0E-20	7.6E-20
1.8E-19	4.3E-19	9.9E-19	2.2E-18	4.8E-18	1.0E-17	2.1E-17	4.3E-17	8.5E-17	3.2E-16	1.1E-15	3.5E-15	1.1E-14	3.1E-14
1.1E-13	3.4E-13	1.0E-12	2.9E-12	7.5E-12	1.9E-11	4.5E-11	1.0E-10						
Pu-240		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pu-241		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Am-241		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-20	7.2E-20	2.6E-19	8.8E-19	2.8E-18	8.6E-18	2.5E-17	6.9E-17	1.8E-16
4.7E-16	1.1E-15	2.7E-15	6.2E-15	1.4E-14	2.9E-14	6.1E-14	1.2E-13	2.5E-13	4.7E-13	8.9E-13	3.0E-12	9.1E-12	2.6E-11
6.9E-11	1.7E-10	4.1E-10	9.2E-10	2.0E-09	4.0E-09	8.0E-09	1.5E-08	2.8E-08	4.9E-08	8.5E-08	1.4E-07	2.3E-07	3.7E-07
5.7E-07	8.7E-07	1.3E-06	1.9E-06	2.7E-06	3.9E-06	5.4E-06	7.3E-06	9.9E-06	1.3E-05	1.7E-05	2.3E-05	2.9E-05	3.7E-05
4.6E-05	5.7E-05	7.1E-05	8.6E-05	1.0E-04	1.3E-04	1.5E-04	1.8E-04	2.1E-04	2.8E-04	3.7E-04	4.7E-04	5.9E-04	7.3E-04
9.3E-04	1.2E-03	1.4E-03	1.6E-03	1.9E-03	2.2E-03	2.4E-03	2.7E-03						
Cm-244		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ra-226		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ho-166m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-20	1.0E-19	6.1E-19	3.4E-18	1.7E-17	8.3E-17	3.7E-16	1.5E-15	5.9E-15	2.1E-14
7.4E-14	2.4E-13	7.6E-13	2.3E-12	6.4E-12	1.8E-11	4.6E-11	1.2E-10	2.9E-10	6.9E-10	1.6E-09	3.5E-09	7.7E-09	1.6E-08
3.4E-08	6.8E-08	1.3E-07	2.6E-07	4.9E-07	9.0E-07	1.6E-06	2.9E-06	5.1E-06	1.5E-05	4.0E-05	1.0E-04	2.6E-04	6.0E-04
1.6E-03	4.1E-03	9.9E-03	2.3E-02	4.9E-02	1.0E-01	2.0E-01	3.8E-01						
I-129		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	7.1E-19	2.9E-17	6.1E-16	7.9E-15	6.9E-14	4.3E-13	2.1E-12	8.4E-12	2.8E-11	8.0E-11	2.0E-10	4.6E-10
9.5E-10	1.8E-09	3.2E-09	5.4E-09	8.6E-09	1.3E-08	1.9E-08	2.6E-08	3.5E-08	4.6E-08	5.8E-08	7.1E-08	8.6E-08	1.0E-07

