Contract No:

This document was prepared in conjunction with work accomplished under Contract No. 89303321CEM000080 with the U.S. Department of Energy (DOE) Office of Environmental Management (EM).

Disclaimer:

APPENDIX H: SUPPORTING INFORMATION: INTEGRATION AND INTERPRETATION OF RESULTS

This appendix contains supporting information and key data employed in Chapter 8. The following topics are addressed:

- Preliminary GW inventory limits for each radionuclide and DU
- DU-specific PIPs
- DU-specific PIF strategy and results for GW and air pathway
- Time-windowing strategy and results
- Tables of inventory trigger values for GW, IHI, air, and radon pathways by DU
- Final GW, IHI, air, and radon inventory limits for each radionuclide and DU
- Dose history time profiles by DU and pathway
- Comparison of inventory limits for this PA with PA2008 (WSRC, 2008) by type of DU
- Projected CWTS closure inventories in calendar year 2065
- Microsoft Excel[1] CWTS emulator worksheet for assisting and confirming the overall limits system

H.1 GROUNDWATER PATHWAYS

H.1.1 Aquifer and Groundwater Plume Interaction Profile Supporting Material

This section provides supporting material for the development of DU-specific final inventory limits for the GW pathways for every generic waste form and SWF parent radionuclide requiring an inventory limit. The final inventory limits are based on nominal PA transport simulations using PORFLOW as reported in Chapter 5. The nominal PA settings represent the compliance case where some modeling parameter settings are defined based on conservative (pessimistically leaning) arguments. In the overall computational approach employed in this PA, a multitiered radionuclide screening process is adopted as discussed in Chapter 2, Section 2.3.7. In the multitiered process, the initial list of 1,252 parent radionuclides is shortened substantially using conservative, but simple, transport models, along with a reasonably low cutoff criterion of 0.1% SOF value. Multidimensional PORFLOW flow and transport modeling is employed for every parent radionuclide that failed the GW screening. The generic waste form limits represent Tier-3 analyses, while Tier-4 analyses are employed for SWF limits, where warranted.

A set of results from Tier-3 analyses is referred to as generic waste form limits. However, for some parent radionuclides contained within SWFs, more complex Tier-4 flow and/or transport analyses are undertaken. For some SWF parent radionuclides, their generic waste form counterparts provide acceptable inventory limits and, therefore, Tier-4 updated limits are not computed. Tier-1 and Tier-2 radionuclide screening analyses, as summarized in Chapter 2, Section 2.3.7, effectively shorten the initial ICRP list (ICRP, 2008) of 1,252 potential generic waste form parent

[1] Microsoft, Excel, and Word are trademarks of the Microsoft group of companies.

radionuclides to less than 30 for the various types of ELLWF DUs. Based on the radionuclide screening analyses for GW as well as existing and future SWM disposal plans, Table H-1 summarizes the number of generic waste form and SWF parent radionuclides requiring inventory limits for the GW pathways (either Tier-3 or Tier-4 transport analysis) for each DU.

To meet current SWM objectives, six future DUs (ST17, ST19, ST20, ST21, ST22, and ET06) are being deferred beyond PA2022 for deployment considerations (see Table H-1 and Section H.1.1.4 for details). To deploy any of these six future DUs, an SA will be required that focuses on the unique aspects associated with GW plume overlap within the eastern sector of the ELLWF (i.e., specifically the East1 PIF aquifer cutout).

Table H-1. Number of Generic Waste Form and SWF Parent Radionuclides Requiring Inventory Limits for Groundwater Pathways

Reference DU-Type	DU	DU Status	Number of Parent Radionuclides		
			Generic Waste Form	SWF	Total
Trench	ST01	Closed	26	4	30
	ST02	Closed	26	7	33
	ST03	Closed	26	5	31
	ST04	Closed	26	4	30
	ST05	Closed	26	5	31
	ST06	Open	26	3	29
	ST07	Open	26	4	30
	ST08	Open	26	9	35
	ST09	Open	26	15	41
	ST10	Future	26	13	39
	ST11	Future	26	1	27
	ST14	Open	26	6	32
	ST17[a]	Future	26	1	27
	ST18	Future	26	1	27
	ST19[a]	Future	26	1	27
	ST20[a]	Future	26	1	27
	ST21[a]	Future	26	1	27
	ST22[a]	Future	26	1	27
	ST23	Open	26	24	50
	ST24	Future	26	0	26
	ET01	Closed	26	6	32
	ET02	Open	26	0	26
	ET03	Open	26	0	26
	ET04	Future	26	0	26
	ET05	Future	26	0	26
	ET06[a]	Future	26	0	26
	ET07	Future	26	0	26
	ET08	Future	26	0	26
	ET09	Future	26	0	26
LAWV	LAWV	Open	19	1	20
ILV	ILV	Open	20	8	28
NRCDAG and NRCDAS	NR07E	Closed	0	10	10
	NR26E	Open	12	11	23

Notes:

[a] Six future DUs deferred beyond PA2022 for deployment considerations, which will require an SA.

H.1.1.1. Basic Plume Interaction Aspects

The basic concepts behind the use of a PIF require the following three conditions to be met:

1. The aquifer transient transport equation is linear in the range of radionuclide concentrations of interest (i.e., the absorption isotherms are approximately linear where the chord of the isotherm can be expressed with a partition coefficient, or K_d, that is assumed to be constant.
2. For a given aquifer flow field (i.e., a specific time period), a steady-state constant source of a parent radionuclide yields the maximum spread of the contaminant across a downstream boundary (i.e., a vertical curtain generally representing a POA.
3. The transient behavior of the aquifer flow field (i.e., resulting from application of a cover that degrades over time) can be represented by a series of steady-state flow fields that encompasses the entire compliance periods of interest.

To assist in describing how the steady-state transport analyses are employed in determining PIPs, the 1-D advection-dispersion equation for a non-conservative solute species is considered:

$$\frac{\partial c}{\partial t} = D'_{xx}\frac{\partial^2 c}{\partial x^2} - u'_x\frac{\partial c}{\partial x} - \lambda_r c \qquad \text{Eq. (H-1)}$$

where:

$D_{xx} = \alpha_{LH}u_x + \theta_w \tau D^*$	Hydrodynamic dispersion coefficient ($ft^2\ yr^{-1}$)
$D'_{xx} = \frac{D_{xx}}{R}$	Retarded longitudinal dispersion coefficient ($ft^2\ yr^{-1}$)
D^*	Species bulk molecular diffusion coefficient ($ft^2\ yr^{-1}$)
K_d	Partition coefficient (chord of linear sorption isotherm) ($mL\ g^{-1}$)
$R = 1 + \frac{\rho_b K_d}{\theta_w}$	Species retardation factor (unitless)
S_w	Water saturation (unitless)
t	Time (yr)
$u'_x = \frac{u_x}{R}$	Retarded phasic water (pore) velocity ($ft\ yr^{-1}$)
$u_x = \frac{U_x}{\theta_w}$	Phasic water (pore) velocity ($ft\ yr^{-1}$)
U_x	Superficial (Darcy) velocity ($ft\ yr^{-1}$)
x	Spatial dimension aligned with primary flow direction (ft)
α_{LH}	Longitudinal horizontal dispersivity (ft)
$\theta_w = S_w\phi$	Moisture content (unitless)
λ_r	First-order reaction rate (radioactive decay constant) (yr^{-1})

$\rho_b = \rho_s (1-\phi)$	Dry bulk soil density (g mL^{-1})
ρ_s	Soil particle (material) density (g mL^{-1})
τ	Tortuosity of porous medium (ft)
ϕ	Total porosity of soil matrix (unitless)

A species is referred to as a conservative tracer when it is assumed to be a non-absorbing species (i.e., $K_d = 0$, thus $R = 1$) and a stable compound (i.e., $\lambda_r = 0$).

Under these assumptions, when comparing transport of a conservative tracer to a radionuclide species with a finite half-life that participates with the media, the following observations have historically been made:

- The tracer's effective dispersion (longitudinal and transverse) coefficients are smaller, resulting in less lateral spread of its plume downstream of a source.
- The total mass represented by the resulting tracer plume is larger because no radioactive decay takes place.
- Under transient conditions, tracer travel times are much faster because no phasic velocity retardation takes place.

The above observations based on Eq. (H-1) strongly suggest that conservative, steady-state tracer plumes can be employed to bound the spread of a radionuclide's transient plume downstream of a fixed source. However, based on more recent numerical simulations, it is observed that a steady-state tracer plume does not always bound the spread of a plume resulting from a nonconservative radionuclide under certain conditions. As such, steady-state transport analyses (similar in nature to prior tracer analyses) are conducted for all parent radionuclides (including their progeny) requiring inventory limits. This much larger set of results is used to generate DU-specific PIPs.

As the infiltration rate at the ground surface changes from uncovered to covered and then to degraded cover, the aquifer flow field beneath the ELLWF also changes. To account for these changes, flow fields for five separate time periods were created (i.e., four containing the various compliance periods and one beyond the compliance periods) as discussed in Chapter 3, Section 3.5.3, and Appendix C.

To illustrate the impact that varying aquifer flow fields have on PIP creation, results for ST04 are reviewed. For ST04, combined PIPs are generated to account for flow field changes during the various compliance periods (i.e., time periods TP0, TP1, TP2, and TP3). The resulting combined PIPs for a tracer and Sr-90 (black-dashed curves) are shown in Figure H-1 along with their individual curves per time period (colored-solid curves).

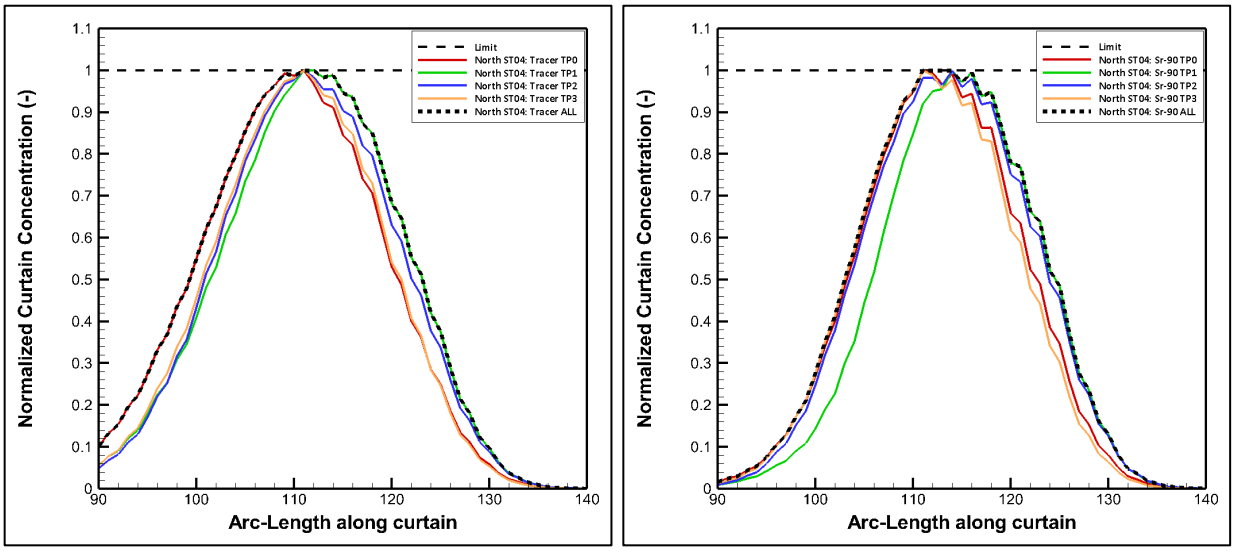


Figure H-1. Tracer (left) and Sr-90 (right) Concentration Profiles for ST04 in Center PIF Aquifer Cutout Along North Curtain

As both plots illustrate, the PIPs shift as a direct result of flow field changes. The black-dashed curves present the combined PIP for each species which conservatively (pessimistically leaning) spreads out the composited PIP response.

A comparison of combined profiles for ST04 is shown in Figure H-2 to illustrate how a steady-state tracer profile does not necessarily bound nonconservative radionuclides. In both plots, the tracer profile (black-dashed curve) and the overall, maximum, radionuclide composite profile (red-dashed curve) are provided. The plot on the left contains five key radionuclides of interest, while the plot on the right contains all 26 parent radionuclides requiring inventory limits for the GW pathways for STs and ETs.

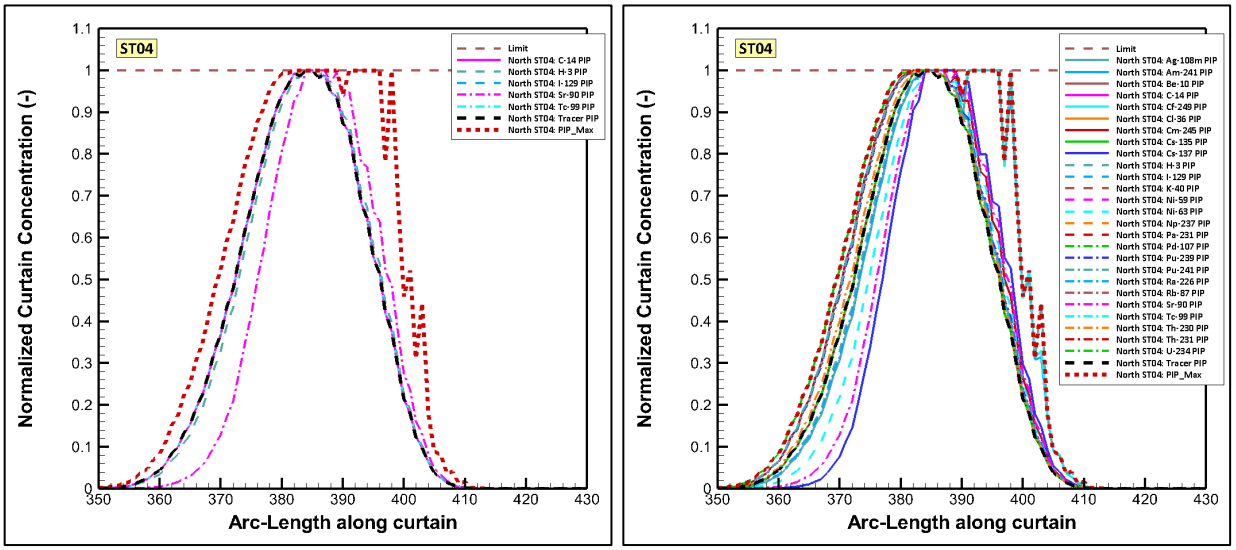


Figure H-2. Steady-State Radionuclide Combined Profiles for ST04 in Center PIF Aquifer Cutout Along North Curtain (five key radionuclides on left; all 26 on right)

The composited profile (red-dashed curve) in both plots of Figure H-2 bounds the behavior. As discussed further in Section H.1.1.3.1, given the discrete representation of flow field changes (i.e., a total of five time periods), these composited PIPs are also smoothed to help capture intermediate flow-field configurations.

As Figure H-2 indicates, a modest number of the 26 parent radionuclides spread laterally beyond the results for a tracer. Table H-2 lists the half-life and clay and sand retardation factors (which make each radionuclide unique with respect to a tracer) for these five key radionuclides.

Table H-2. Comparison of Half-Life and Retardation Factors for Five Key Radionuclides

Radionuclide	Half-Life (yr)	Sand *R* (unitless)	Clay *R* (unitless)
Tracer	0.0	1.0	1.0
H-3	1.23e+01	1.0	1.0
Tc-99	2.11e+05	5.8	15.3
I-129	1.57e+07	9.0	24.9
C-14	5.70e+03	8.95	239.5
Sr-90	2.88e+01	40.8	136.2

As Table H-2 shows, there is a wide range of parameter values among the five key radionuclides. To illustrate, Figure H-3 displays a simple example of where the concentration profile at the 100-meter POA is distorted and shifted about its centerline. When the 100-meter POA is not aligned with aquifer GW flow, travel distances and thus travel times due to retardation will vary, leading to profile distortions that originate due to radioactive decay. The impact associated with travel distances will generally increase with increased retardation.

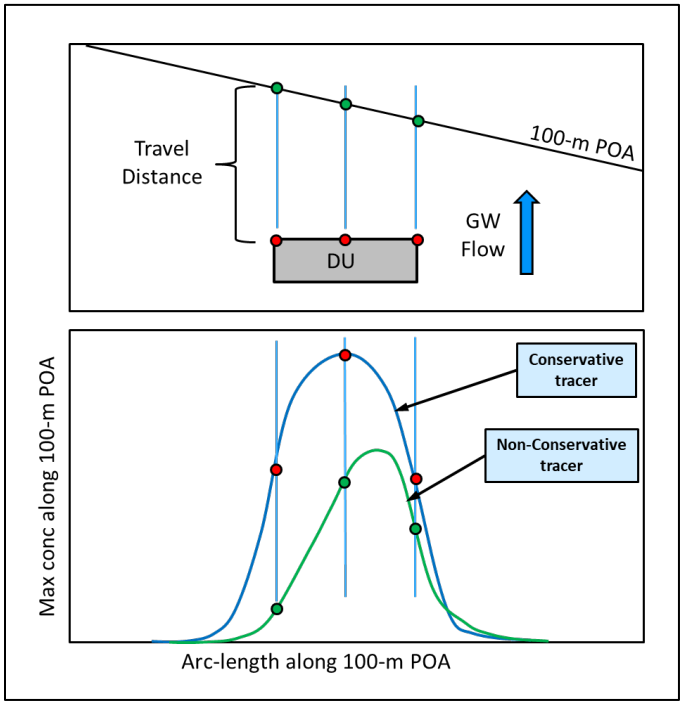


Figure H-3. Schematic Illustrating How Decay and Absorption May Impact 100-meter POA Profile

PIFs were generated based on tracer analyses in the PA2008 and subsequent SAs. However, based on recent observed weaknesses associated with tracer-only PIPs, composite PIPs that include transport analyses for all parent radionuclides (and their progeny) are employed in PA2022. In addition, prior PIF analyses did not explicitly consider aquifer flow field variations; whereas, in PA2022, impacts associated with application of covers and their degradation are explicitly addressed.

H.1.1.2. Tracer Concentration Plumes and Profiles

The general shape of downstream concentration profiles emanating from a specific DU can be obtained by viewing constant-source, steady-state, tracer transport simulations on a time-period basis. The spreading of the actual radionuclides will differ some from the tracer results as discussed in Section H.1.1.2.2. For each PIF aquifer cutout (i.e., West, Center, East1, and East2), 2-D tracer concentration profiles are generated for every time period within the GW compliance periods and beyond (i.e., TP0, TP1, TP2, TP3, and TP4). The 2-D plume profiles are extracted from the 3-D PORFLOW simulations, where the vertical maximum tracer concentration is plotted at each *x*-*y* grid location. The source strength of each DU's tracer source term is adjusted such that the peak concentration touching the downstream 100-meter POA is 1.0E-08 gmol L^{-1}. Normalizing the source-term strengths to a common metric provides a better visual comparison of the relative lateral spreading.

Steady-steady tracer transport simulations are performed for all 33 DUs and the five different time periods. Results for all 33 DUs during the initial uncovered flow period (i.e., TP0) and the first time period after installation of the final closure cap (i.e., TP1) are given in Appendix C, Section C.1.2. The flow fields associated with TP0 and TP1 bound the behavior observed beneath the ELLWF. A subset of the transport simulations comparing multiple DUs in the same PIF aquifer cutout is shown below.

A single set of contour values is employed in each tracer plot as follows:

- 1.0E-08 is the normalizing value used to set source strengths.
- 1.0E-11 represents 0.1% of the normalizing value to indicate an effective plume boundary.
- 1.0E-06, 1.0E-07, 1.0E-09, 1.0E-10 help illustrate the basic shape of the plume.

Plotting the maximum local concentrations versus some arbitrary 2-D slice through the 3-D plume better illustrates the actual lateral extent of each plume and its potential overlap with neighboring plumes. More than 99% of each plume's tracer mass is contained within the 1.0E-11 contour, which illustrates that the aerial extent of each PIF aquifer cutout is adequate for the various DUs being modeled within those cutouts. The 100-meter POA surrounding the ELLWF is also shown in each contour plot.

PORFLOW-based, steady-state (using a constant source), aquifer transport simulations are made for the following:

- Every ELLWF DU (33 total) [PIF aquifer cutout dependent].

- Every aquifer flow field's time period (five total with first four falling within the GW compliance periods and the fifth occurring beyond the compliance period).
- Every generic waste form parent radionuclide with its short-chain progeny, which is reference DU-type dependent.
- Tracer for comparison purposes only.

2-D extractions are generated from the resulting 3-D concentration plumes for the parent radionuclide and its progeny. Because the general shape of the concentration plumes can be seen in the tracer results, 2-D tracer plumes are provided below for only the TP0 period. Tracer concentration plumes for the TP1 period are included in Appendix C, Section C.1.2. To serve as an overview of the plume results, Figure H-4 displays 2-D tracer concentration plumes for ET07, ST08, ST24, and ST22 for the initially uncovered (TP0) aquifer flow field. Three of the PIF aquifer cutouts (i.e., West, Center, and East1) are shown in Figure H-4 to illustrate their overlap.

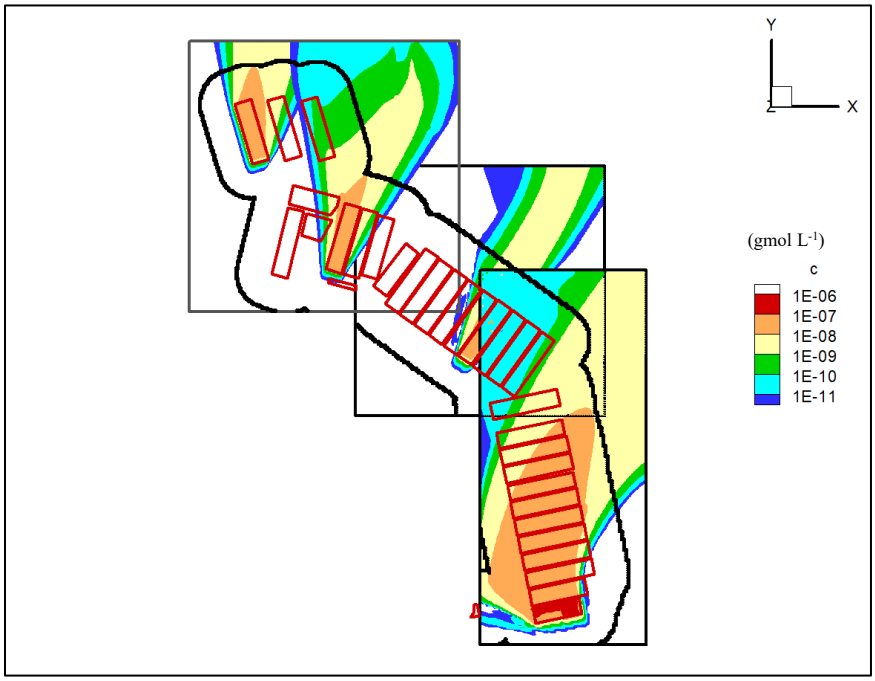


Figure H-4. PORFLOW-Based, Steady-State, Tracer Concentration Plume Overview

For each time period, 1-D tracer concentration profiles are extracted from each of the 2-D tracer concentration plumes along the 100-meter POA. As discussed in Appendix C, the 100-meter POA is broken into two segments: North curtain and South curtain.

H.1.1.2.1. West PIF Aquifer Cutout

The 2-D tracer concentration plumes for every DU being modeled within the West PIF aquifer cutout are provided in Appendix C, Section C.1.2.1. In some plots included in Appendix C, Section C.1.2.1, the plumes at the lower concentration levels display an abrupt shift in the northwestern direction. This is a direct result of the 3-D concentration plume dropping through the Gordon Confining Unit (green clay) into the underlying Gordon Aquifer Unit. The general aquifer flow directions above versus below the green clay have a counterclockwise rotation.

Three DUs (ET07, ET03, and ST11) spanning the range of DUs in the West PIF aquifer cutout are plotted together in Figure H-5. The plot on the left represents the 2-D tracer concentration plumes for the three DUs, while the plot on the right shows the corresponding 1-D concentration profiles along the North curtain. The three DU plumes shown have essentially no overlap, while nearer DU's exhibit plume overlap as shown as shown in Figure H-7, Figure H-9, and Figure H-11. The results shown in Figure H-5, Figure H-7, Figure H-9, and Figure H-11 apply to the TP0 period only. The corresponding 1-D tracer concentration profiles for the four time periods constituting the overall GW compliance period time window are provided in Figure H-6, Figure H-8, Figure H-10, and Figure H-12. The composited 1-D tracer concentration profiles are also shown.

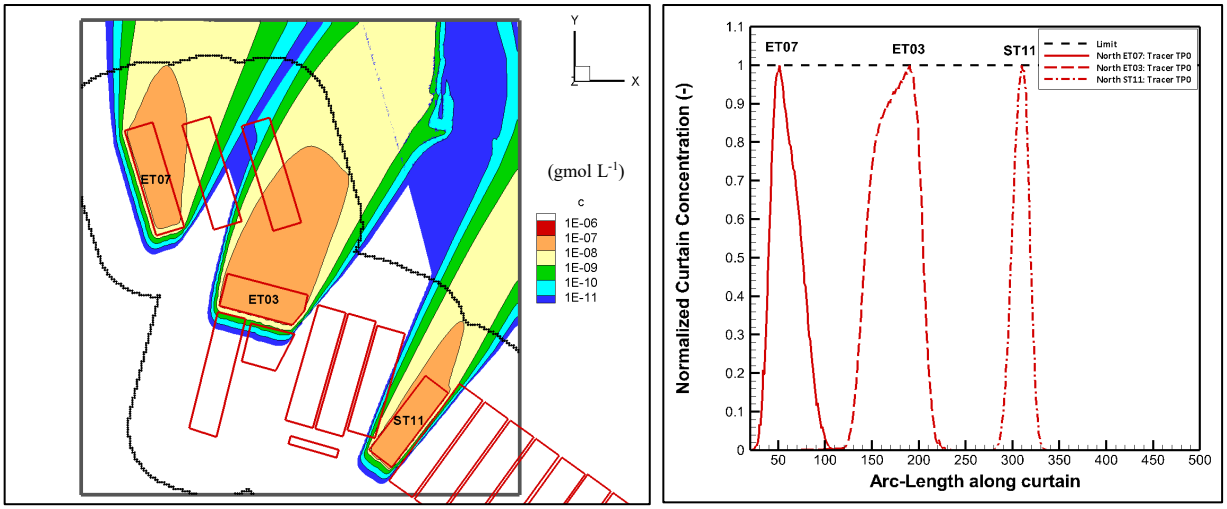


Figure H-5. TP0 Steady-State 2-D Tracer Concentration Plumes (left) and 1-D Concentration Profiles (right) for ET07, ET03, and ST11 in West PIF Aquifer Cutout Along North Curtain

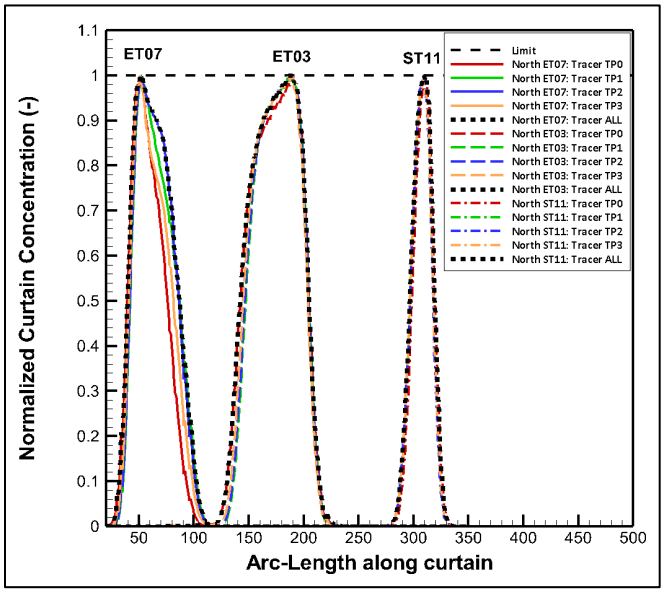


Figure H-6. TP0, TP1, TP2, TP3, and Composited Steady-State Tracer Concentration Profiles for ET07, ET03, and ST11 in West PIF Aquifer Cutout Along North Curtain

A typical plume overlapping situation is shown in Figure H-7 for two neighboring DUs, ET07 and ET08, whose aquifer flow is somewhat aligned with respect to the 100-meter POA.

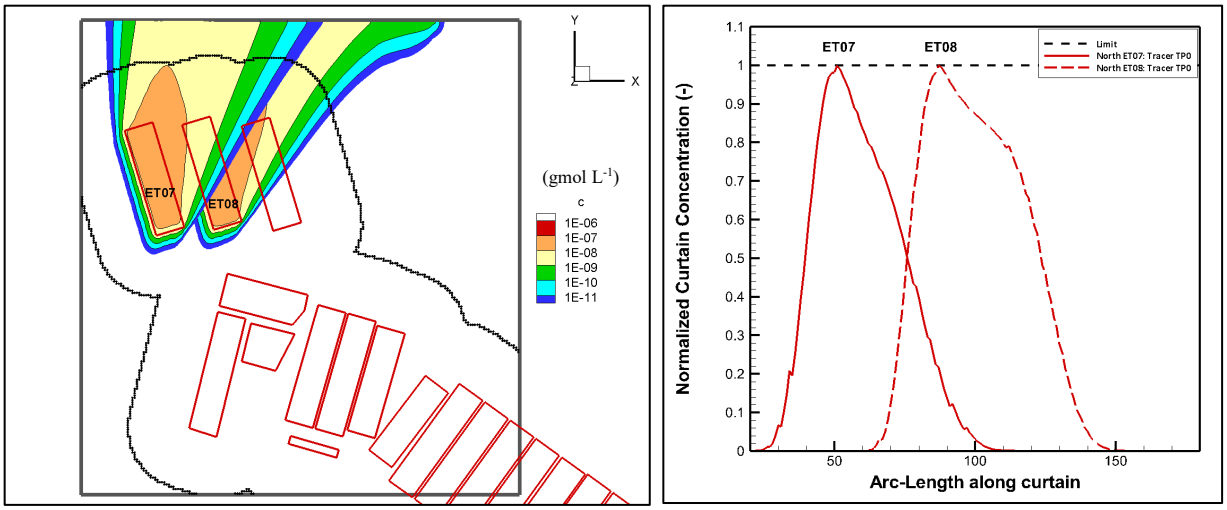


Figure H-7. TP0 Steady-State 2-D Tracer Concentration Plumes (left) and 1-D Concentration Profiles (right) for ET07 and ET08 in West PIF Aquifer Cutout Along North Curtain

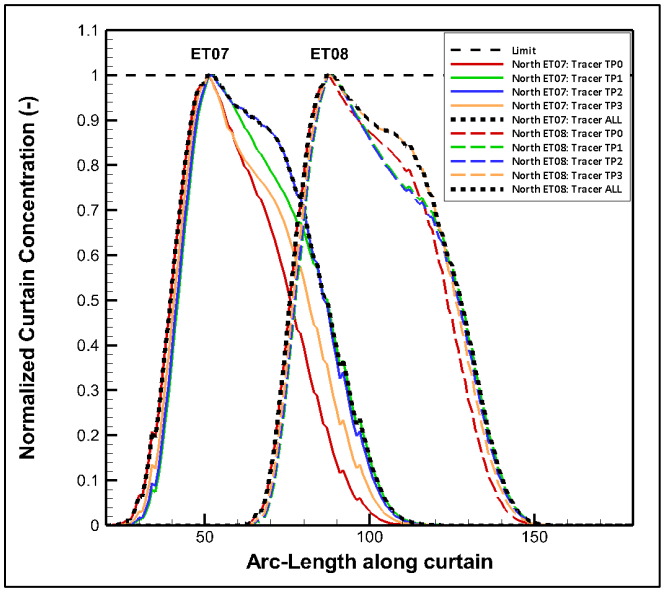


Figure H-8. TP0, TP1, TP2, TP3, and Composited Steady-State Tracer Concentration Profiles for ET07 and ET08 in West PIF Aquifer Cutout Along North Curtain

In Figure H-9 for the two neighboring DUs, ET03 and ET04, the aquifer flow is primarily downgradient from these two DUs, which results in more significant plume overlap at the 100-meter POA.

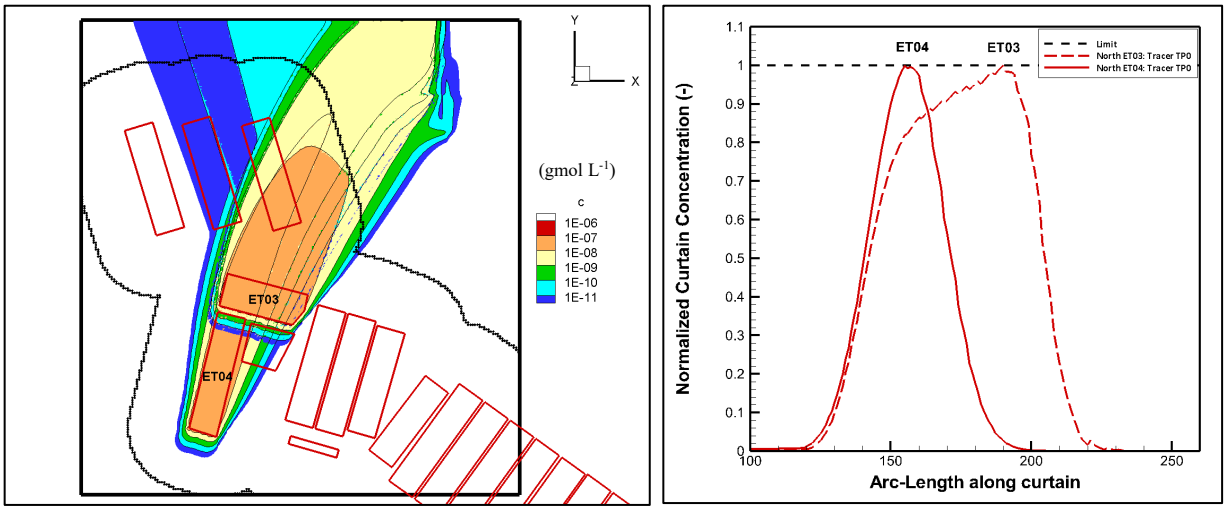


Figure H-9. TP0 Steady-State 2-D Tracer Concentration Plumes (left) and 1-D Concentration Profiles (right) for ET03 and ET04 in West PIF Aquifer Cutout Along North Curtain

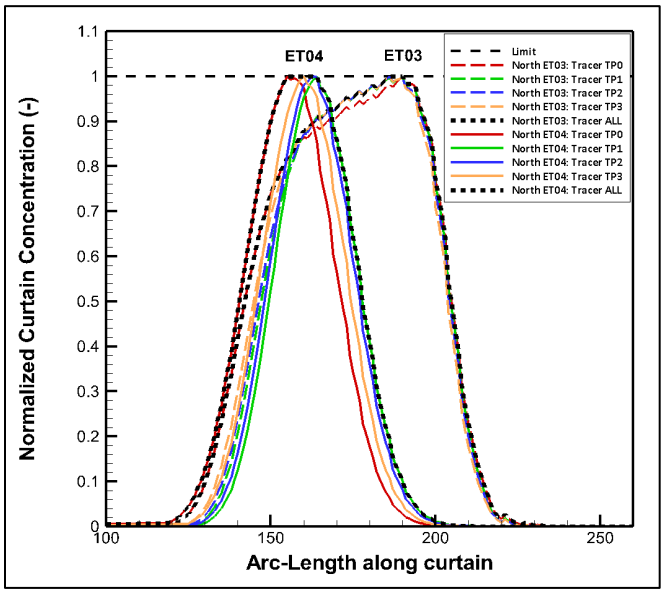


Figure H-10. TP0, TP1, TP2, TP3, and Composited Steady-State Tracer Concentration Profiles for ET03 and ET04 in West PIF Aquifer Cutout Along North Curtain

In Figure H-11 for the two neighboring DUs, ST09 and ILV, the aquifer flow is also primarily downgradient from these two DUs, which results in more significant plume overlap at the 100-meter POA.