1.1E-07	1.3E-07	1.4E-07	1.5E-07	1.6E-07	1.7E-07	1.7E-07	1.8E-07	1.8E-07	1.8E-07	1.7E-07	1.7E-07	1.6E-07	1.5E-07
1.4E-07	1.3E-07	1.2E-07	1.1E-07	1.0E-07	9.2E-08	8.3E-08	7.4E-08	6.6E-08	5.8E-08	5.1E-08	3.9E-08	2.9E-08	2.2E-08
1.6E-08	1.1E-08	8.0E-09	5.7E-09	3.9E-09	2.7E-09	1.9E-09	1.3E-09	8.6E-10	5.7E-10	3.8E-10	2.5E-10	1.7E-10	1.1E-10
7.2E-11	4.7E-11	3.1E-11	2.0E-11	1.3E-11	8.2E-12	5.3E-12	3.4E-12	2.2E-12	1.4E-12	8.7E-13	5.5E-13	3.5E-13	2.2E-13
1.4E-13	8.7E-14	5.5E-14	3.4E-14	2.2E-14	1.3E-14	8.4E-15	5.3E-15	3.3E-15	1.3E-15	4.9E-16	1.9E-16	7.2E-17	2.7E-17
8.2E-18	2.4E-18	7.2E-19	2.1E-19	6.3E-20	1.9E-20	0.0E+00	0.0E+00						
K-40		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	6.4E-19	5.0E-17	1.8E-15	3.7E-14	4.7E-13	4.2E-12	2.8E-11	1.5E-10	6.3E-10	2.3E-09	7.0E-09	1.9E-08
4.7E-08	1.1E-07	2.2E-07	4.2E-07	7.5E-07	1.3E-06	2.1E-06	3.2E-06	4.8E-06	6.9E-06	9.6E-06	1.3E-05	1.7E-05	2.2E-05
2.7E-05	3.3E-05	4.0E-05	4.7E-05	5.4E-05	6.1E-05	6.8E-05	7.5E-05	8.2E-05	8.8E-05	9.3E-05	9.7E-05	1.0E-04	1.0E-04
1.0E-04	1.0E-04	1.0E-04	1.0E-04	9.8E-05	9.5E-05	9.1E-05	8.7E-05	8.2E-05	7.7E-05	7.2E-05	6.2E-05	5.3E-05	4.3E-05
3.5E-05	2.8E-05	2.2E-05	1.7E-05	1.3E-05	1.0E-05	7.8E-06	5.8E-06	4.3E-06	3.2E-06	2.3E-06	1.7E-06	1.2E-06	8.7E-07
6.2E-07	4.4E-07	3.1E-07	2.2E-07	1.6E-07	1.1E-07	7.6E-08	5.3E-08	3.6E-08	2.5E-08	1.7E-08	1.2E-08	8.1E-09	5.5E-09
3.8E-09	2.6E-09	1.7E-09	1.2E-09	8.0E-10	5.4E-10	3.6E-10	2.5E-10	1.6E-10	7.4E-11	3.3E-11	1.5E-11	6.6E-12	2.9E-12
1.0E-12	3.7E-13	1.3E-13	4.7E-14	1.7E-14	5.8E-15	2.0E-15	7.2E-16						
Mn-53		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Na-22		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Nb-91		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-20
1.7E-19	7.3E-19	2.9E-18	1.1E-17	3.9E-17	1.3E-16	4.4E-16	1.4E-15	4.2E-15	1.2E-14	3.4E-14	2.4E-13	1.5E-12	8.3E-12
4.1E-11	1.9E-10	7.9E-10	3.0E-09	1.1E-08	3.6E-08	1.1E-07	3.3E-07	9.4E-07	2.5E-06	6.3E-06	1.5E-05	3.6E-05	8.0E-05
1.7E-04	3.6E-04	7.4E-04	1.4E-03	2.8E-03	5.2E-03	9.4E-03	1.7E-02	2.9E-02	4.9E-02	8.1E-02	1.3E-01	2.1E-01	3.3E-01
5.2E-01	7.9E-01	1.2E+00	1.7E+00	2.5E+00	3.7E+00	5.2E+00	7.3E+00	1.0E+01	1.9E+01	3.4E+01	6.0E+01	1.0E+02	1.6E+02
2.8E+02	4.8E+02	7.8E+02	1.2E+03	1.9E+03	2.7E+03	3.9E+03	5.5E+03						
Nb-92		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-20	3.6E-20	1.1E-19	3.2E-19	8.9E-19	6.4E-18	4.0E-17	2.3E-16
1.1E-15	5.2E-15	2.2E-14	8.6E-14	3.1E-13	1.0E-12	3.3E-12	9.9E-12	2.8E-11	7.5E-11	1.9E-10	4.7E-10	1.1E-09	2.5E-09
5.5E-09	1.2E-08	2.4E-08	4.7E-08	9.1E-08	1.7E-07	3.2E-07	5.6E-07	9.9E-07	1.7E-06	2.8E-06	4.7E-06	7.6E-06	1.2E-05
1.9E-05	2.9E-05	4.4E-05	6.6E-05	9.7E-05	1.4E-04	2.0E-04	2.9E-04	4.1E-04	7.7E-04	1.4E-03	2.5E-03	4.3E-03	7.1E-03
1.3E-02	2.2E-02	3.7E-02	6.0E-02	9.3E-02	1.4E-01	2.1E-01	3.0E-01						
Nb-93m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-20	5.9E-20	1.6E-19	4.0E-19	9.7E-19	2.3E-18	5.2E-18	2.4E-17	9.8E-17	3.6E-16
1.2E-15	3.5E-15	9.6E-15	2.4E-14	5.7E-14	1.3E-13	2.6E-13	5.0E-13	9.2E-13	1.6E-12	2.7E-12	4.3E-12	6.5E-12	9.6E-12
1.4E-11	1.9E-11	2.5E-11	3.2E-11	4.1E-11	5.0E-11	5.9E-11	6.9E-11	7.8E-11	8.7E-11	9.5E-11	1.0E-10	1.1E-10	1.1E-10
1.1E-10	1.1E-10	1.1E-10	1.1E-10	1.0E-10	9.8E-11	9.2E-11	8.5E-11	7.8E-11	6.3E-11	4.9E-11	3.6E-11	2.6E-11	1.8E-11
1.1E-11	6.7E-12	3.8E-12	2.1E-12	1.1E-12	5.7E-13	2.9E-13	1.4E-13						
Nb-94		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-20
1.3E-19	6.0E-19	2.5E-18	9.8E-18	3.5E-17	1.2E-16	3.8E-16	1.1E-15	3.2E-15	8.6E-15	2.2E-14	5.4E-14	1.3E-13	2.9E-13
6.3E-13	1.3E-12	2.7E-12	5.4E-12	1.0E-11	2.0E-11	3.6E-11	6.4E-11	1.1E-10	1.9E-10	3.2E-10	5.3E-10	8.6E-10	1.4E-09
2.1E-09	3.3E-09	5.0E-09	7.5E-09	1.1E-08	1.6E-08	2.3E-08	3.3E-08	4.6E-08	8.7E-08	1.6E-07	2.8E-07	4.8E-07	8.0E-07
1.4E-06	2.5E-06	4.2E-06	6.7E-06	1.0E-05	1.6E-05	2.3E-05	3.3E-05						
Ni-59		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ni-63		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Os-194		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pa-231		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	1.8E-20	1.3E-19	7.9E-19	4.5E-18	2.3E-17	1.1E-16						

Pb-202		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pb-210		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pd-107		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-19
4.5E-18	6.6E-17	7.8E-16	7.4E-15	6.0E-14	4.1E-13	2.4E-12	1.3E-11	5.9E-11	2.5E-10	9.4E-10	3.3E-09	1.1E-08	3.2E-08
9.2E-08	2.4E-07	6.2E-07	1.5E-06	3.4E-06	7.5E-06	1.6E-05	3.2E-05	6.3E-05	1.2E-04	2.2E-04	3.9E-04	6.8E-04	1.1E-03
1.9E-03	3.1E-03	4.9E-03	7.6E-03	1.2E-02	1.7E-02	2.6E-02	3.7E-02	5.3E-02	7.5E-02	1.0E-01	1.9E-01	3.4E-01	5.9E-01
9.6E-01	1.5E+00	2.3E+00	3.5E+00	5.0E+00	7.1E+00	9.8E+00	1.3E+01	1.7E+01	2.3E+01	2.9E+01	3.6E+01	4.5E+01	5.5E+01
6.6E+01	7.9E+01	9.3E+01	1.1E+02	1.2E+02	1.4E+02	1.6E+02	1.8E+02	2.0E+02	2.2E+02	2.4E+02	2.6E+02	2.8E+02	3.0E+02
3.2E+02	3.4E+02	3.5E+02	3.7E+02	3.8E+02	3.9E+02	4.0E+02	4.0E+02	4.1E+02	4.1E+02	4.1E+02	4.0E+02	3.8E+02	3.6E+02
3.3E+02	2.9E+02	2.6E+02	2.2E+02	1.9E+02	1.6E+02	1.3E+02	1.1E+02						
Pm-145		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pm-147		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Po-208		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Po-209		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Pt-193		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-20	2.8E-19	3.0E-18	2.8E-17	2.3E-16	1.6E-15	9.9E-15	5.5E-14
2.8E-13	1.3E-12	5.4E-12	2.1E-11	7.6E-11	2.6E-10	8.1E-10	2.4E-09	6.9E-09	1.8E-08	4.7E-08	1.2E-07	2.7E-07	6.2E-07
1.3E-06	2.8E-06	5.8E-06	1.1E-05	2.2E-05	4.1E-05	7.4E-05	1.3E-04	2.3E-04	3.8E-04	6.3E-04	1.6E-03	3.9E-03	8.8E-03
1.9E-02	3.7E-02	7.1E-02	1.3E-01	2.2E-01	3.7E-01	6.0E-01	9.4E-01	1.4E+00	2.1E+00	3.0E+00	4.1E+00	5.6E+00	7.4E+00
9.6E+00	1.2E+01	1.5E+01	1.9E+01	2.3E+01	2.7E+01	3.2E+01	3.7E+01	4.2E+01	4.8E+01	5.3E+01	5.9E+01	6.4E+01	7.0E+01
7.4E+01	7.9E+01	8.3E+01	8.7E+01	9.0E+01	9.3E+01	9.5E+01	9.6E+01	9.7E+01	9.7E+01	9.4E+01	9.0E+01	8.4E+01	7.8E+01
6.8E+01	5.9E+01	4.9E+01	4.1E+01	3.3E+01	2.6E+01	2.0E+01	1.5E+01						