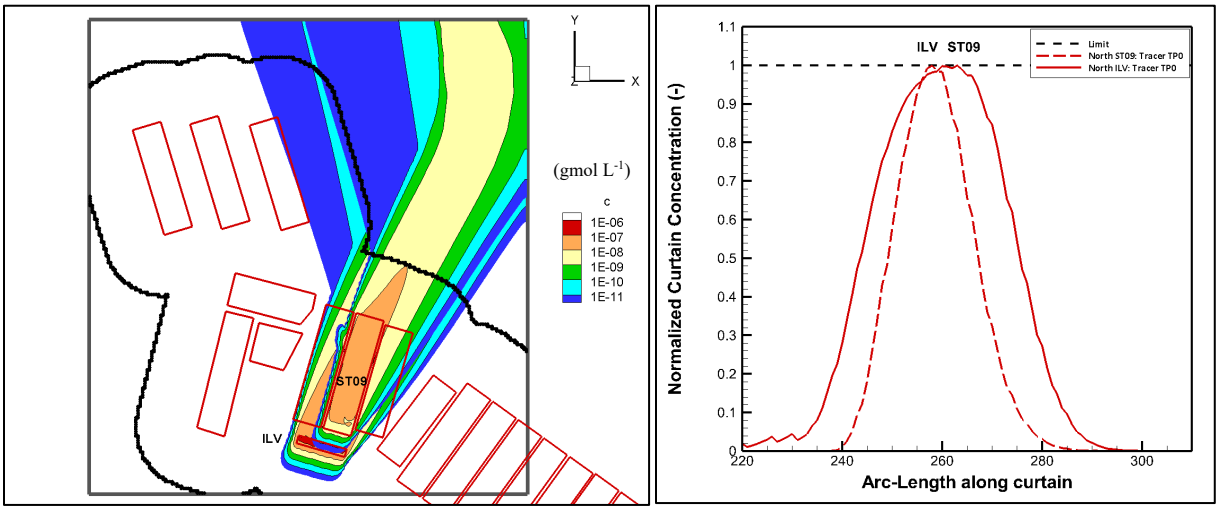


Figure H-11. TP0 Steady-State 2-D Tracer Concentration Plumes (left) and 1-D Concentration Profiles (right) for ST09 and ILV in West PIF Aquifer Cutout Along North Curtain

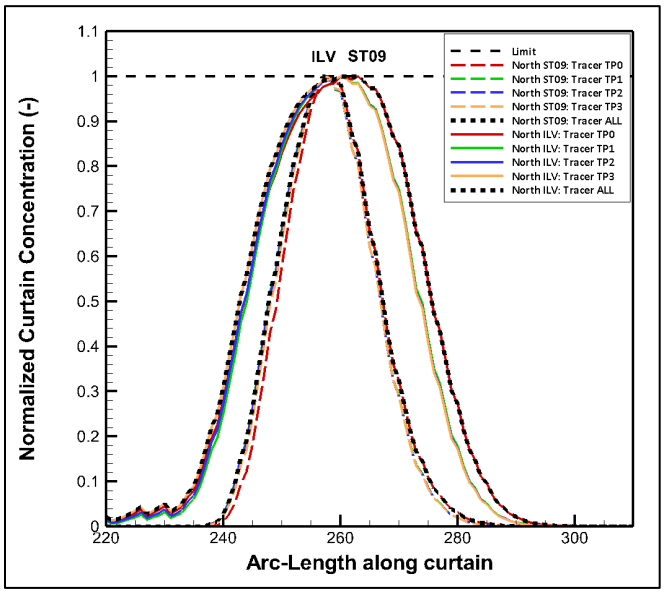


Figure H-12. TP0, TP1, TP2, TP3, and Composited Steady-State Tracer Concentration Profiles for ST09 and ILV in West PIF Aquifer Cutout Along North Curtain

As the results above indicate, the degree of plume overlap varies among DUs in the West PIF aquifer cutout.

H.1.1.2.2. Center PIF Aquifer Cutout

The 2-D tracer concentration plumes for every DU being modeled within the Center PIF aquifer cutout are provided in Appendix C, Section C.1.2.2. Figure H-13 displays three of the DUs spanning the range of DUs within the Center PIF aquifer cutout. The plot on the left represents the 2-D tracer concentration plumes for the three DUs, while the plot on the right shows the corresponding 1-D concentration profiles along the North curtain. The three DU plumes shown have essentially no overlap, while nearer DU's exhibit modest plume overlap as highlighted in

Figure H-15. The results shown in Figure H-13 and Figure H-15 apply to the TP0 period only. The corresponding 1-D tracer concentration profiles for the four time periods constituting the overall GW compliance period time window are provided in Figure H-14 and Figure H-16.

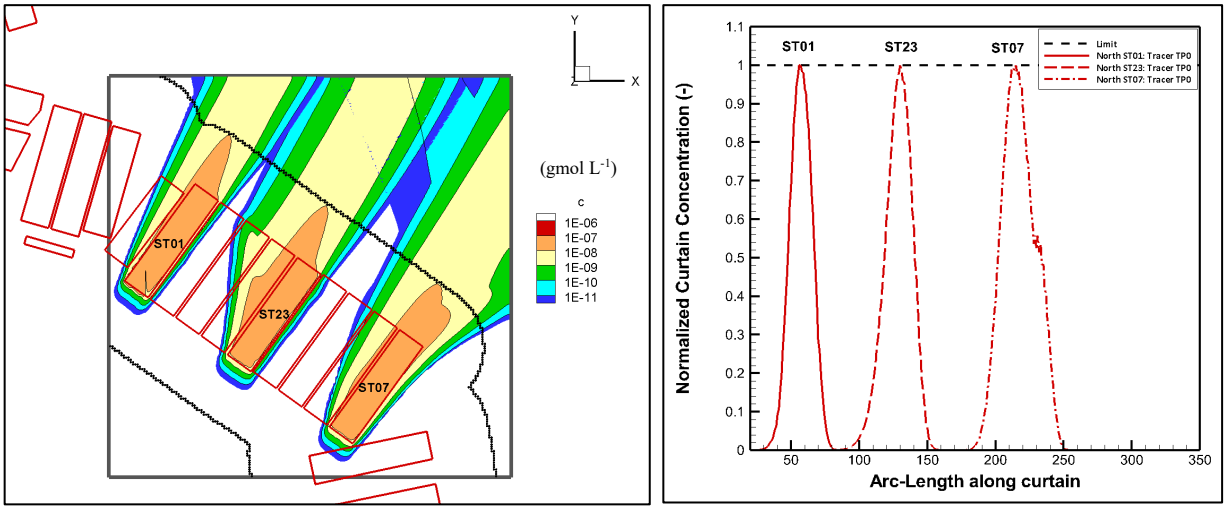


Figure H-13. TP0 Steady-State 2-D Tracer Concentration Plumes (left) and 1-D Concentration Profiles (right) for ST01, ST23, and ST07 in Center PIF Aquifer Cutout Along North Curtain

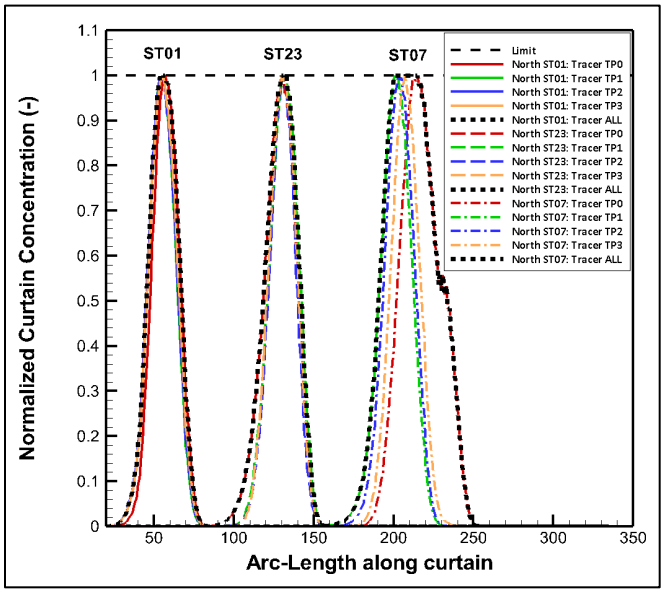


Figure H-14. TP0, TP1, TP2, TP3, and Composited Steady-State Tracer Concentration Profiles for ST01, ST23, and ST07 in Center PIF Aquifer Cutout Along North Curtain

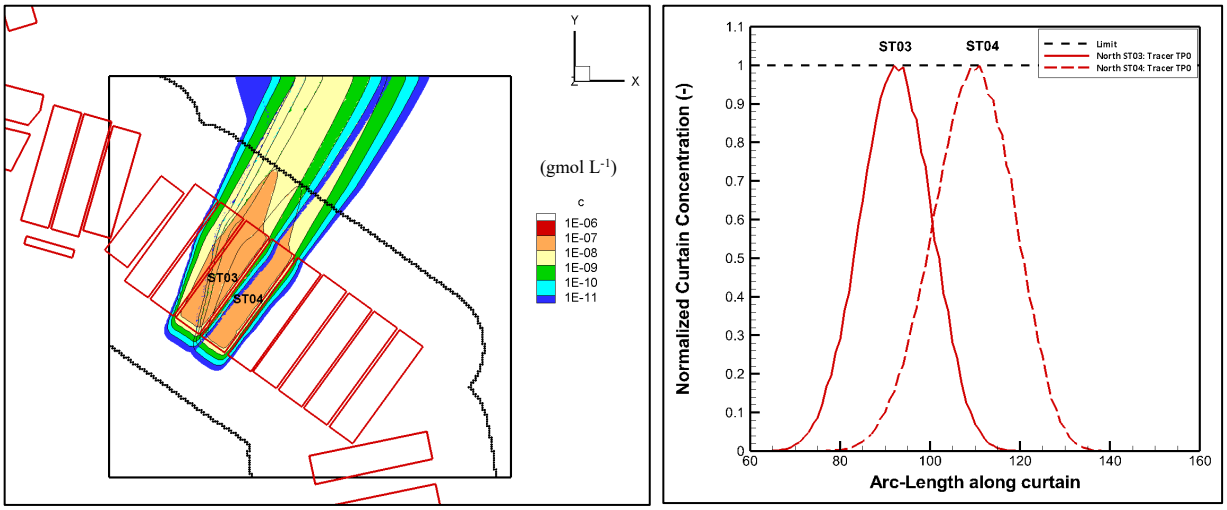


Figure H-15. TP0 Steady-State 2-D Tracer Concentration Plumes (left) and 1-D Concentration Profiles (right) for ST03 and ST04 in Center PIF Aquifer Cutout Along North Curtain

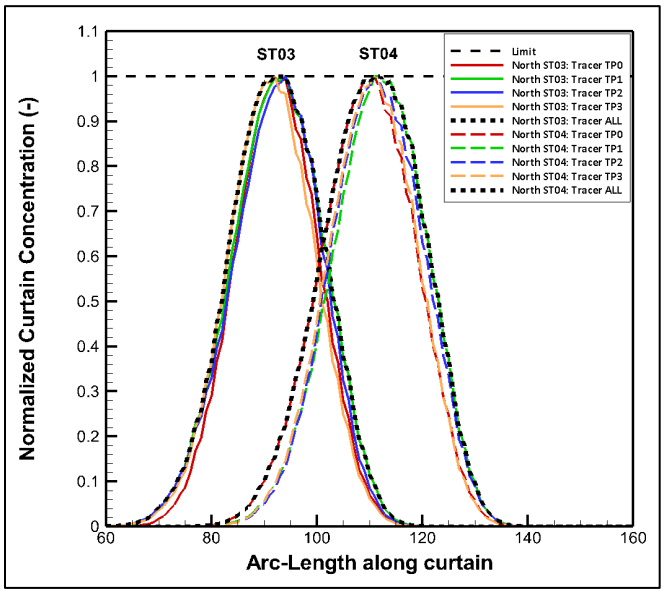


Figure H-16. TP0, TP1, TP2, TP3, and Composited Steady-State Tracer Concentration Profiles for ST03 and ST04 in Center PIF Aquifer Cutout Along North Curtain

As the results above indicate, the degree of plume overlap among DUs within the Center PIF aquifer cutout is modest because all the DUs are aligned perpendicular to the GW flow field.

H.1.1.2.3. East1 PIF Aquifer Cutout

The 2-D tracer concentration plumes for every DU being modeled within the aquifer East1 PIF aquifer cutout are provided in Appendix C, Section C.1.2.3. In some plots included in Appendix C, Section C.1.2.3, the plumes at the lower concentration levels display an abrupt shift in the northwestern direction. Figure H-17 displays three of the DUs spanning the range of DUs within the East1 PIF aquifer cutout. The plot on the left represents the 2-D tracer concentration plumes for the three DUs, while the plot on the right shows the corresponding 1-D concentration profiles

along the North curtain. The three DU plumes shown have significant plume overlap. The results shown in Figure H-17 apply to the TP0 period only. The corresponding 1-D tracer concentration profiles for the four periods constituting the overall GW compliance period time window are provided in Figure H-18. The composited 1-D tracer concentration profiles are also shown.

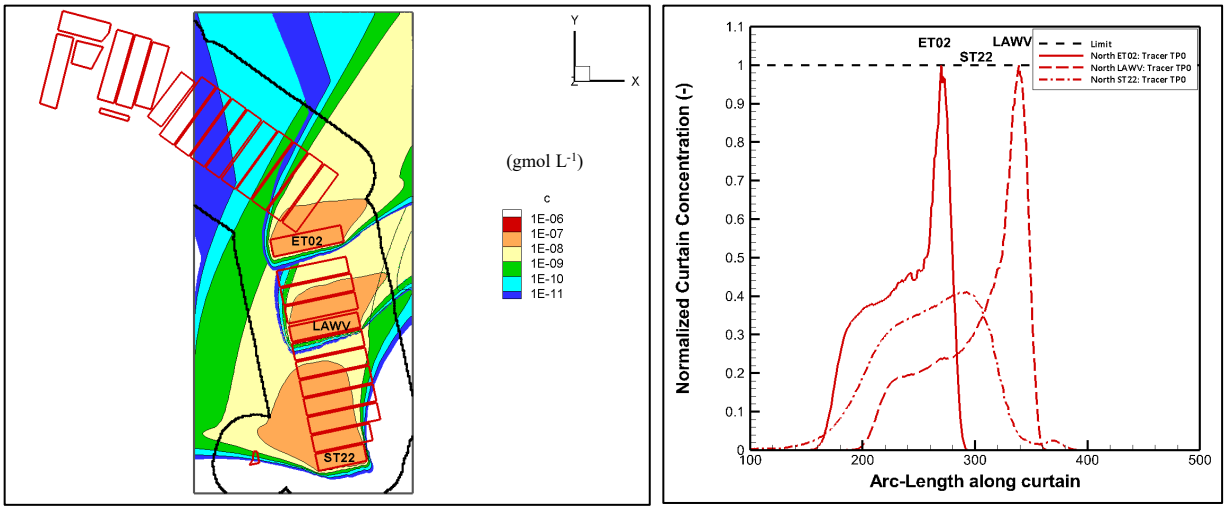


Figure H-17. TP0 Steady-State 2-D Tracer Concentration Plumes (left) and 1-D Concentration Profiles (right) for ET02, LAWV, and ST22 in East1 PIF Aquifer Cutout Along North Curtain

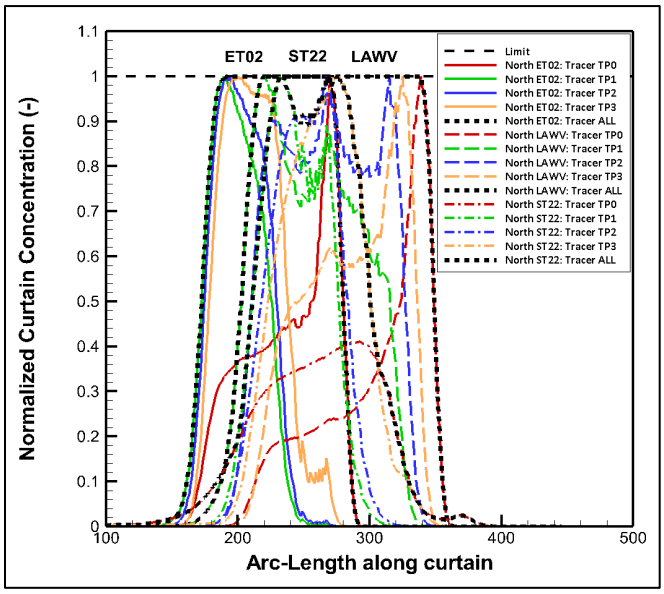


Figure H-18. TP0, TP1, TP2, TP3, and Composited Steady-State Tracer Concentration Profiles for ET02, LAWV, and ST22 in East1 PIF Aquifer Cutout Along North Curtain

The GW flow field beneath the eastern section of the ELLWF has an adverse (i.e., non-ideal with respect to plume overlap concerns) flow direction when compared to alignment of DU footprints and the 100-meter POA. In addition, the application of a cover has its largest impact in the eastern section as well. Both effects can be observed in Figure H-19 for ET05, LAWV, and ST18. These three DUs are in the center regime of the East1 PIF aquifer cutout. The 1-D tracer concentration

profiles for each DU for both the TP0 and TP1 periods are superimposed on the same graph in Figure H-19. Significant plume overlap is observed during both time periods, as is a significant counterclockwise shift in the TP1 profiles upon application of a cover.

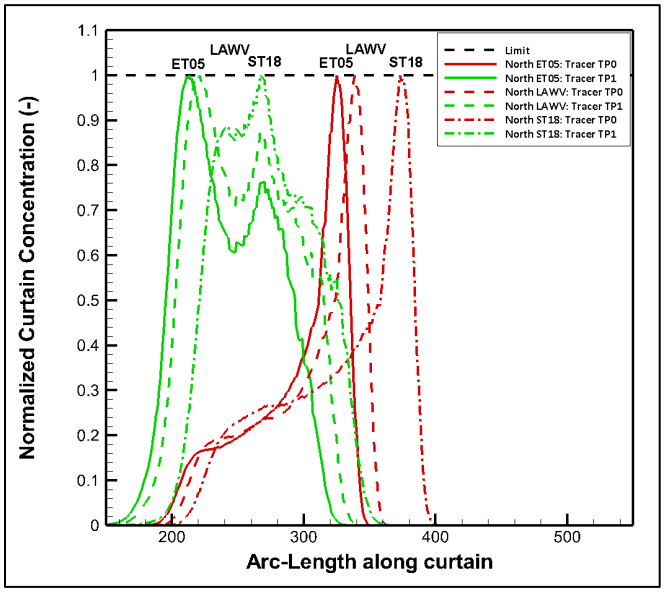


Figure H-19. TP0 and TP1 Steady-State Tracer Concentration Profiles for ET05, LAWV, and ST18 in East1 PIF Aquifer Cutout Along North Curtain

The composited 1-D tracer concentration profiles for ET05, LAWV, and ST18 are shown in Figure H-20 where significant plume overlap resulting from flow field misalignment and rotational effects is clearly illustrated.