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PATHRAE-RAD(PC)  Version 2.2d  February 1995
  Date: 11-30-2007
  Time: 17:37:41
EnergySolutions Class A South cell side slope sensitivity, lim.conc., vert., par
*****  Mirror Image of Input Files  *****
-- Input File:  ABCDEF.DAT
EnergySolutions Class A South cell side slope sensitivity, lim.conc., vert., part 2, S59Lb
118,1.,3.,6.,9.,12.,15.,18.,21.,24.,27.,30.,35.,40.,45.,50.,55.,60.,65.,70.,75.,80.,85.,90.,95.,100.,105.,110.,115.,120.,125.,130.,1
35,0,1
1,2
0,1.,1.,5.95E-03,5.95E-03,3.64,0
1558.,0.100,0,0,0.317,3.34E-02,97.4,0
1,0,0,0,0,0
0,1.,1.,3.64,0,1800.,1.,0,0,0
0,0,0,0.0,1.
0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0
0,0
1,0,1,0
0.00595,0.053,0.113,0,0,1.,0,1.,0,0.355

-- Input File:  BRCDCF.DAT
158,Pu-236  0,0,0,0,0,0,0
159,Pu-238  0,0,0,0,0,0,0
160,Pu-239  0,0,0,0,0,0,0
161,Pu-242  0,0,0,0,0,0,0
162,Pu-244  0,0,0,0,0,0,0
163,Ra-228  0,0,0,0,0,0,0
164,Re-187  0,0,0,0,0,0,0
165,Se-79   0,0,0,0,0,0,0
166,Si-32   0,0,0,0,0,0,0
167,Sm-151  0,0,0,0,0,0,0
168,Sn-121m 0,0,0,0,0,0,0
169,Sn-126  0,0,0,0,0,0,0
170,Sr-90   0,0,0,0,0,0,0
171,Tb-157  0,0,0,0,0,0,0
172,Tb-158  0,0,0,0,0,0,0
173,Tc-99   0,0,0,0,0,0,0
174,Te-123  0,0,0,0,0,0,0
175,Th-229  0,0,0,0,0,0,0
176,Th-232  0,0,0,0,0,0,0
177,Ti-44   0,0,0,0,0,0,0
178,Tl-204  0,0,0,0,0,0,0
179,Tm-170  0,0,0,0,0,0,0
180,U-232   0,0,0,0,0,0,0
181,U-233   0,0,0,0,0,0,0
182,U-234   0,0,0,0,0,0,0
183,U-235   0,0,0,0,0,0,0
184,V-50    0,0,0,0,0,0,0
185,Zr-93   0,0,0,0,0,0,0
186,Ks-20   0,0,0,0,0,0,0
187,Ks-21   0,0,0,0,0,0,0
188,Ks-22   0,0,0,0,0,0,0
189,Ks-23   0,0,0,0,0,0,0
190,Ks-24   0,0,0,0,0,0,0
191,Ks-25   0,0,0,0,0,0,0
192,Ks-26   0,0,0,0,0,0,0
-- Input File:  INVNTRY.DAT
158,2.86E+00,9.00E-04,0,0,0,0,0
159,8.77E+01,1.80E-02,0,0,0,0,0
160,2.41E+04,1.80E-02,0,0,0,0,0
161,3.73E+05,1.80E-02,0,0,0,0,0
162,8.08E+07,9.00E-04,0,0,0,0,0
163,5.75E+00,4.90E+08,0,0,0,0,0
164,4.35E+10,1.87E-06,0,0,0,0,0
165,6.50E+04,1.25E+05,0,0,0,0,0
166,1.72E+02,1.17E+08,0,0,0,0,0
167,9.00E+01,4.74E+07,0,0,0,0,0
168,5.50E+01,9.68E+07,0,0,0,0,0
169,1.00E+05,5.11E+04,0,0,0,0,0
170,2.88E+01,1.44E-04,0,0,0,0,0
171,7.10E+01,2.70E+07,0,0,0,0,0
172,1.80E+02,2.70E+07,0,0,0,0,0
173,2.11E+05,5.26E-06,0,0,0,0,0
174,1.00E+13,5.24E-04,0,0,0,0,0
175,7.88E+03,3.83E+05,0,0,0,0,0
176,1.41E+10,1.98E-01,0,0,0,0,0
177,6.30E+01,2.81E+08,0,0,0,0,0
178,3.78E+00,7.92E+02,0,0,0,0,0
179,3.52E-01,7.92E+02,0,0,0,0,0
180,6.89E+01,3.97E+07,0,0,0,0,0
181,1.59E+05,1.35E-01,0,0,0,0,0
182,2.46E+05,1.12E+04,0,0,0,0,0
183,7.04E+08,3.42E-03,0,0,0,0,0
184,1.40E+17,9.20E-08,0,0,0,0,0
185,1.53E+06,4.53E+03,0,0,0,0,0
186,1.00E+00,7.92E+02,0,0,0,0,0
187,1.00E+00,7.92E+02,0,0,0,0,0
188,1.00E+00,7.92E+02,0,0,0,0,0
189,1.00E+00,7.92E+02,0,0,0,0,0
190,4.00E+00,7.92E+02,0,0,0,0,0
191,4.00E+00,7.92E+02,0,0,0,0,0
192,2.00E+00,7.92E+02,0,0,0,0,0
-- Input File:  RQSITE.DAT
158,3.29E-04,10.0,10.0
159,3.29E-04,10.0,10.0
160,3.29E-04,10.0,10.0
161,3.29E-04,10.0,10.0
162,3.29E-04,10.0,10.0
163,3.29E-04,10.0,10.0
164,2.96E-02,0.075,0.075
165,3.19E-03,1.0,1.0
166,8.55E-03,0.35,0.35
167,1.33E-03,2.45,2.45
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168,6.61E-05,50.0,50.0
169,6.61E-05,50.0,50.0
170,3.81E-02,0.05,0.05
171,5.06E-04,6.5,6.5
172,5.06E-04,6.5,6.5
173,2.25E-02,0.11,0.11
174,2.57E-03,1.25,1.25
175,3.29E-04,10.0,10.0
176,3.29E-04,10.0,10.0
177,3.29E-04,10.0,10.0
178,1.77E-02,0.15,0.15
179,5.06E-04,6.5,6.5
180,5.48E-04,6.0,6.0
181,5.48E-04,6.0,6.0
182,5.48E-04,6.0,6.0
183,5.48E-04,6.0,6.0
184,3.29E-04,10.0,10.0
185,3.29E-04,10.0,10.0
186,8.78E-02,0.001,0.001
187,7.08E-02,0.01,0.01
188,2.42E-02,0.1,0.1
189,3.19E-03,1.0,1.0
190,6.61E-05,50.0,50.0
191,3.30E-05,100.0,100.0
192,3.19E-03,1.0,1.0
-- Input File:  UPTAKE.DAT
5.95E-03,3.55E-01,1.558
0,0,0,0,0
0,0,0
0,0,0,0
0,0,0,0,0
0,0,0,0,0,730.,0
158,0.00E+00,0.0,0.0,0,0,0,0
159,0.00E+00,0.0,0.0,0,0,0,0
160,0.00E+00,0.0,0.0,0,0,0,0
161,0.00E+00,0.0,0.0,0,0,0,0
162,0.00E+00,0.0,0.0,0,0,0,0
163,0.00E+00,0.0,0.0,0,0,0,0
164,0.00E+00,0.0,0.0,0,0,0,0
165,0.00E+00,0.0,0.0,0,0,0,0
166,0.00E+00,0.0,0.0,0,0,0,0
167,0.00E+00,0.0,0.0,0,0,0,0
168,0.00E+00,0.0,0.0,0,0,0,0
169,0.00E+00,0.0,0.0,0,0,0,0
170,0.00E+00,0.0,0.0,0,0,0,0
171,0.00E+00,0.0,0.0,0,0,0,0
172,0.00E+00,0.0,0.0,0,0,0,0
173,0.00E+00,0.0,0.0,0,0,0,0
174,0.00E+00,0.0,0.0,0,0,0,0
175,0.00E+00,0.0,0.0,0,0,0,0
176,0.00E+00,0.0,0.0,0,0,0,0
177,0.00E+00,0.0,0.0,0,0,0,0
178,0.00E+00,0.0,0.0,0,0,0,0
179,0.00E+00,0.0,0.0,0,0,0,0
180,0.00E+00,0.0,0.0,0,0,0,0
181,0.00E+00,0.0,0.0,0,0,0,0
182,0.00E+00,0.0,0.0,0,0,0,0
183,0.00E+00,0.0,0.0,0,0,0,0
184,0.00E+00,0.0,0.0,0,0,0,0
185,0.00E+00,0.0,0.0,0,0,0,0
186,0.00E+00,0.0,0.0,0,0,0,0
187,0.00E+00,0.0,0.0,0,0,0,0
188,0.00E+00,0.0,0.0,0,0,0,0
189,0.00E+00,0.0,0.0,0,0,0,0
190,0.00E+00,0.0,0.0,0,0,0,0
191,0.00E+00,0.0,0.0,0,0,0,0
192,0.00E+00,0.0,0.0,0,0,0,0
1
                     TOTAL EQUIVALENT UPTAKE FACTORS FOR PATHRAE
               UT(J,1)   UT(J,2)   UT(J,3)   UT(J,4)   UT(J,5)   UT(J,6)
                RIVER     WELL     EROSION   BATHTUB   SPILLAGE    FOOD
NUCLIDE          L/YR      L/YR      L/YR      L/YR      L/YR     KG/YR
  Pu-236      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Pu-238      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  •
  •
  •
  Ks-25       0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Ks-26       0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
**********  PATHRAE INPUT SUMMARY  **********
THERE ARE 80 ISOTOPES IN THE DOSE FACTOR LIBRARY
NUMBER OF TIMES FOR CALCULATION IS118
YEARS TO BE CALCULATED ARE ...
     1.00      3.00      6.00      9.00     12.00
    15.00     18.00     21.00     24.00     27.00
    30.00     35.00     40.00     45.00     50.00
    55.00     60.00     65.00     70.00     75.00
    80.00     85.00     90.00     95.00    100.00
   105.00    110.00    115.00    120.00    125.00
   130.00    135.00    140.00    145.00    150.00
   155.00    160.00    165.00    170.00    175.00
   180.00    185.00    190.00    195.00    200.00
   205.00    210.00    215.00    220.00    225.00
   230.00    235.00    240.00    245.00    250.00
   255.00    260.00    265.00    270.00    275.00
   280.00    285.00    290.00    295.00    300.00
   310.00    320.00    330.00    340.00    350.00
   360.00    370.00    380.00    390.00    400.00
   410.00    420.00    430.00    440.00    450.00
   460.00    470.00    480.00    490.00    500.00
   510.00    520.00    530.00    540.00    550.00
   560.00    570.00    580.00    590.00    600.00
   610.00    620.00    630.00    640.00    650.00
   660.00    670.00    680.00    690.00    700.00
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    720.00    740.00    760.00    780.00    800.00
    825.00    850.00    875.00    900.00    925.00
    950.00    975.00   1000.00
 THERE ARE  35 ISOTOPES IN THE INVENTORY FILE
 THE VALUE OF IFLAG IS 0
 NUMBER OF PATHWAYS IS  1
            PATHWAY              TYPE OF USAGE
                             FOR UPTAKE FACTORS
    1  GROUNDWATER TO RIVER          2
 TIME OF OPERATION OF WASTE FACILITY IN YEARS                        0.
 LENGTH OF REPOSITORY (M)                                            1.
 WIDTH OF REPOSITORY (M)                                             1.
 RIVER FLOW RATE (M**3/YR)                                           5.95E-03
 STREAM FLOW RATE (M**3/YR)                                          5.95E-03
 DISTANCE TO RIVER (M)                                               4.
 OPERATIONAL SPILLAGE FRACTION                                       0.00E+00
 DENSITY OF AQUIFER (KG/M**3)                                     1558.
 LONGITUDINAL DISPERSIVITY (M)                                       1.00E-01
 LATERAL DISPERSION COEFFICIENT -- Y AXIS (M**2/YR)                  0.00E+00
 NUMBER OF MESH POINTS FOR DISPERSION CALCULATION                    1
 FLAG FOR GAMMA PATHWAY OPTIONS                                      0
 FLAG FOR GAMMA BUILDUP CALCULATION                                  0
 FLAG FOR ATMOSPHERIC PATHWAY                                        0
 COVER THICKNESS OVER WASTE (M)                                       .00
 THICKNESS OF WASTE IN PITS (M)                                      1.00
 TOTAL WASTE VOLUME (M**3)                                           1.000E+00
 DISTANCE TO WELL -- X COORDINATE (M)                                4.
 DISTANCE TO WELL -- Y COORDINATE (M)                                0.
 DENSITY OF WASTE (KG/M**3)                                       1800.
 FRACTION OF FOOD CONSUMED THAT IS GROWN ON SITE                     1.000
 FRACTION OF YEAR SPENT IN DIRECT RADIATION FIELD                     .000
 DEPTH OF PLANT ROOT ZONE (M)                                         .000
 AREAL DENSITY OF PLANTS (KG/M**2)                                    .000
 AVERAGE DUST LOADING IN AIR (KG/M**3)                               0.00E+00