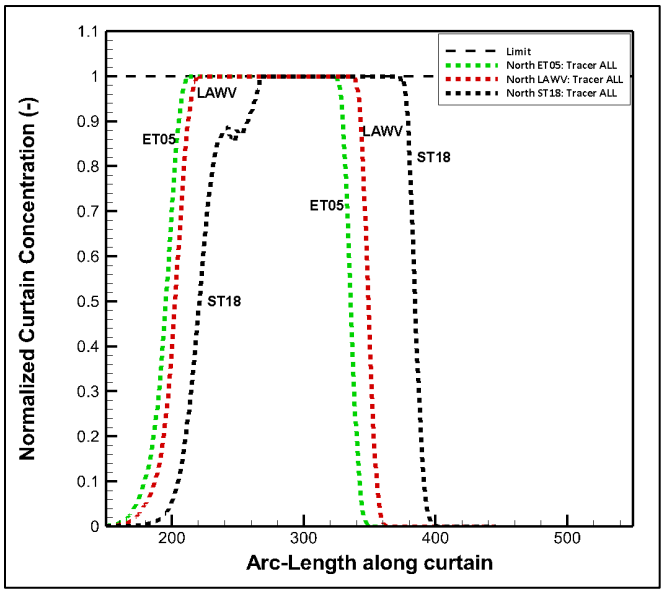


Figure H-20. Composited Steady-State Tracer Concentration Profiles for ET05, LAWV, and ST18 in East1 PIF Aquifer Cutout Along North Curtain

As the individual DU profiles in Appendix C, Section C.1.2.3 suggest, the peak concentration at the 100-meter POA generally resides along the North curtain. However, peak concentrations for ST21 and ST22 reside along the South curtain. Within the East1 PIF aquifer cutout, ST21 and ST22 are unique because their peak concentrations at the 100-meter POA shift from the South curtain during the TP0 period to the North curtain during all other periods (Figure H-21 and Figure H-22).

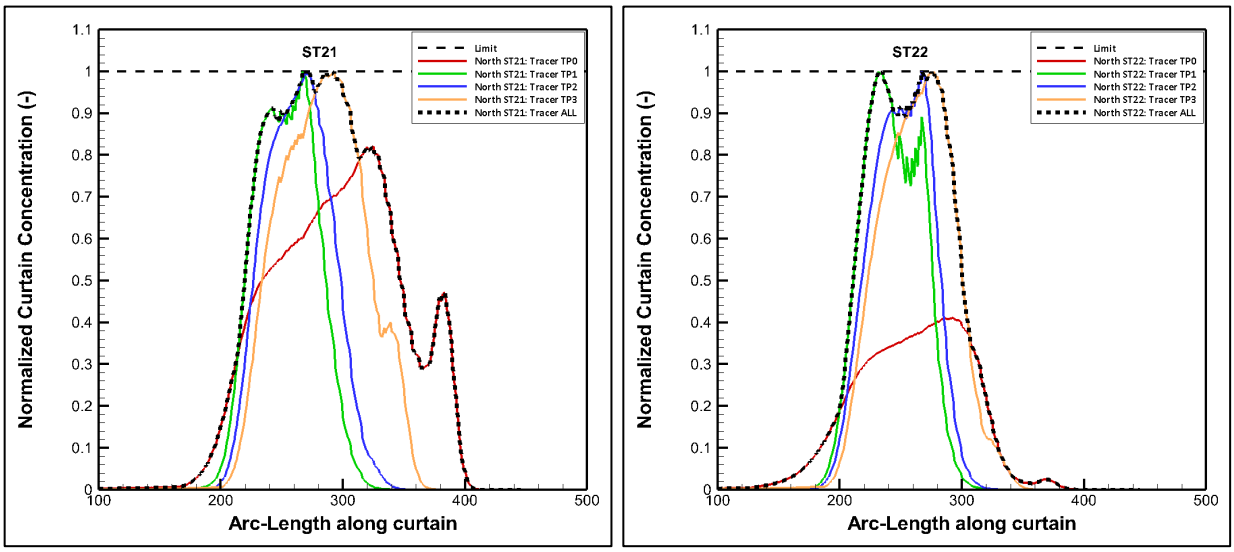


Figure H-21. TP0, TP1, TP2, TP3, and Composited Steady-State Tracer Concentration Profiles for ST21 and ST22 in East1 PIF Aquifer Cutout Along North Curtain

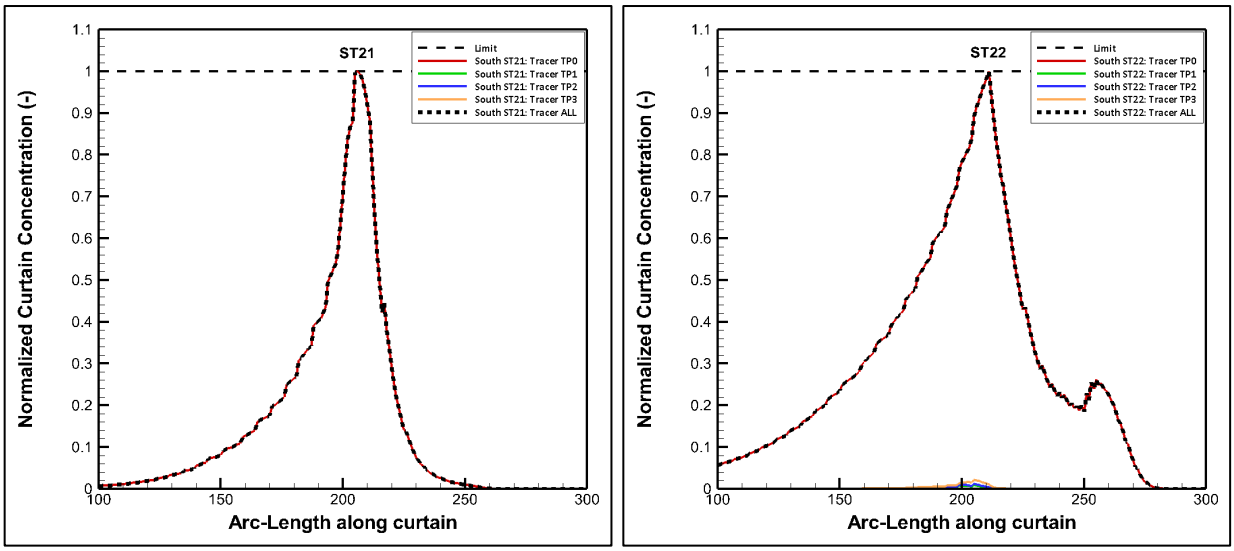


Figure H-22. TP0, TP1, TP2, TP3, and Composited Steady-State Tracer Concentration Profiles for ST21 and ST22 in East1 PIF Aquifer Cutout Along South Curtain

As the results above indicate, the degree of plume overlap among DUs within the East1 PIF aquifer cutout is significant.

H.1.1.2.4. East2 PIF Aquifer Cutout

The 2-D tracer concentration plume for NR07E within the East2 PIF aquifer cutout is shown below. As Figure H-23 indicates, the peak concentration at the 100-meter POA resides along the South curtain during TP0. Figure H-24 highlights that the peak concentration continues to occur along the South curtain for all time periods. Peak concentrations along the North curtain are more than one order of magnitude lower than along the South curtain.

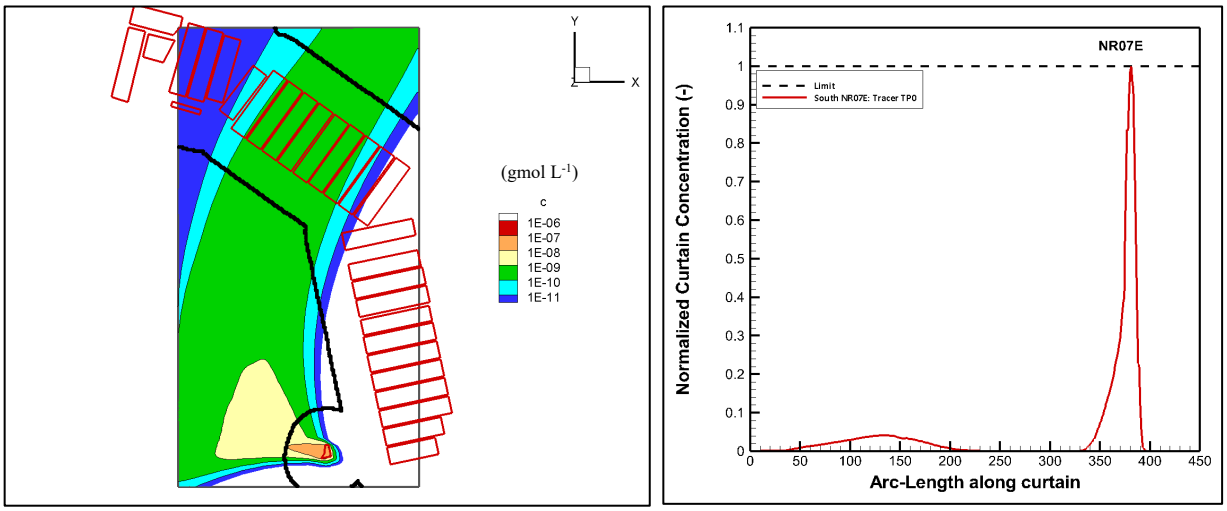


Figure H-23. TP0 Steady-State 2-D Tracer Concentration Plumes (left) and 1-D Concentration Profiles (right) for NR07E in East2 PIF Aquifer Cutout Along South Curtain

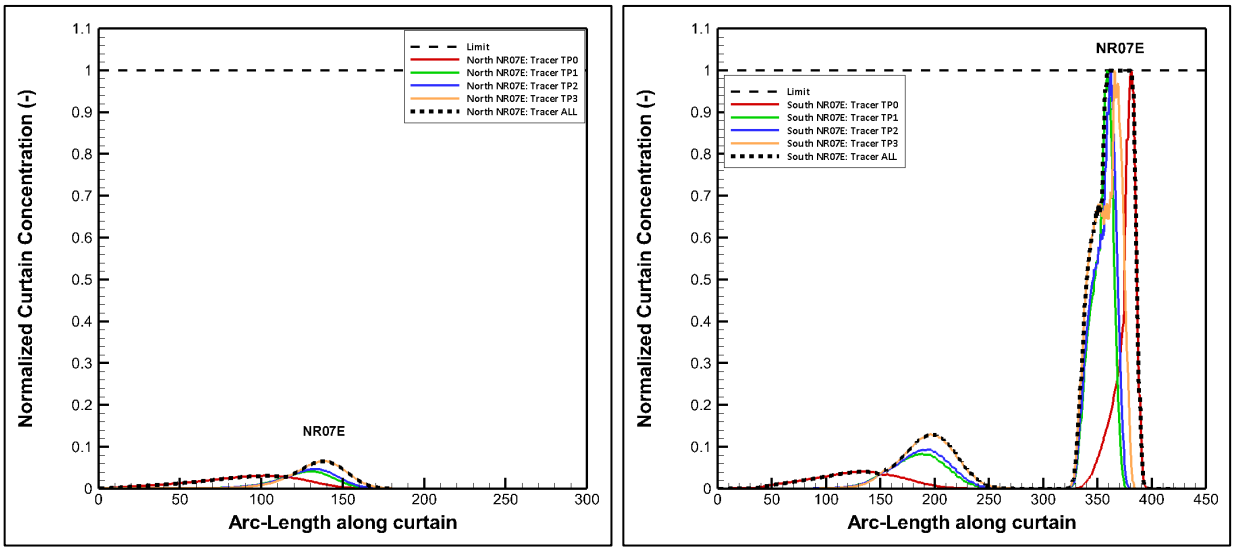


Figure H-24. TP0, TP1, TP2, TP3, and Composited Steady-State Tracer Concentration Profiles for NR07E in East2 PIF Aquifer Cutout Along North (left) and South (right) Curtains

H.1.1.3. Plume Interaction Profiles

In general, PIPs are DU-, radionuclide-, and time-dependent. Section H.1.1.2 introduces PIPs and discusses concentration plumes in general. In this section, a combination scheme is discussed and then employed to reduce PIP dependence to DU only. The approach chosen for combining parent

radionuclide PIPs within a specific DU is conservative (pessimistically leaning) as shown below. For a PIP of a parent radionuclide with progeny, all its chain members are incorporated before employing the combining approach at a DU level.

A PIP represents the maximum vertical radionuclide concentrations along one of the 100-meter POA curtains based on steady-state aquifer transport simulations in PORFLOW. The following transport simulations are made for each DU:

- Every generic waste form parent radionuclide that is retained during the GW radionuclide screening process and requires inventory limits for the GW pathways (plus tracer and short-chain progeny based on a 1-yr half-life cutoff.
- The four steady-state aquifer flow fields spanning the entire GW compliance period (i.e., Year 0 to Year 1,171).
- A total of 33 separate transport simulations [where a steady-state (i.e., constant) source term for each generic waste form parent radionuclide is assumed] is considered for the 33 ELLWF DUs.

For example, the maximum vertical tracer concentration emanating from ET03 is shown in Figure H-25 for the case where the source strength is arbitrarily set to achieve a concentration of 1.0E-08 gmol L^{-1} at the 100-meter POA. The concentration profile in Figure H-25 represents the maximum vertical concentrations at each *x-y* location. Contours ranging over three orders in magnitude (i.e., from 1.0E-08 gmol L^{-1} to 1.0E-11 gmol L^{-1}) are provided along the North curtain. When normalized, the peak concentration is at a value of 100% (i.e., intersection of the yellow and orange contours) and the contour boundary is at 0.1% of this peak (i.e., intersection of the blue and cyan contours).

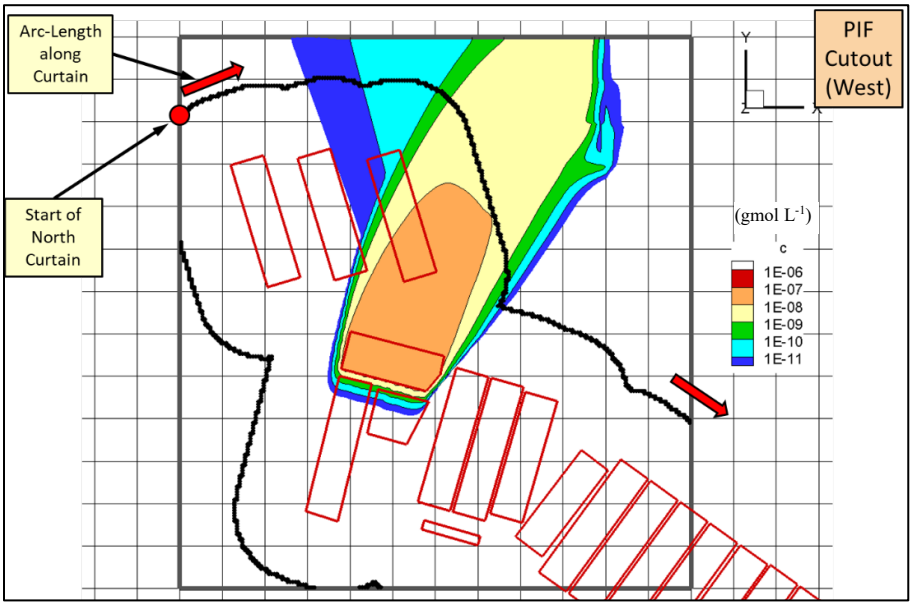


Figure H-25. Schematic Illustrating How a Plume Interaction Factor is Related to Neighboring Disposal Units

The arc-length along the North curtain is also shown in Figure H-25, which begins at the far western point of the model domain (i.e., West PIF aquifer cutout) and travels along the curtain in a southeastern (clockwise) direction. In summary, the following steady-state transport simulations are made:

- Four PIF aquifer cutouts (West, Center, East1, and East2)
- 33 DUs in total
- Two vertical curtains along the 100-meter POA (North and South)
- Four steady-state aquifer flow fields spanning the entire GW compliance periods

PIPs, in which the concentrations are normalized as described above, are created for every parent radionuclide and its short-chain progeny from each of the bulleted list of transport simulations. Table H-3 provides the list of parent radionuclides and their progeny for each reference DU-type (see Chapter 2, Section 2.3.7 for GW radionuclide screening process). For example, all 29 slit and engineered trenches (i.e., 20 STs and 9 ETs) have the same list of parent radionuclides and progeny; Table H-3 indicates that there are 26 parent radionuclides plus the tracer for comparison and combining purposes.

Because of mesh refinement demands to maintain numerical dispersion at acceptable levels, the computational domain of the overall ELLWF footprint is parsed into four PIF aquifer cutouts (i.e., a 3.0E+06 node limit for PORFLOW). Each PIF cutout overlaps with its neighboring PIF cutouts to arrive at full coverage of the ELLWF footprint. Specific DUs associated with each PIF aquifer cutout are as follows:

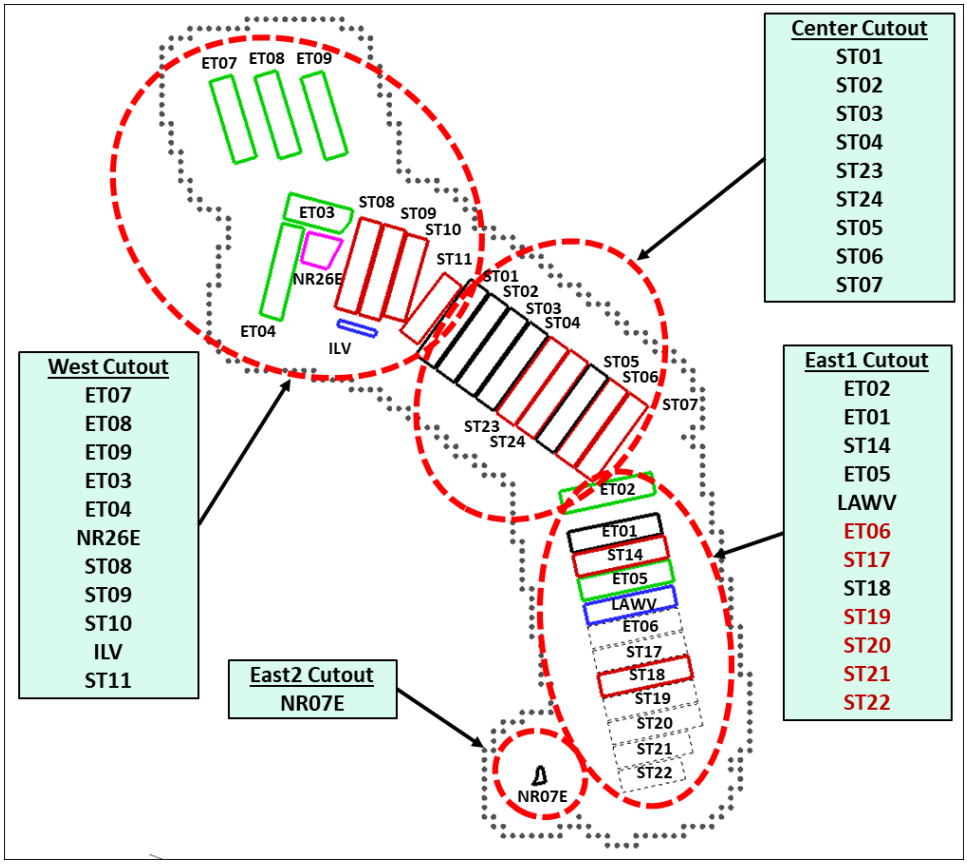
- **West:** ET07, ET08, ET09, ET03, ET04, NR26E, ST08, ST09, ST10, ILV, ST11
- **Center:** ST01, ST02, ST03, ST04, ST23, ST24, ST05, ST06, ST07
- **East1:** ET02, ET01, ST14, ET05, LAWV, ET06, ST17, ST18, ST19, ST20, ST21, ST22
- **East2:** NR07E

Figure H-26 displays a schematic of the ELLWF with the four PIF aquifer cutouts and their associated DU footprints highlighted.

Note that preliminary inventory limits for the GW pathways are generated for the six potential future DUs beyond this PA; however, final inventory limits are not (see Section H.1.1.4 for details). If the excluded DUs are needed for future ELLWF operations, a revised PA or a subsequent SA will be required to include them in the CWTS limits system.

Table H-3. Generic Waste Form Radionuclides Requiring Inventory Limits for Groundwater Pathways by Reference DU-Type Plus Tracer and Progeny Chain Members

Parent Radionuclides Plus Tracer	Reference DU-Type					Parent	Progeny - Chain Members (1 yr half-life cutoff)					
	Trench	LAWV	ILV	NRCDAG	NRCDAS	1	2	3	4	5	6	7
Ag-108m	Ag-108m	Ag-108m	Ag-108m	--	--	Ag-108m						
Am-241	Am-241	Am-241	Am-241	--	Am-241	Am-241	Np-237	U-233	Th-229			
Ar-39	--	Ar-39	--	--	--	Ar-39						
Be-10	Be-10	--	--	--	--	Be-10						
C-14	C-14	C-14	C-14	--	C-14	C-14						
Ca-41	--	--	Ca-41	--	--	Ca-41						
Cf-249	Cf-249	Cf-249	--	--	--	Cf-249	Cm-245	Pu-241	Am-241	Np-237	U-233	Th-229
Cl-36	Cl-36	Cl-36	Cl-36	--	Cl-36	Cl-36						
Cm-245	Cm-245	Cm-245	Cm-245	--	--	Cm-245	Pu-241	Am-241	Np-237	U-233	Th-229	
Cs-135	Cs-135	Cs-137	Cs-137	--	--	Cs-135						
Cs-137	Cs-137	--	--	--	--	Cs-137						
H-3	H-3	H-3	H-3	--	H-3	H-3						
I-129	I-129	I-129	I-129	--	I-129	I-129						
K-40	K-40	K-40	K-40	--	--	K-40						
Ni-59	Ni-59	Ni-59	Ni-59	--	Ni-59	Ni-59						
Ni-63	Ni-63	Ni-63	Ni-63	--	Ni-63	Ni-63						
Np-237	Np-237	Np-237	Np-237	--	Np-237	Np-237	U-233	Th-229				
Pa-231	Pa-231	--	--	--	--	Pa-231	Ac-227					
Pd-107	Pd-107	--	--	--	--	Pd-107						
Pu-239	Pu-239	Pu-239	Pu-239	--	--	Pu-239	U-235	Pa-231	Ac-227			
Pu-241	Pu-241	Pu-241	Pu-241	--	Pu-241	Pu-241	Am-241	Np-237	U-233	Th-229		
Ra-226	Ra-226	Ra-226	Ra-226	--	--	Ra-226	Pb-210					
Rb-87	Rb-87	--	--	--	--	Rb-87						
Sr-90	Sr-90	Sr-90	Sr-90	--	Sr-90	Sr-90						
Tc-99	Tc-99	Tc-99	Tc-99	--	Tc-99	Tc-99						
Th-230	Th-230	--	--	--	--	Th-230	Ra-226	Pb-210				
Th-231	Th-231	--	--	--	--	Th-231	Pa-231	Ac-227				
U-234	U-234	--	--	--	--	U-234	Th-230	Ra-226	Pb-210			
U-235	--	U-235	U-235	--	U-235	U-235	Pa-231	Ac-227				
Total Number Parents	**26**	**20**	**19**	**0**	**12**	**29**						
Tracer	Yes	Yes	Yes	Yes	Yes	Tracer						



DU footprint color-coding: ST – solid red; ET – solid green; LAWV/ILV – solid blue; NRCDA – solid magenta; Closed DUs – solid black; Potential (excluded) DUs beyond this PA – dashed black; names labeled in red.

Figure H-26. E-Area Low-Level Waste Facility Disposal Unit Footprints and PIF Aquifer Cutout Groupings

H.1.1.3.1. Process of Combining Plume Interaction Profiles

PORFLOW steady-state aquifer simulations of each flow field using the appropriate PIF aquifer cutouts are completed for every generic waste form parent radionuclide and DU. The resulting concentration profiles are processed along the North and South curtains to obtain DU-, radionuclide-, and time (DU-Nuc-Time)-dependent PIPs.

As mentioned above, the following multistep process is employed to combine the DU-Nuc-Time-dependent PIPs for each DU:

1. Parent radionuclide and its progeny are combined.
2. Time periods (i.e., TP0, TP1, etc.) for the combined parent radionuclides are combined.
3. The combined parent and time-period PIPs are combined.
4. The overall combined PIP is then smoothed.

The first step is omitted for parent radionuclides without progeny. The smoothing process accounts for the discrete aspects associated with using just four discrete, steady-state flow fields to represent

an actual spectrum. Every step of the process above brings conservative (pessimistically leaning) aspects into the final PIP representing a given DU.

Figure H-27 illustrates an example of combining time periods for the single radionuclide, Sr-90, in ST01. As Figure H-27 shows, the shift in the aquifer flow field over the GW compliance periods tends to spread the concentration profiles out along the North curtain. To conservatively capture this spread, an overall PIP is computed whereby the maximum concentration for every flow field is chosen at each point along this curtain as shown by the black-dashed curve.

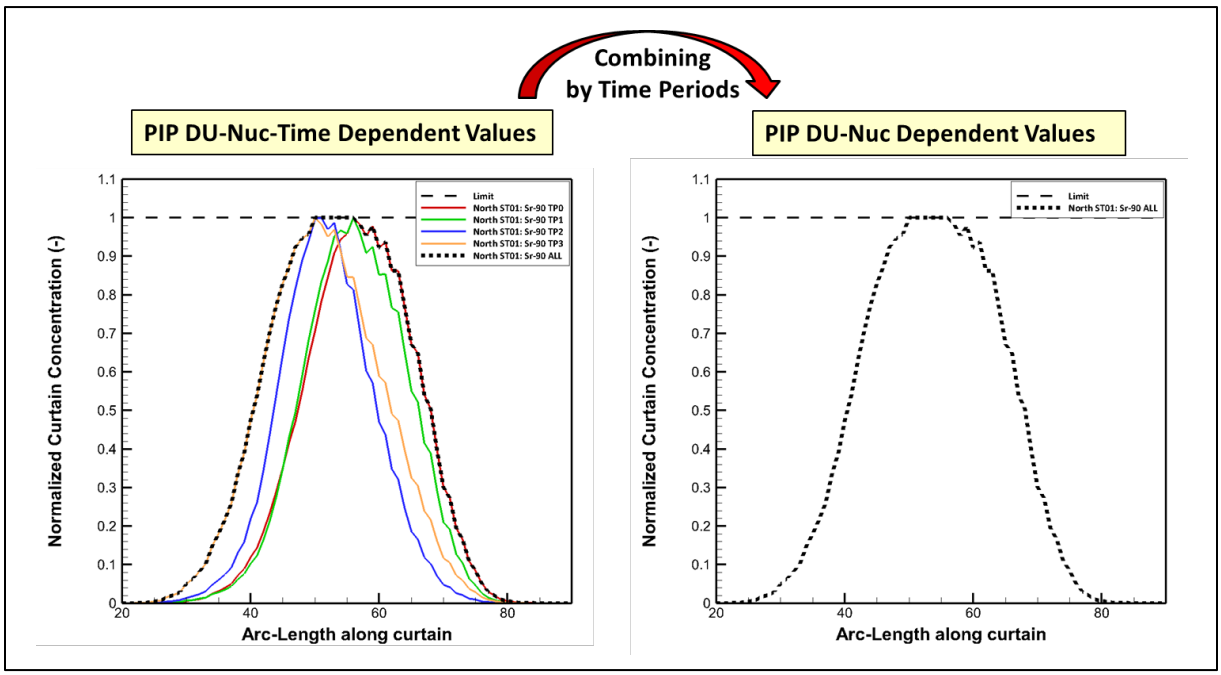


Figure H-27. Example of Combining Time Periods for Sr-90 in ST01

In the example for Sr-90 above, the four discrete flow fields (for time periods TP0, TP1, TP2, and TP3) are combined into a single PIP curve.

The above process is applied to every generic waste form parent radionuclide within a given DU (here ST01). The resulting radionuclide-specific PIPs are then combined to compute an overall maximum PIP that is radionuclide independent. To address the issue of discrete flow fields, the overall PIP is then smoothed. The combining of the parent PIPs and then smoothing is illustrated for ST01 in Figure H-28. The combined PIP for the parent radionuclides is represented by the black-dashed line in the left image of Figure H-28, while its smoothed version is shown in the right image as a red-dashed curve. For reference, the PIP for the tracer is displayed in both images as the long-dashed black curve.

The above combining process is applied to all 33 ELLWF DUs regardless of status (i.e., closed, opened, or future). The smoothed overall PIP and tracer PIP for every DU is provided in the subsections below (i.e., plots like the righthand image in Figure H-28).

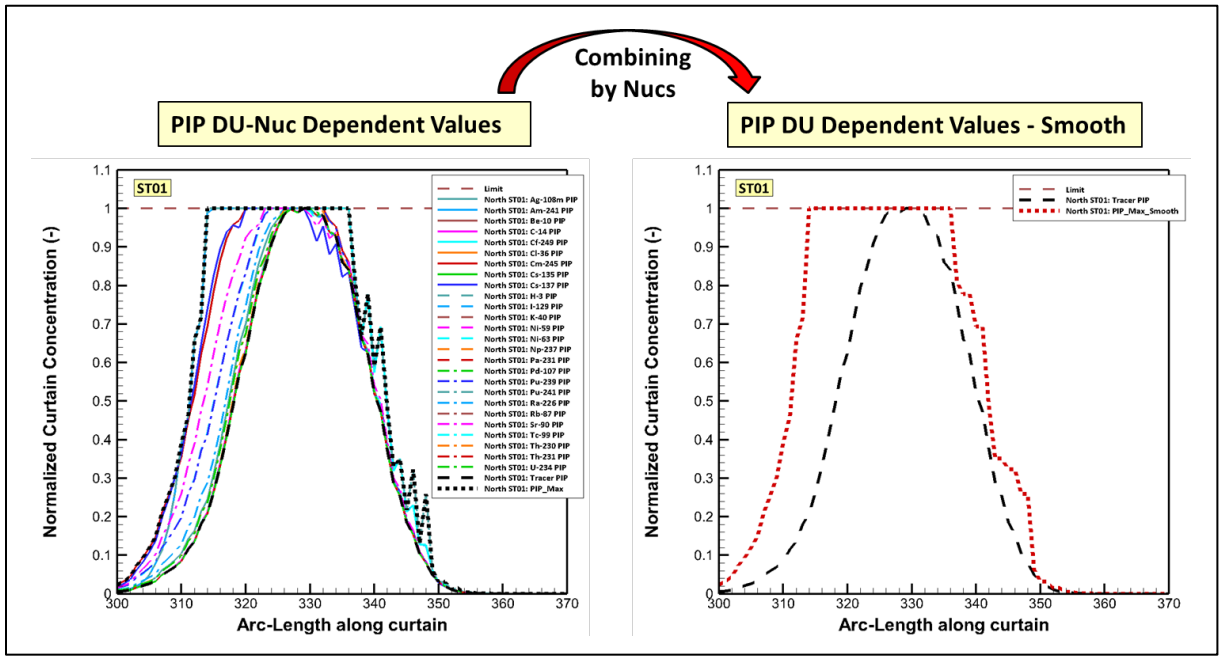


Figure H-28. Example of Combining All Parent Radionuclides (plus Tracer) in ST01, Then Smoothing

H.1.1.3.2. Plume Interaction Profiles for West PIF Aquifer Cutout

The tracer PIP and the smoothed overall PIP along the North and South curtains for the West PIF aquifer cutout are presented below.

H.1.1.3.2.1. North Curtain Along West PIF Aquifer Cutout

As expected, the smoothed overall PIP curves encompass the tracer PIP curves in every case. In some cases, the smoothed overall PIP spreads out significantly from its tracer PIP counterpart. Generally, this is a result of the combining of the various radionuclides within a DU's radionuclide listing.

Figure H-29 displays the smoothed overall PIPs for every DU in the West PIF aquifer cutout. Each DU is then highlighted individually in Figure H-30 through Figure H-35 where the smoothed overall PIP is compared to its tracer PIP.

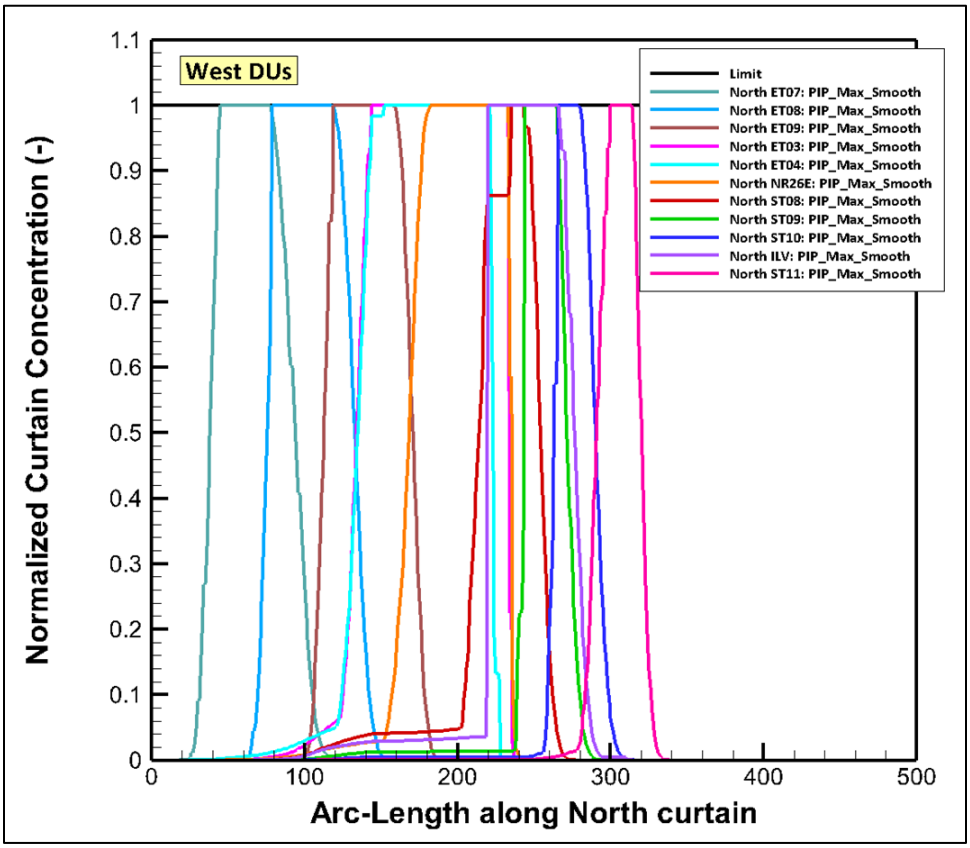


Figure H-29. Smoothed Plume Interaction Profiles Along North Curtain for All Disposal Units in West PIF Aquifer Cutout