 ANNUAL ADULT BREATHING RATE (M**3/YR)                               0.
 FRACTION OF YEAR EXPOSED TO DUST                                     .000
 CANISTER LIFETIME (YEARS)                                           0.
 INVENTORY SCALING FACTOR                                            1.00E+00
 HEIGHT OF ROOMS IN RECLAIMER HOUSE (CM)                             0.
 AIR CHANGE RATE IN RECLAIMER HOUSE (CHANGES/SEC)                    0.00E+00
 RADON EMANATING POWER OF THE WASTE                                  0.00E+00
 DIFFUSION COEFF. OF RADON IN WASTE (CM**2/SEC)                      0.00E+00
 DIFFUSION COEFF. OF RN IN CONCRETE (CM**2/SEC)                      0.00E+00
 THICKNESS OF CONCRETE SLAB FLOOR (CM)                                .0
 DIFFUSION COEFF. OF RADON IN COVER (CM**2/SEC)                      0.00E+00
 ATMOSPHERIC STABILITY CLASS                                         0
 AVERAGE WIND SPEED (M/S)                                             .00
 FRACTION OF TIME WIND BLOWS TOWARD RECEPTOR                          .0000
 RECEPTOR DISTANCE FOR ATMOSPHERIC PATHWAY (M)                        .0
 DUST RESUSPENSION RATE FOR OFFSITE TRANSPORT (M**3/S)               0.00E+00
 DEPOSITION VELOCITY (M/S)                                            .0000
 STACK HEIGHT (M)                                                     .0
 STACK INSIDE DIAMETER (M)                                            .00
 STACK GAS VELOCITY (M/S)                                             .0
 HEAT EMISSION RATE FROM BURNING (CAL/S)                             0.00E+00
 DECAY CHAIN FLAGS                                0   0   0   0   0   0   0
 FLAG FOR INPUT SUMMARY PRINTOUT                                     1
 FLAG FOR DIRECTION OF TRENCH FILLING                                1
 FLAG FOR GROUNDWATER PATHWAY OPTIONS                                0
 AMOUNT OF WATER PERCOLATING THROUGH WASTE ANNUALLY (M)              5.95E-03
 DEGREE OF SOIL SATURATION                                            .317
 RESIDUAL SOIL SATURATION                                             .033
 PERMEABILITY OF VERTICAL ZONE (M/YR)                               97.40
 SOIL NUMBER                                                          .000
 POROSITY OF AQUIFER                                                  .11
 POROSITY OF UNSATURATED ZONE                                         .36
 DISTANCE FROM AQUIFER TO WASTE (M)                                   .0
 AVERAGE VERTICAL GROUNDWATER VELOCITY (M/YR)                        5.29E-02
 HORIZONTAL VELOCITY OF AQUIFER (M/YR)                                .1
 LENGTH OF PERFORATED WELL CASING (M)                                1.000
 SURFACE EROSION RATE (M/YR)                                         0.000E+00
 LEACH RATE SCALING FACTOR                                           1.000E+00
 ANNUAL RUNOFF OF PRECIPITATION (M)                                  0.00E+00
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NUCLIDE	INGESTION DOSE FACTORS (MREM/PCI)	INHALATION DOSE FACTORS (MREM/PCI)	DIRECT GAMMA DOSE FACTORS (MREM-M2/PCI-YR)	HALF LIFE (YR)
Pu-236	0.000E+00	0.000E+00	0.000E+00	2.860E+00
Pu-238	0.000E+00	0.000E+00	0.000E+00	8.770E+01
Pu-239	0.000E+00	0.000E+00	0.000E+00	2.410E+04
Pu-242	0.000E+00	0.000E+00	0.000E+00	3.730E+05
Pu-244	0.000E+00	0.000E+00	0.000E+00	8.080E+07
Ra-228	0.000E+00	0.000E+00	0.000E+00	5.750E+00
Re-187	0.000E+00	0.000E+00	0.000E+00	4.350E+10
Se-79	0.000E+00	0.000E+00	0.000E+00	6.500E+04
Si-32	0.000E+00	0.000E+00	0.000E+00	1.720E+02
Sm-151	0.000E+00	0.000E+00	0.000E+00	9.000E+01
Sn-121m	0.000E+00	0.000E+00	0.000E+00	5.500E+01
Sn-126	0.000E+00	0.000E+00	0.000E+00	1.000E+05
Sr-90	0.000E+00	0.000E+00	0.000E+00	2.880E+01
Tb-157	0.000E+00	0.000E+00	0.000E+00	7.100E+01
Tb-158	0.000E+00	0.000E+00	0.000E+00	1.800E+02
Tc-99	0.000E+00	0.000E+00	0.000E+00	2.110E+05
Te-123	0.000E+00	0.000E+00	0.000E+00	1.000E+13
Th-229	0.000E+00	0.000E+00	0.000E+00	7.880E+03
Th-232	0.000E+00	0.000E+00	0.000E+00	1.410E+10
Ti-44	0.000E+00	0.000E+00	0.000E+00	6.300E+01
Tl-204	0.000E+00	0.000E+00	0.000E+00	3.780E+00
Tm-170	0.000E+00	0.000E+00	0.000E+00	3.520E-01
U-232	0.000E+00	0.000E+00	0.000E+00	6.890E+01
U-233	0.000E+00	0.000E+00	0.000E+00	1.590E+05
U-234	0.000E+00	0.000E+00	0.000E+00	2.460E+05
U-235	0.000E+00	0.000E+00	0.000E+00	7.040E+08
V-50	0.000E+00	0.000E+00	0.000E+00	1.400E+17
Zr-93	0.000E+00	0.000E+00	0.000E+00	1.530E+06
Ks-20	0.000E+00	0.000E+00	0.000E+00	1.000E+00