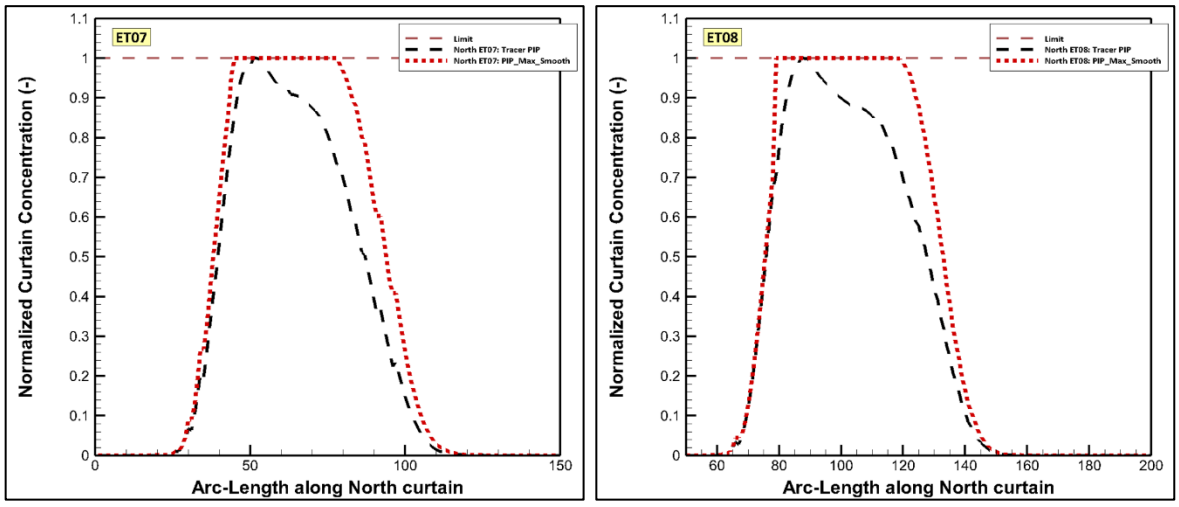


Figure H-30. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ET07 and ET08

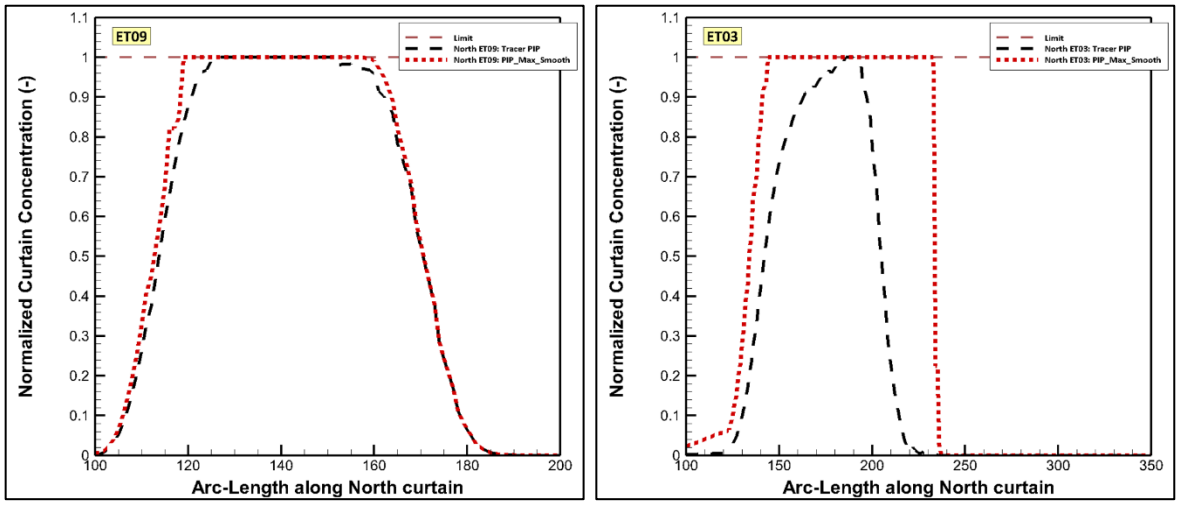


Figure H-31. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ET09 and ET03

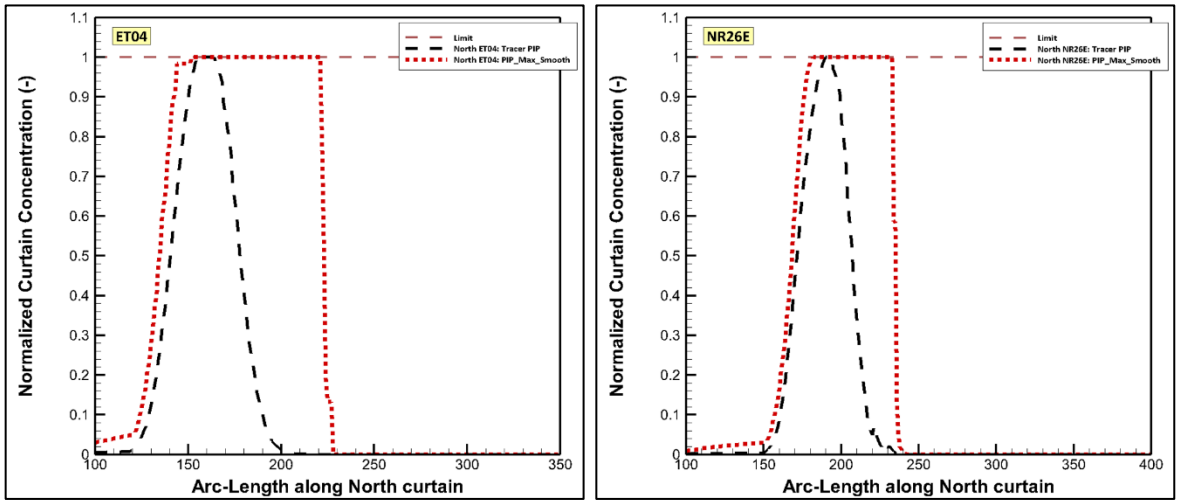


Figure H-32. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ET04 and NR26E

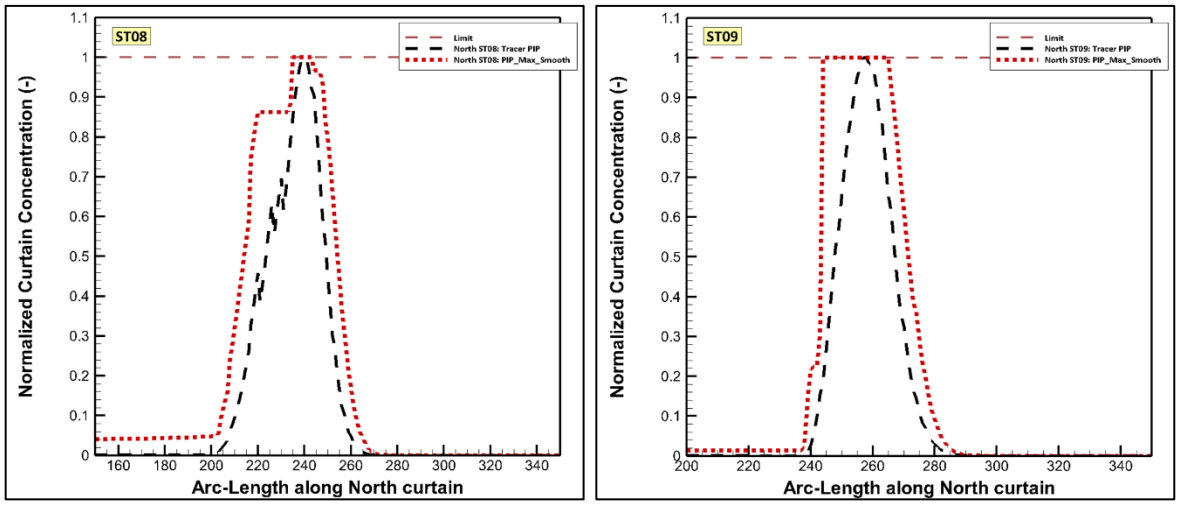


Figure H-33. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST08 and ST09

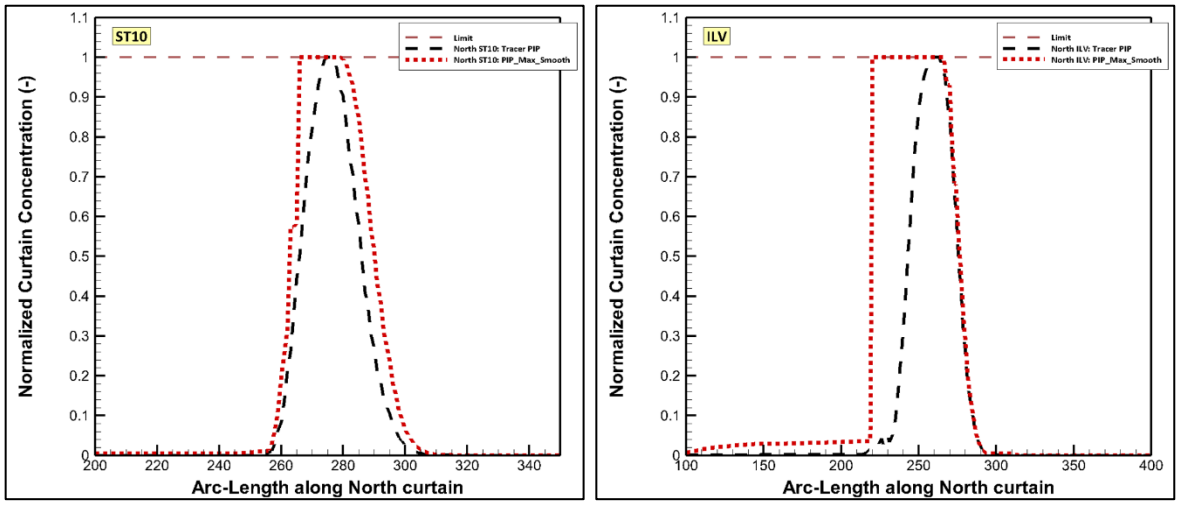


Figure H-34. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST10 and ILV

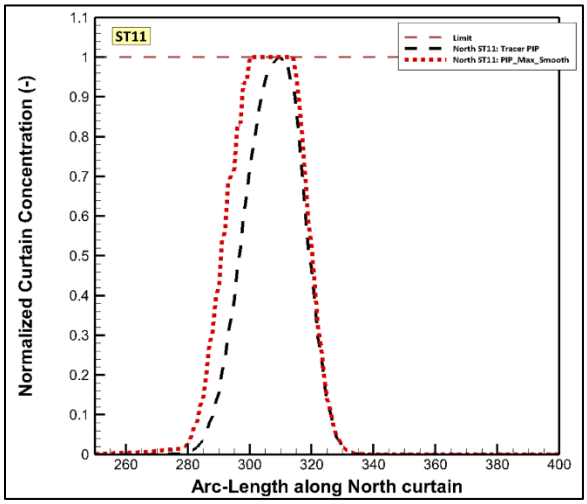


Figure H-35. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST11

H.1.1.3.2.2. South Curtain Along West PIF Aquifer Cutout

Because the advective component exceeds back-dispersion, PIPs along the South curtain are at extremely low concentration levels and do not require tracking. Thus, no explicit PIPs are generated for the South curtain along the West PIF aquifer cutout.

H.1.1.3.3. Plume Interaction Profiles for Center PIF Aquifer Cutout

The tracer PIP and the smoothed overall PIP along the North and South curtains for the Center PIF aquifer cutout are presented below.

H.1.1.3.3.1. North Curtain Along Center PIF Aquifer Cutout

As expected, the smoothed overall PIP curves encompass the tracer PIP curves in every case. In some cases, the smoothed overall PIP spreads out significantly from its tracer PIP counterpart. Generally, this is a result of the combining of the various radionuclides within a DU's radionuclide listing.

Figure H-36 displays the smoothed overall PIPs for every DU in the Center PIF aquifer cutout. Each DU is then highlighted individually in Figure H-37 through Figure H-41 where the smoothed overall PIP is compared to its tracer PIP.

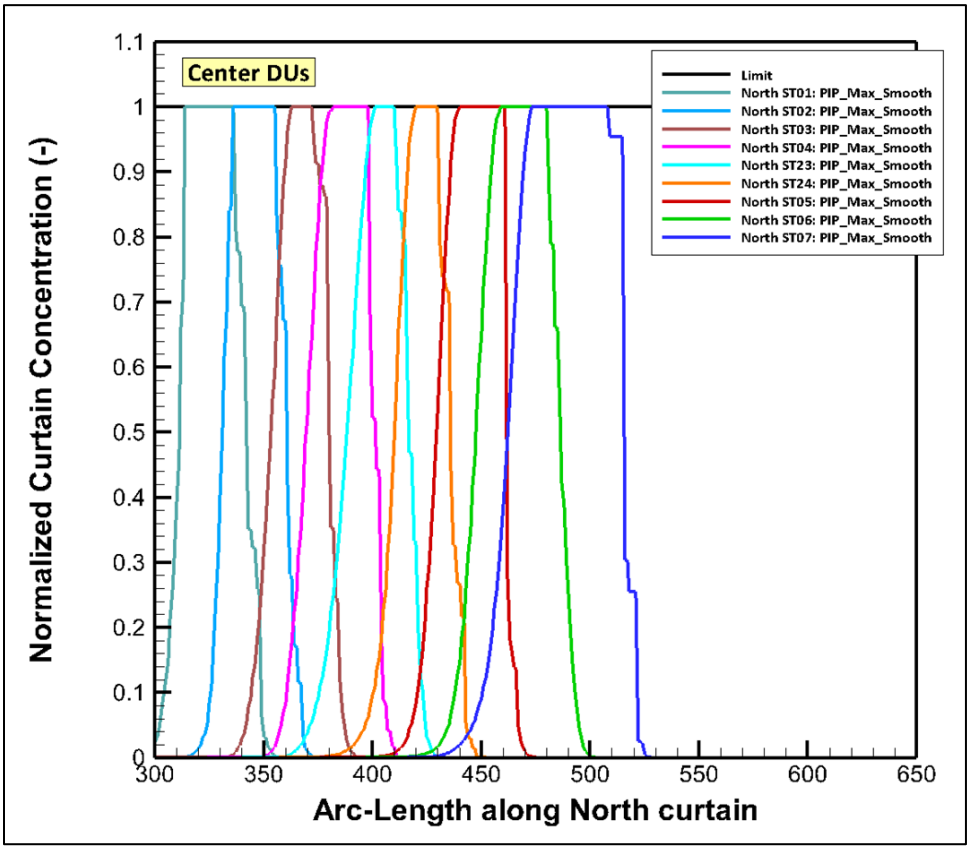


Figure H-36. Smoothed Plume Interaction Profiles Along North Curtain for All Disposal Units in Center PIF Aquifer Cutout