Ks-21	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-22	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-23	0.000E+00	0.000E+00	0.000E+00	1.000E+00
Ks-24	0.000E+00	0.000E+00	0.000E+00	4.000E+00
Ks-25	0.000E+00	0.000E+00	0.000E+00	4.000E+00
Ks-26	0.000E+00	0.000E+00	0.000E+00	2.000E+00

NUCLIDE	VOLATILITY FRACTION	GAMMA ENERGY (MEV)	GAMMA ATTENUATION (1/M)
Pu-236	0.000E+00	0.000E+00	0.000E+00
Pu-238	0.000E+00	0.000E+00	0.000E+00
•			
•			
•			
Ks-25	0.000E+00	0.000E+00	0.000E+00
Ks-26	0.000E+00	0.000E+00	0.000E+00

NUCLIDE	INPUT LEACH RATE (1/YR)	FINAL LEACH RATE (1/YR)	SOLUBILITY (MOLE/L)	INPUT INVENTORY (CI)
Pu-236	3.290E-04	3.290E-04	0.000E+00	9.000E-04
Pu-238	3.290E-04	3.290E-04	0.000E+00	1.800E-02
Pu-239	3.290E-04	3.290E-04	0.000E+00	1.800E-02
Pu-242	3.290E-04	3.290E-04	0.000E+00	1.800E-02
Pu-244	3.290E-04	3.290E-04	0.000E+00	9.000E-04
Ra-228	3.290E-04	3.290E-04	0.000E+00	4.900E+08
Re-187	2.960E-02	2.960E-02	0.000E+00	1.870E-06
Se-79	3.190E-03	3.190E-03	0.000E+00	1.250E+05
Si-32	8.550E-03	8.550E-03	0.000E+00	1.170E+08
Sm-151	1.330E-03	1.330E-03	0.000E+00	4.740E+07
Sn-121m	6.610E-05	6.610E-05	0.000E+00	9.680E+07
Sn-126	6.610E-05	6.610E-05	0.000E+00	5.110E+04
Sr-90	3.810E-02	3.810E-02	0.000E+00	1.440E-04
Tb-157	5.060E-04	5.060E-04	0.000E+00	2.700E+07
Tb-158	5.060E-04	5.060E-04	0.000E+00	2.700E+07
Tc-99	2.250E-02	2.250E-02	0.000E+00	5.260E-06
Te-123	2.570E-03	2.570E-03	0.000E+00	5.240E-04
Th-229	3.290E-04	3.290E-04	0.000E+00	3.830E+05
Th-232	3.290E-04	3.290E-04	0.000E+00	1.980E-01
Ti-44	3.290E-04	3.290E-04	0.000E+00	2.810E+08
Tl-204	1.770E-02	1.770E-02	0.000E+00	7.920E+02
Tm-170	5.060E-04	5.060E-04	0.000E+00	7.920E+02
U-232	5.480E-04	5.480E-04	0.000E+00	3.970E+07
U-233	5.480E-04	5.480E-04	0.000E+00	1.350E-01
U-234	5.480E-04	5.480E-04	0.000E+00	1.120E+04
U-235	5.480E-04	5.480E-04	0.000E+00	3.420E-03
V-50	3.290E-04	3.290E-04	0.000E+00	9.200E-08
Zr-93	3.290E-04	3.290E-04	0.000E+00	4.530E+03
Ks-20	8.780E-02	8.780E-02	0.000E+00	7.920E+02
Ks-21	7.080E-02	7.080E-02	0.000E+00	7.920E+02
Ks-22	2.420E-02	2.420E-02	0.000E+00	7.920E+02
Ks-23	3.190E-03	3.190E-03	0.000E+00	7.920E+02
Ks-24	6.610E-05	6.610E-05	0.000E+00	7.920E+02
Ks-25	3.300E-05	3.300E-05	0.000E+00	7.920E+02
Ks-26	3.190E-03	3.190E-03	0.000E+00	7.920E+02

NUCLIDE	AQUIFER SORPTION	AQUIFER RETARDATION	VERTICAL SORPTION	VERTICAL RETARDATION
Pu-236	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Pu-238	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Pu-239	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Pu-242	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Pu-244	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Ra-228	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Re-187	7.500E-02	2.034E+00	7.500E-02	2.038E+00
Se-79	1.000E+00	1.479E+01	1.000E+00	1.484E+01
Si-32	3.500E-01	5.826E+00	3.500E-01	5.846E+00
Sm-151	2.450E+00	3.478E+01	2.450E+00	3.492E+01
Sn-121m	5.000E+01	6.904E+02	5.000E+01	6.932E+02
Sn-126	5.000E+01	6.904E+02	5.000E+01	6.932E+02
Sr-90	5.000E-02	1.689E+00	5.000E-02	1.692E+00
Tb-157	6.500E+00	9.062E+01	6.500E+00	9.099E+01
Tb-158	6.500E+00	9.062E+01	6.500E+00	9.099E+01
Tc-99	1.100E-01	2.517E+00	1.100E-01	2.523E+00
Te-123	1.250E+00	1.823E+01	1.250E+00	1.831E+01
Th-229	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Th-232	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Ti-44	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Tl-204	1.500E-01	3.068E+00	1.500E-01	3.077E+00
Tm-170	6.500E+00	9.062E+01	6.500E+00	9.099E+01
U-232	6.000E+00	8.373E+01	6.000E+00	8.407E+01
U-233	6.000E+00	8.373E+01	6.000E+00	8.407E+01
U-234	6.000E+00	8.373E+01	6.000E+00	8.407E+01
U-235	6.000E+00	8.373E+01	6.000E+00	8.407E+01
V-50	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Zr-93	1.000E+01	1.389E+02	1.000E+01	1.394E+02
Ks-20	1.000E-03	1.014E+00	1.000E-03	1.014E+00
Ks-21	1.000E-02	1.138E+00	1.000E-02	1.138E+00
Ks-22	1.000E-01	2.379E+00	1.000E-01	2.384E+00
Ks-23	1.000E+00	1.479E+01	1.000E+00	1.484E+01
Ks-24	5.000E+01	6.904E+02	5.000E+01	6.932E+02
Ks-25	1.000E+02	1.380E+03	1.000E+02	1.385E+03
Ks-26	1.000E+00	1.479E+01	1.000E+00	1.484E+01