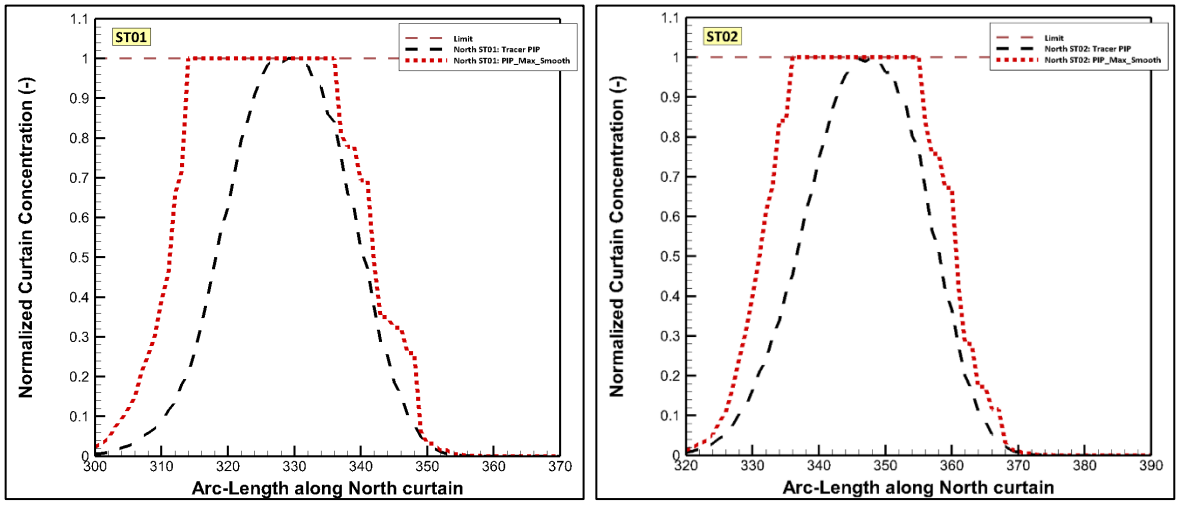


Figure H-37. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST01 and ST02

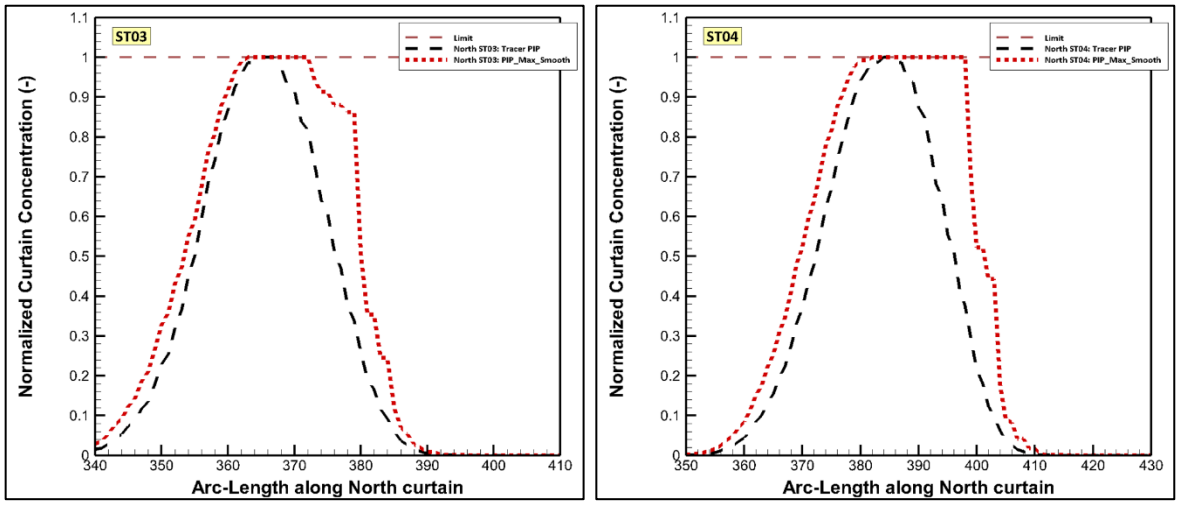


Figure H-38. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST03 and ST04

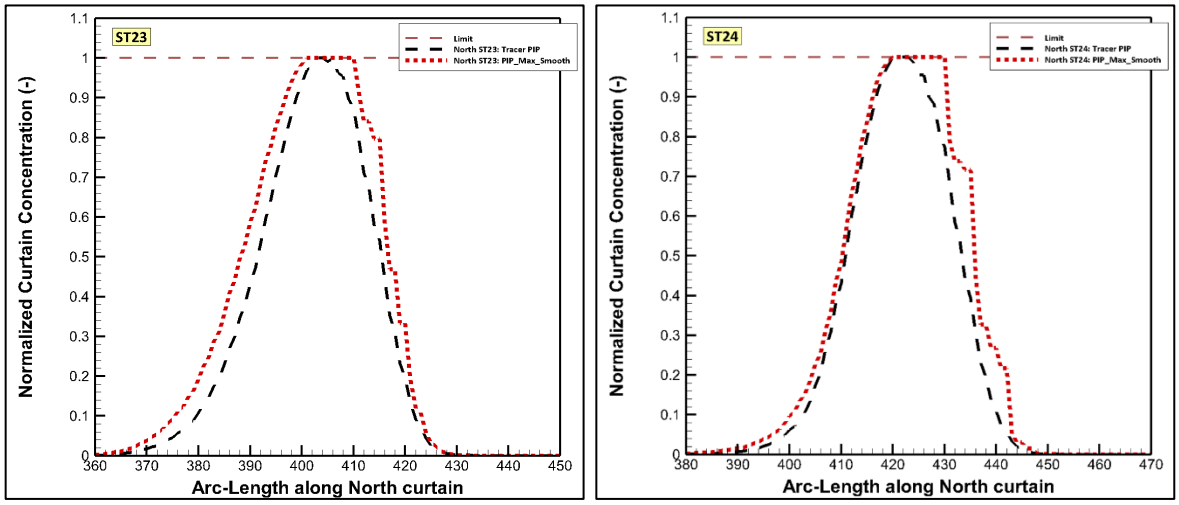


Figure H-39. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST23 and ST24

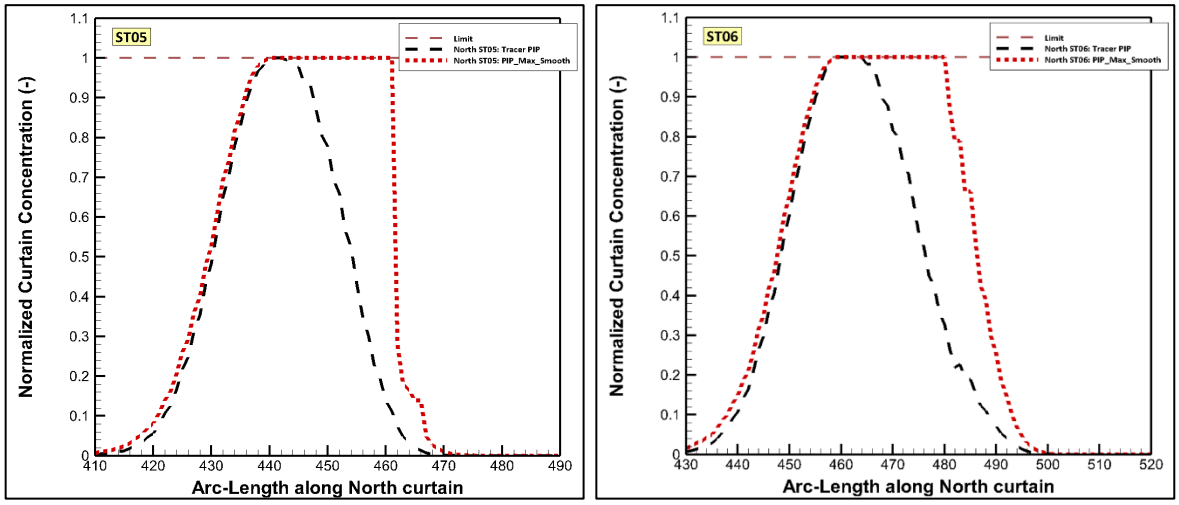


Figure H-40. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST05 and ST06

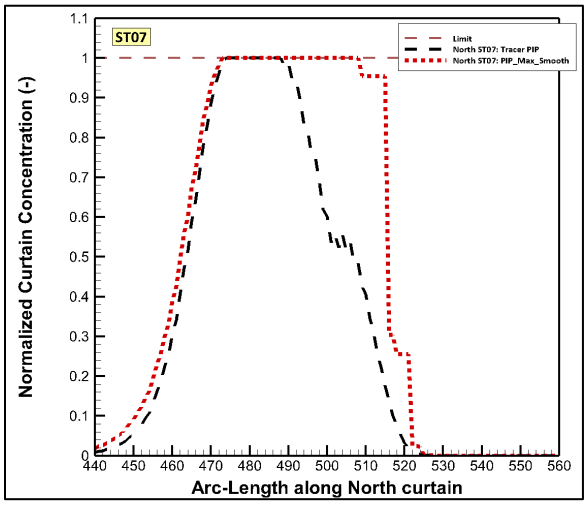


Figure H-41. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST07

H.1.1.3.3.2. South Curtain Along Center PIF Aquifer Cutout

Because the advective component exceeds back-dispersion, PIPs along the South curtain are at extremely low concentration levels and do not require tracking. Thus, no explicit PIPs are generated for the South curtain along the Center PIF aquifer cutout.

H.1.1.3.4. Plume Interaction Profiles for East1 PIF Aquifer Cutout

The tracer PIP and the smoothed overall PIP along the North and South curtains for the East1 PIF aquifer cutout are presented below.

H.1.1.3.4.1. North Curtain Along East1 PIF Aquifer Cutout

As expected for the North curtain, the smoothed overall PIP curves encompass the tracer PIP curves in every case. However, unlike for the West and Center aquifer cutouts, the smoothed overall and tracer PIP curves are relatively close together, which indicates that the flow field for the East1 PIF aquifer cutout dominates the shape of these PIPs.

Figure H-42 displays the smoothed overall PIPs for every DU in the East1 PIF aquifer cutout. Each DU is then highlighted individually in Figure H-43 through Figure H-54 where the smoothed overall PIP is compared to its tracer PIP. Due to the aquifer flow field direction beneath the East1 aquifer cutout, significant plume overlap is observed.

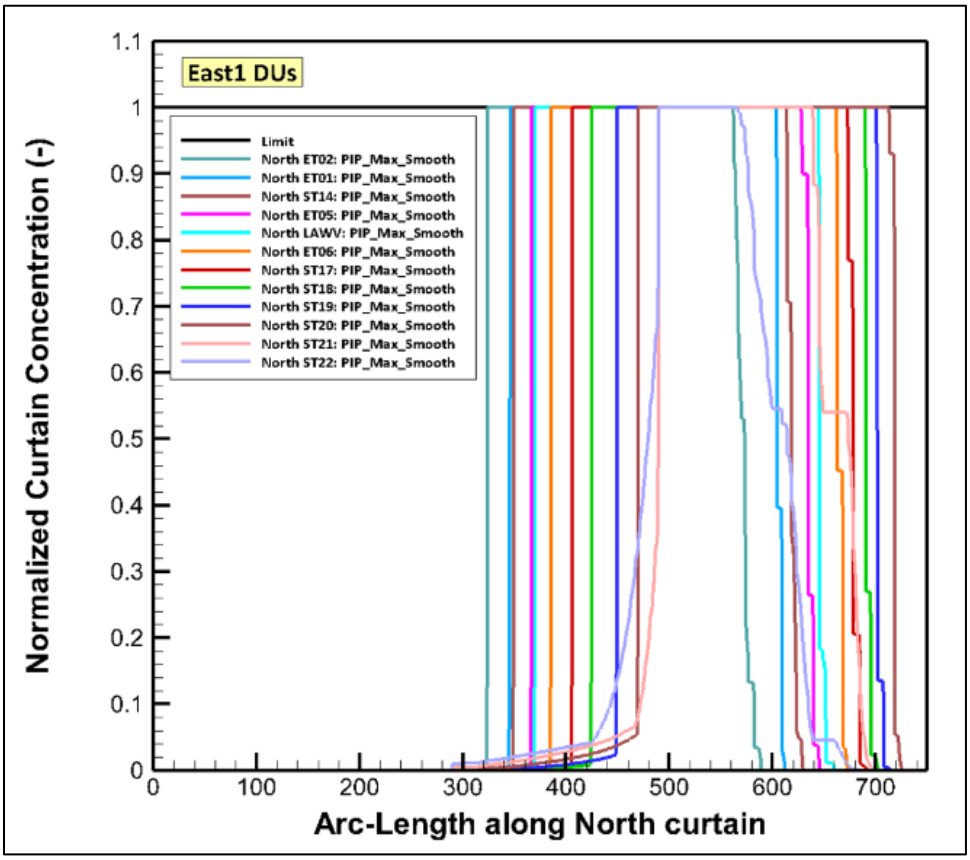


Figure H-42. Smoothed Plume Interaction Profiles Along North Curtain for All Disposal Units in East1 PIF Aquifer Cutout

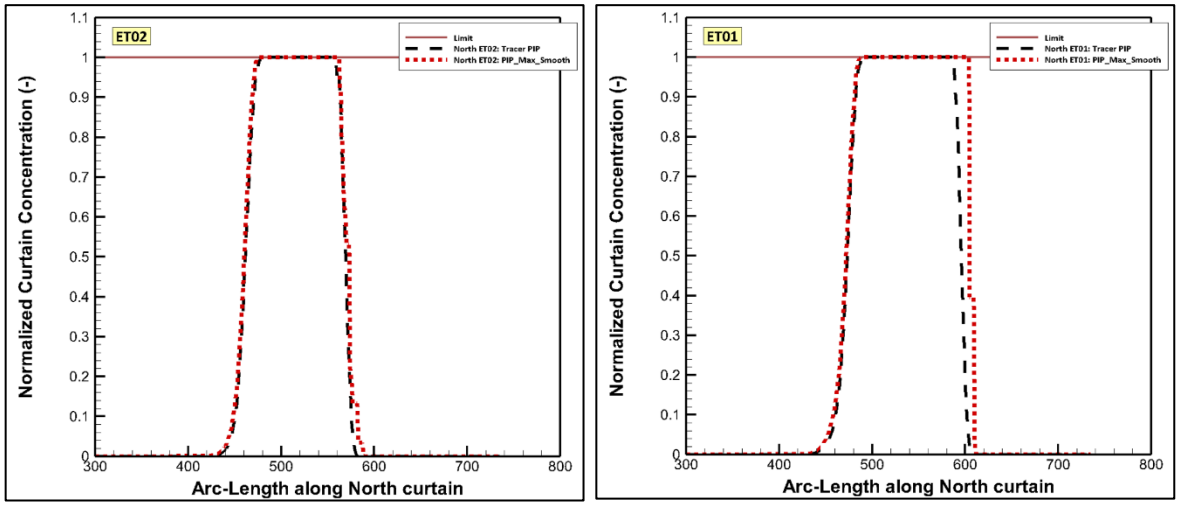


Figure H-43. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ET02 and ET01

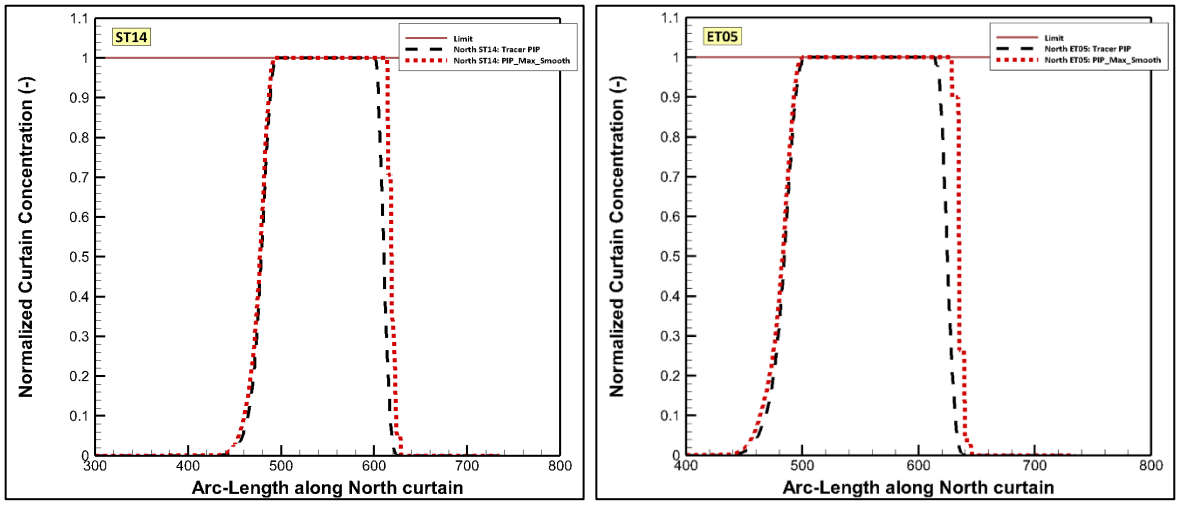


Figure H-44. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST14 and ET05

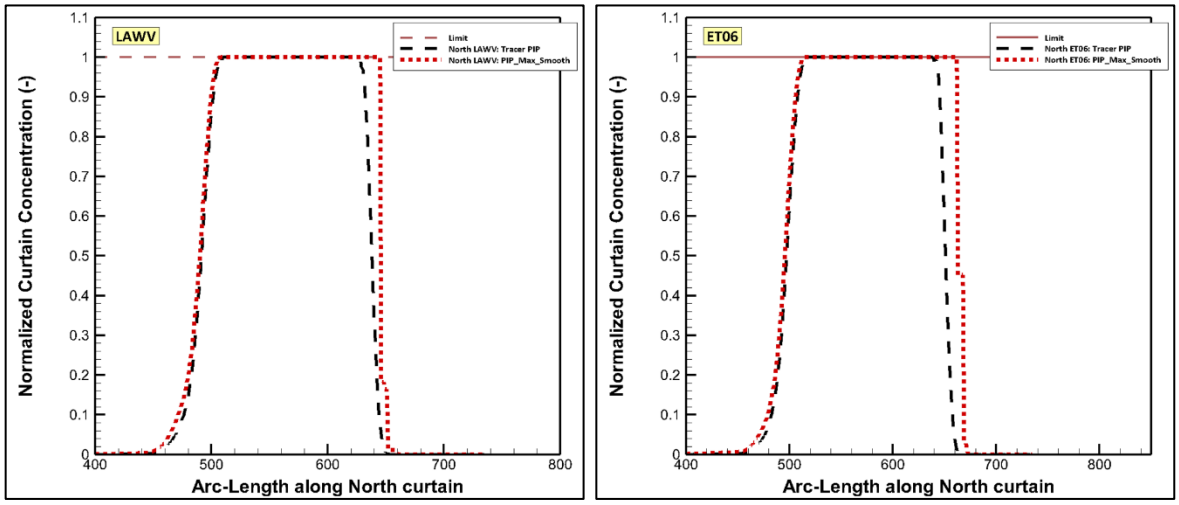


Figure H-45. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for LAWV and ET06

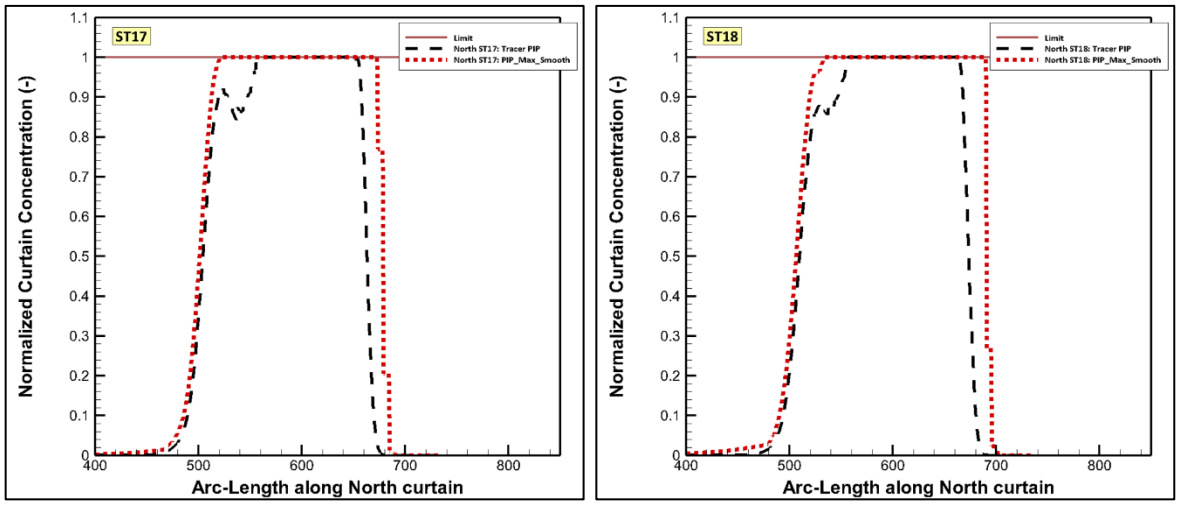


Figure H-46. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST17 and ST18

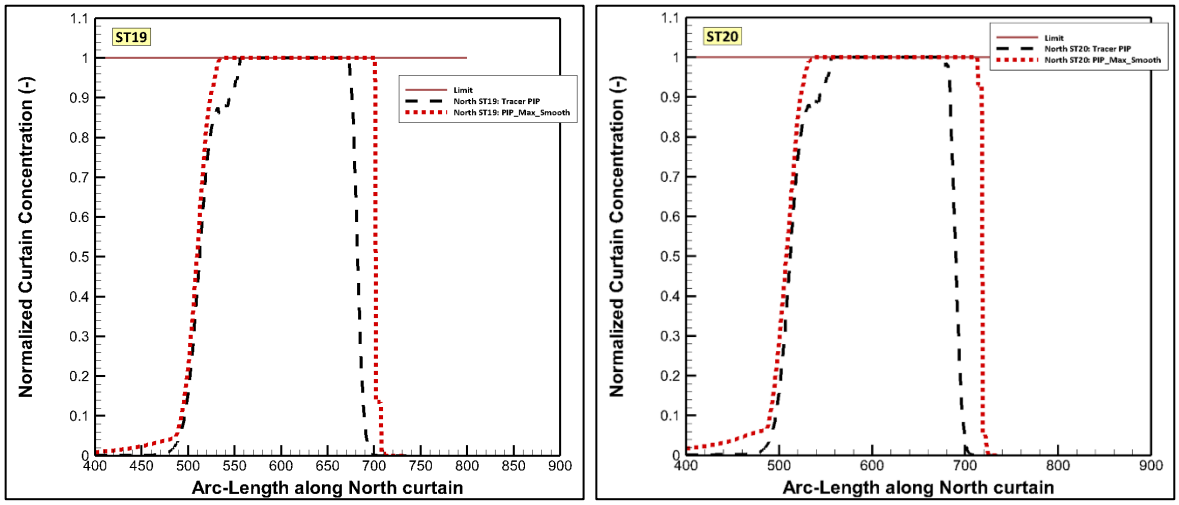


Figure H-47. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST19 and ST20

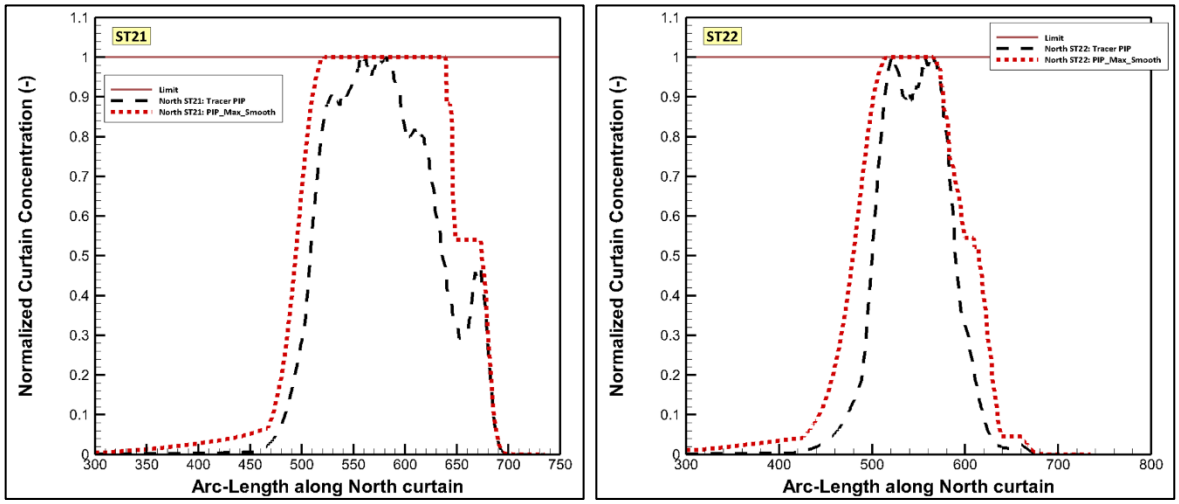


Figure H-48. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for ST21 and ST22

H.1.1.3.4.2. South Curtain Along East1 PIF Aquifer Cutout

As expected, the smoothed overall PIP curves for the South curtain encompass the tracer PIP curves in every case (Figure H-49 through Figure H-54). In general, the PIPs associated with the South curtain are dominated by their North curtain counterparts. However, the strength of the South curtain grows relative to the North curtain for DUs approaching the southern tip of the ELLWF. For ST18 through ST22, maximum concentrations are higher along the South curtain than the North curtain as displayed in Figure H-52 through Figure H-54 in at least one time period.