BIOACCUMULATION FACTORS

NUCLIDE	SOIL-PLANT Bv	SOIL-PLANT Br	FORAGE-MILK Fm (D/L)	FORAGE-MEAT Ff (D/KG)
Pu-236	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00
•				
•				
•				
Ks-26	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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                                              PATHWAY  1
                                           GROUNDWATER TO RIVER
NUCLIDE CONCENTRATIONS IN RIVER  (Ci/m**3)
  NUCLIDE/TIME          1.        3.        6.        9.       12.       15.       18.       21.       24.       27.       30.       35.
40.       45.       50.       55.       60.       65.       70.       75.       80.       85.       90.       95.      100.      105.
110.      115.      120.      125.      130.      135.      140.      145.      150.      155.      160.      165.      170.      175.
180.      185.      190.      195.      200.      205.      210.      215.      220.      225.      230.      235.      240.      245.
250.      255.      260.      265.      270.      275.      280.      285.      290.      295.      300.      310.      320.      330.
340.      350.      360.      370.      380.      390.      400.      410.      420.      430.      440.      450.      460.      470.
480.      490.      500.      510.      520.      530.      540.      550.      560.      570.      580.      590.      600.      610.
620.      630.      640.      650.      660.      670.      680.      690.      700.      720.      740.      760.      780.      800.
825.      850.      875.      900.      925.      950.      975.     1000.
     Pu-236          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pu-238          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pu-239          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pu-242          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pu-244          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Ra-228          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Re-187          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   3.1E-19
8.7E-17   6.5E-15   1.9E-13   3.0E-12   2.8E-11   1.8E-10   8.2E-10   3.0E-09   9.2E-09   2.4E-08   5.3E-08   1.1E-07   2.0E-07   3.3E-07
5.2E-07   7.7E-07   1.1E-06   1.4E-06   1.8E-06   2.2E-06   2.6E-06   2.9E-06   3.2E-06   3.4E-06   3.6E-06   3.6E-06   3.6E-06   3.5E-06
3.3E-06   3.1E-06   2.9E-06   2.6E-06   2.4E-06   2.1E-06   1.8E-06   1.6E-06   1.4E-06   1.2E-06   9.8E-07   8.2E-07   6.9E-07   5.7E-07
4.6E-07   3.8E-07   3.1E-07   2.5E-07   2.0E-07   1.6E-07   1.3E-07   1.0E-07   7.9E-08   6.2E-08   4.8E-08   2.9E-08   1.8E-08   1.0E-08
6.1E-09   3.6E-09   2.1E-09   1.2E-09   6.8E-10   3.8E-10   2.2E-10   1.2E-10   6.8E-11   3.8E-11   2.1E-11   1.2E-11   6.3E-12   3.5E-12
1.9E-12   1.0E-12   5.6E-13   3.0E-13   1.6E-13   8.9E-14   4.8E-14   2.6E-14   1.4E-14   7.4E-15   4.0E-15   2.1E-15   1.1E-15   6.1E-16
3.2E-16   1.7E-16   9.1E-17   4.8E-17   2.6E-17   1.4E-17   7.2E-18   3.8E-18   2.0E-18   5.6E-19   1.6E-19   4.3E-20   1.2E-20   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Se-79           0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   3.4E-20   2.8E-19   2.0E-18
1.3E-17   7.6E-17   4.1E-16   2.0E-15   8.9E-15   3.7E-14   1.4E-13   5.2E-13   1.8E-12   5.8E-12   1.8E-11   5.2E-11   1.5E-10   3.9E-10
1.0E-09   2.5E-09   5.9E-09   1.4E-08   3.0E-08   6.5E-08   1.4E-07   2.8E-07   5.6E-07   1.1E-06   2.1E-06   7.0E-06   2.2E-05   6.3E-05
1.7E-04   4.3E-04   1.0E-03   2.4E-03   5.2E-03   1.1E-02   2.2E-02   4.2E-02   7.8E-02   1.4E-01   2.5E-01   4.2E-01   6.9E-01   1.1E+00
1.8E+00   2.7E+00   4.1E+00   6.2E+00   9.0E+00   1.3E+01   1.8E+01   2.5E+01   3.5E+01   4.7E+01   6.3E+01   8.3E+01   1.1E+02   1.4E+02
1.8E+02   2.2E+02   2.8E+02   3.5E+02   4.3E+02   5.2E+02   6.3E+02   7.6E+02   9.1E+02   1.3E+03   1.7E+03   2.3E+03   3.0E+03   3.8E+03
5.0E+03   6.4E+03   8.0E+03   9.9E+03   1.2E+04   1.4E+04   1.6E+04   1.9E+04
     Si-32           0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   1.7E-19   6.6E-17   1.1E-14   8.5E-13   3.9E-11   1.1E-09   2.2E-08   3.1E-07   3.4E-06   2.9E-05
2.0E-04   1.1E-03   5.7E-03   2.4E-02   9.3E-02   3.2E-01   1.0E+00   2.8E+00   7.5E+00   1.9E+01   4.3E+01   9.4E+01   1.9E+02   3.8E+02
7.2E+02   1.3E+03   2.3E+03   3.9E+03   6.3E+03   1.0E+04   1.6E+04   2.3E+04   3.4E+04   5.0E+04   7.0E+04   9.6E+04   1.3E+05   1.7E+05
2.3E+05   3.0E+05   3.8E+05   4.8E+05   5.9E+05   7.3E+05   8.9E+05   1.1E+06   1.3E+06   1.5E+06   1.8E+06   2.3E+06   3.0E+06   3.8E+06
4.6E+06   5.5E+06   6.5E+06   7.4E+06   8.3E+06   9.2E+06   9.9E+06   1.1E+07   1.1E+07   1.1E+07   1.2E+07   1.2E+07   1.2E+07   1.2E+07
1.1E+07   1.1E+07   1.0E+07   9.7E+06   9.0E+06   8.4E+06   7.7E+06   7.0E+06   6.4E+06   5.7E+06   5.1E+06   4.5E+06   4.0E+06   3.5E+06
3.1E+06   2.7E+06   2.3E+06   2.0E+06   1.7E+06   1.5E+06   1.2E+06   1.0E+06   8.8E+05   6.2E+05   4.3E+05   3.0E+05   2.0E+05   1.4E+05
8.4E+04   5.0E+04   3.0E+04   1.7E+04   1.0E+04   5.8E+03   3.3E+03   1.9E+03
     Sm-151          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   6.3E-20   3.8E-19   2.1E-18   1.0E-17   4.8E-17   2.1E-16   8.3E-16   3.1E-15   1.1E-14   3.6E-14
1.1E-13   3.4E-13   9.5E-13   2.6E-12   6.7E-12   1.7E-11   4.0E-11   9.4E-11   2.1E-10   4.6E-10   9.6E-10   2.0E-09   3.9E-09   7.6E-09
1.4E-08   2.7E-08   4.8E-08   8.5E-08   1.5E-07   2.5E-07   4.2E-07   6.9E-07   1.1E-06   2.7E-06   6.3E-06   1.4E-05   2.9E-05   5.8E-05
1.3E-04   2.7E-04   5.2E-04   9.8E-04   1.7E-03   3.0E-03   4.8E-03   7.6E-03
     Sn-121m         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
```

```
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Sn-126        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Sr-90         0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  5.0E-19  6.1E-17  2.7E-14
2.3E-12  6.6E-11  9.0E-10  6.9E-09  3.5E-08  1.3E-07  3.8E-07  9.1E-07  1.8E-06  3.2E-06  5.1E-06  7.4E-06  9.7E-06  1.2E-05
1.4E-05  1.5E-05  1.5E-05  1.5E-05  1.4E-05  1.3E-05  1.2E-05  9.9E-06  8.2E-06  6.7E-06  5.3E-06  4.2E-06  3.2E-06  2.4E-06
1.8E-06  1.3E-06  9.4E-07  6.7E-07  4.8E-07  3.3E-07  2.3E-07  1.6E-07  1.1E-07  7.4E-08  5.0E-08  3.3E-08  2.2E-08  1.5E-08
9.7E-09  6.4E-09  4.2E-09  2.7E-09  1.8E-09  1.1E-09  7.3E-10  4.7E-10  3.0E-10  1.9E-10  1.2E-10  4.9E-11  1.9E-11  7.7E-12
3.0E-12  1.2E-12  4.5E-13  1.7E-13  6.7E-14  2.5E-14  9.6E-15  3.6E-15  1.4E-15  5.2E-16  1.9E-16  7.2E-17  2.7E-17  1.0E-17
3.7E-18  1.4E-18  5.0E-19  1.9E-19  6.8E-20  2.5E-20  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Tb-157        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Tb-158        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  1.1E-20
    Tc-99         0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
1.6E-20  3.7E-18  2.8E-16  9.1E-15  1.6E-13  1.8E-12  1.4E-11  7.6E-11  3.3E-10  1.2E-09  3.7E-09  9.8E-09  2.3E-08  4.9E-08
9.6E-08  1.7E-07  3.0E-07  4.7E-07  7.2E-07  1.0E-06  1.4E-06  1.9E-06  2.5E-06  3.1E-06  3.8E-06  4.5E-06  5.2E-06  5.9E-06
6.6E-06  7.1E-06  7.5E-06  7.9E-06  8.1E-06  8.2E-06  8.2E-06  8.0E-06  7.8E-06  7.5E-06  7.1E-06  6.7E-06  6.2E-06  5.7E-06
5.3E-06  4.8E-06  4.3E-06  3.8E-06  3.4E-06  3.0E-06  2.6E-06  2.3E-06  2.0E-06  1.7E-06  1.5E-06  1.1E-06  7.8E-07  5.5E-07
3.9E-07  2.7E-07  1.8E-07  1.2E-07  8.2E-08  5.5E-08  3.6E-08  2.4E-08  1.5E-08  1.0E-08  6.4E-09  4.1E-09  2.6E-09  1.7E-09
1.1E-09  6.7E-10  4.2E-10  2.6E-10  1.6E-10  1.0E-10  6.3E-11  3.9E-11  2.4E-11  1.5E-11  9.2E-12  5.7E-12  3.5E-12  2.1E-12
1.3E-12  7.9E-13  4.8E-13  2.9E-13  1.8E-13  1.1E-13  6.6E-14  4.0E-14  2.4E-14  8.7E-15  3.2E-15  1.1E-15  4.1E-16  1.5E-16
4.1E-17  1.1E-17  3.2E-18  8.7E-19  2.4E-19  6.5E-20  1.8E-20  0.0E+00
    Te-123        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  1.2E-20  3.1E-20  7.7E-20  1.8E-19  4.2E-19  9.5E-19  4.4E-18  1.8E-17  7.0E-17
2.5E-16  8.1E-16  2.5E-15  7.0E-15  1.9E-14  4.9E-14  1.2E-13  2.7E-13  6.1E-13  1.3E-12  2.7E-12  5.3E-12  1.0E-11  1.9E-11
3.5E-11  6.1E-11  1.1E-10  1.8E-10  2.9E-10  4.7E-10  7.4E-10  1.2E-09  1.8E-09  2.6E-09  3.9E-09  5.6E-09  8.0E-09  1.1E-08
1.6E-08  2.2E-08  2.9E-08  4.0E-08  5.3E-08  6.9E-08  9.0E-08  1.2E-07  1.5E-07  2.4E-07  3.7E-07  5.5E-07  8.1E-07  1.2E-06
1.7E-06  2.6E-06  3.6E-06  5.0E-06  6.8E-06  8.9E-06  1.2E-05  1.5E-05
    Th-229        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Th-232        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Ti-44         0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Tl-204        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
2.3E-20  7.7E-18  6.5E-16  2.0E-14  2.9E-13  2.4E-12  1.2E-11  4.4E-11  1.2E-10  2.5E-10  4.2E-10  6.0E-10  7.4E-10  8.1E-10
8.0E-10  7.1E-10  5.9E-10  4.5E-10  3.3E-10  2.2E-10  1.4E-10  8.9E-11  5.3E-11  3.0E-11  1.7E-11  9.1E-12  4.8E-12  2.5E-12
1.2E-12  6.0E-13  2.9E-13  1.3E-13  6.2E-14  2.8E-14  1.3E-14  5.6E-15  2.4E-15  1.0E-15  4.4E-16  1.8E-16  7.5E-17  3.1E-17
1.2E-17  5.0E-18  2.0E-18  7.7E-19  3.0E-19  1.2E-19  4.5E-20  1.7E-20  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
    Tm-170        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
```

U-232		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-233		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
U-234		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-20	5.8E-20						
U-235		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
V-50		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Zr-93		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-20		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-18	6.0E-15	3.7E-13	4.5E-12	1.8E-11	3.5E-11	3.2E-11
1.1E-11	2.0E-12	2.2E-13	1.8E-14	1.1E-15	5.3E-17	2.2E-18	8.0E-20	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-21		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-17	3.2E-15	7.3E-14	4.9E-13	1.4E-12	2.2E-12
1.1E-12	2.9E-13	4.4E-14	4.5E-15	3.5E-16	2.2E-17	1.1E-18	5.0E-20	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-22		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-23		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-24		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00						
Ks-25		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

```
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ks-26         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
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Whetstone Associates

ATTACHMENT 4
ENERGY*SOLUTIONS*
CLASS A SOUTH CELL
INFILTRATION & TRANSPORT
MODELING
ELECTRONIC DATA FILES

Prepared for

Energy*Solutions,* LLC
423 West 300 South, Suite 200
Salt Lake City, UT 84101

Prepared by

Whetstone Associates, Inc.
714 S. Oak Street
P.O. Box 1156
La Veta, Colorado 81055-1156
719-742-5155

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