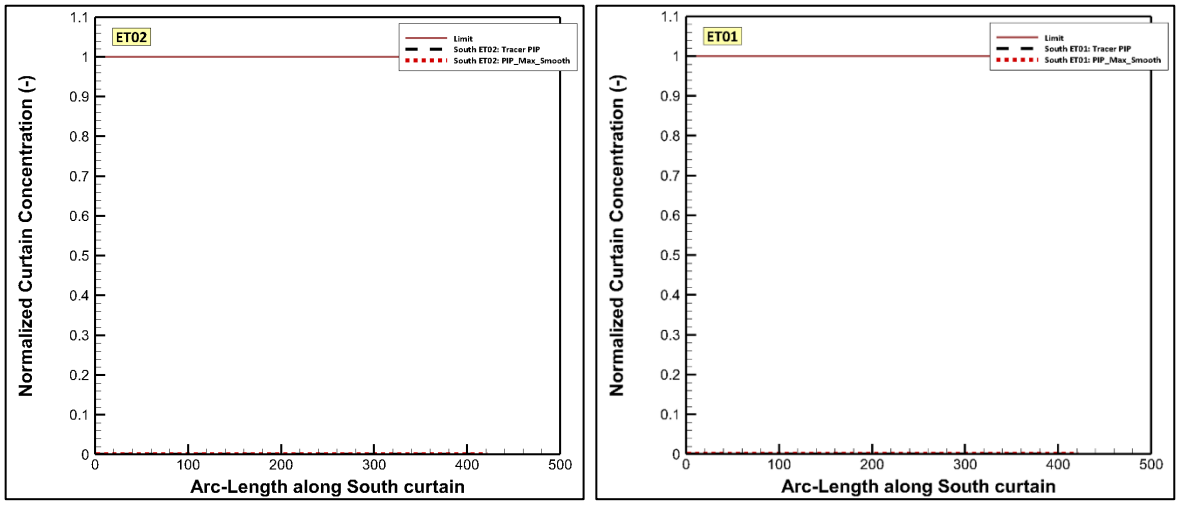


Figure H-49. Tracer versus Smooth Plume Interaction Profiles Along South Curtain for ET02 and ET01

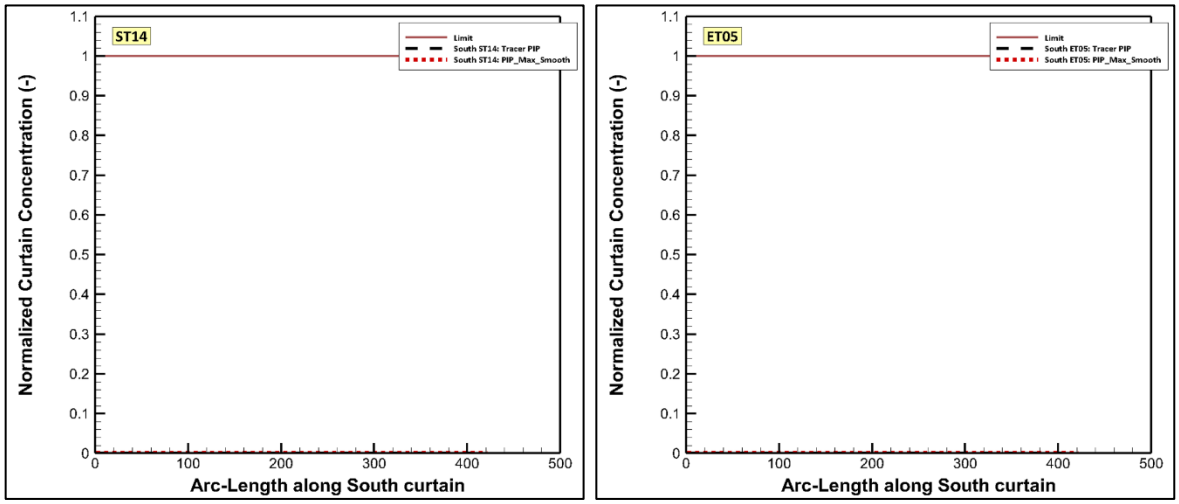


Figure H-50. Tracer versus Smooth Plume Interaction Profiles Along South Curtain for ST14 and ET05

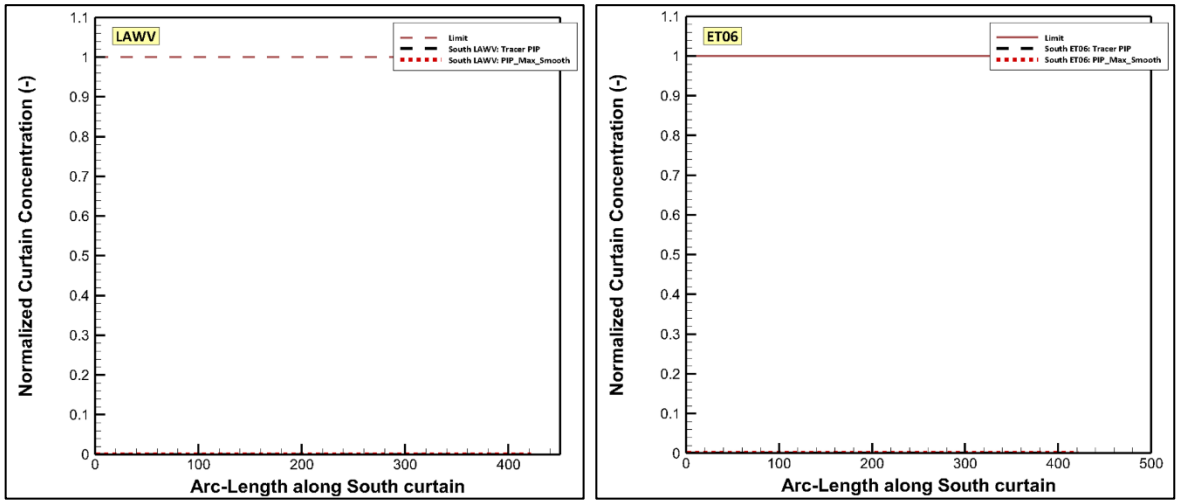


Figure H-51. Tracer versus Smooth Plume Interaction Profiles Along South Curtain for LAWV and ET06

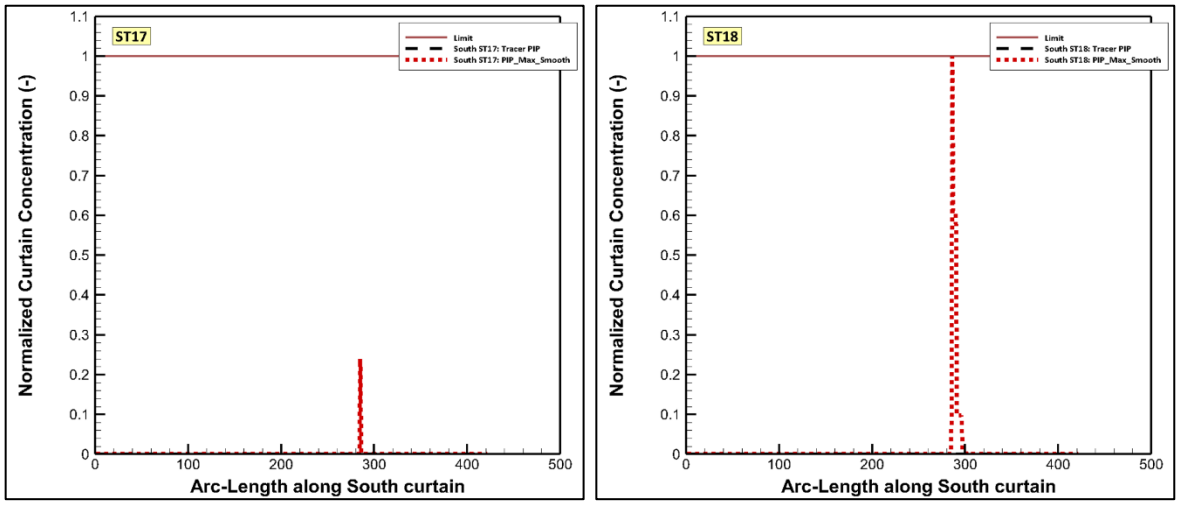


Figure H-52. Tracer versus Smooth Plume Interaction Profiles Along South Curtain for ST17 and ST18

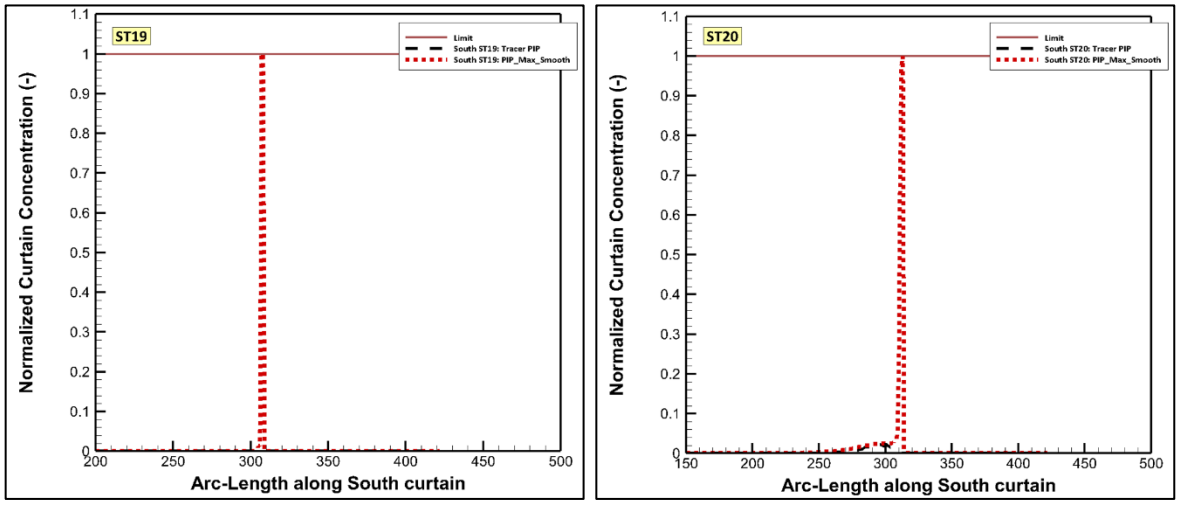


Figure H-53. Tracer versus Smooth Plume Interaction Profiles Along South Curtain for ST19 and ST20

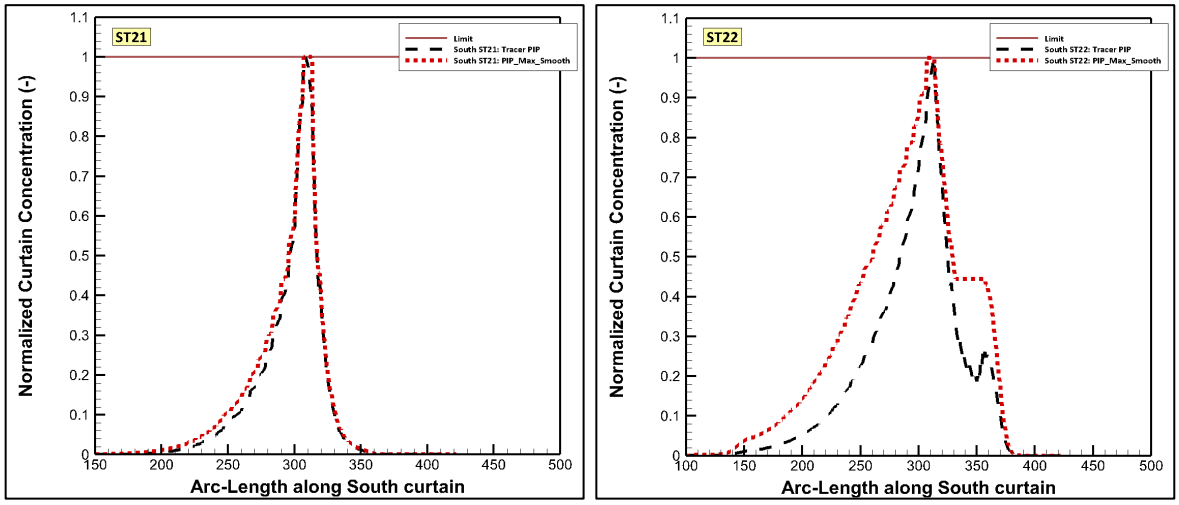


Figure H-54. Tracer versus Smooth Plume Interaction Profiles Along South Curtain for ST21 and ST22

H.1.1.3.5. Plume Interaction Profiles for East2 PIF Aquifer Cutout

The tracer PIP and the smoothed overall PIP along the North and South curtains for the East2 PIF aquifer cutout are presented below.

H.1.1.3.5.1. North Curtain Along East2 PIF Aquifer Cutout

As expected, the smoothed overall PIP curve encompasses the tracer PIP curve. In addition, for NR07E, the flow field generally results in stream traces that first cross the South curtain (i.e., twice) and then the North curtain on its way to outcropping at UTR. As such, the peak normalized concentrations are less than 1.0 along the North curtain as shown in Figure H-55.

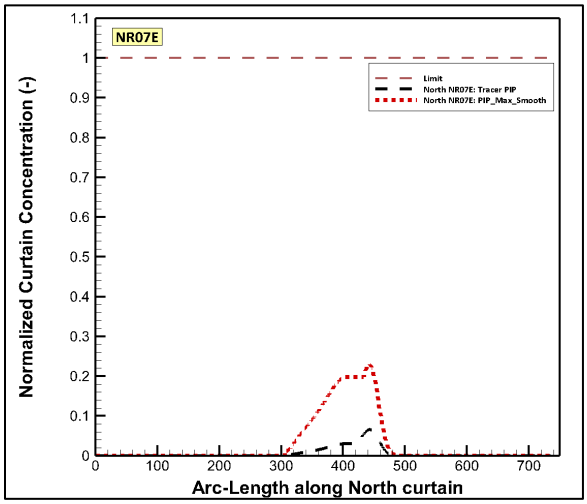


Figure H-55. Tracer versus Smooth Plume Interaction Profiles Along North Curtain for NR07E

H.1.1.3.5.2. South Curtain Along East2 PIF Aquifer Cutout

As expected, the smoothed overall PIP curve encompasses the tracer PIP curve. As mentioned above for NR07E, the flow field results in stream traces that cross the South curtain twice. For this reason, the normalized concentration profiles for both the smoothed overall PIP and tracer PIP display two humps.

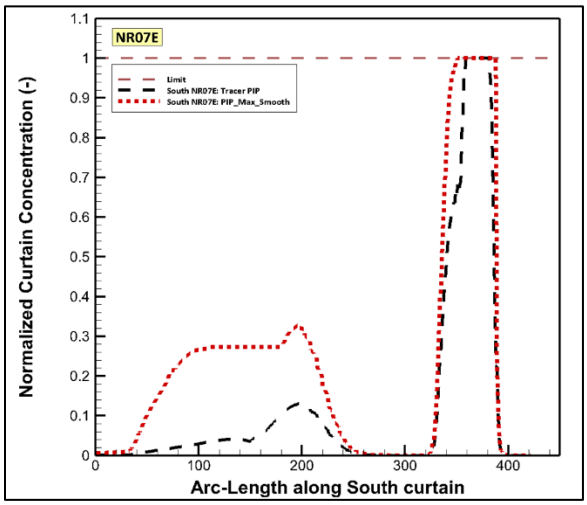


Figure H-56. Tracer versus Smooth Plume Interaction Profiles Along South Curtain for NR07E

H.1.1.4. Plume Interaction Factors

The DU-specific composited PIPs discussed in Section H.1.1.3 provide conservative (pessimistically leaning) estimates of plume overlap among neighboring DUs. The composited PIPs directly address parent radionuclides (and their progeny) at the DU level over the four time periods associated with GW compliance periods.

Application of the DU-specific PIPs and preliminary inventory limits for the GW pathways enables an estimate of DU-specific PIFs to be made. The allocation of activity capacity among the various DUs that comprise the ELLWF is not unique. For example, activity capacity can in principle be lowered in one DU and increased in its neighboring DU(s). Thus, additional information, such as SWM operational expectations, are factored into the GW PIF determination process.

H.1.1.5. Total Sum-of-Fractions Profiles Along 100-Meter Point of Assessment

The total SOF profiles along the 100-meter POA are split into two separate segments-the North and South curtains-whose geometrical details are provided in Appendix C, Section C.1.1. Where applicable, normalized PIPs are created for every ELLWF DU. The total SOF profiles for each DU along the North and South curtains are displayed in Sections H.1.1.5.1 and H.1.1.5.2, respectively, as solid and dashed curves in colors other than black. The overall total SOF profile for each curtain is shown as a black-dashed curve.

In every plot, the overall total SOF never exceeds 1.0, and the profile curves touch this upper bounding constraint at several locations along the 100-meter POA curtains. The locations where the overall total SOF equal 1.0 are intentional and represent an attempt to establish near-optimal activity capacities across the ELLWF DUs.

H.1.1.5.1. Total Sum-of-Fractions Profiles Along North Curtain

All DUs contribute dose to the North curtain of the 100-meter POA, which is defined and discussed in Appendix C, Section C.1.1.1. The resulting total SOF along the entire North curtain is displayed in Figure H-57. Closeups of the West, Center, and East1 PIF aquifer cutout segments are provided in Figure H-58, Figure H-59, and Figure H-60.

Plume overlap, as expressed through the PIPs for each DU, effectively results in diminished activity capacity in the land utilization of the ELLWF. The greater the area beneath the black-dashed curves in Figure H-57 through Figure H-60, the greater the overall ELLWF activity capacity. An attempt to maximize activity capacity, within the operational objectives and PO constraints, is made in assigning GW PIFs.

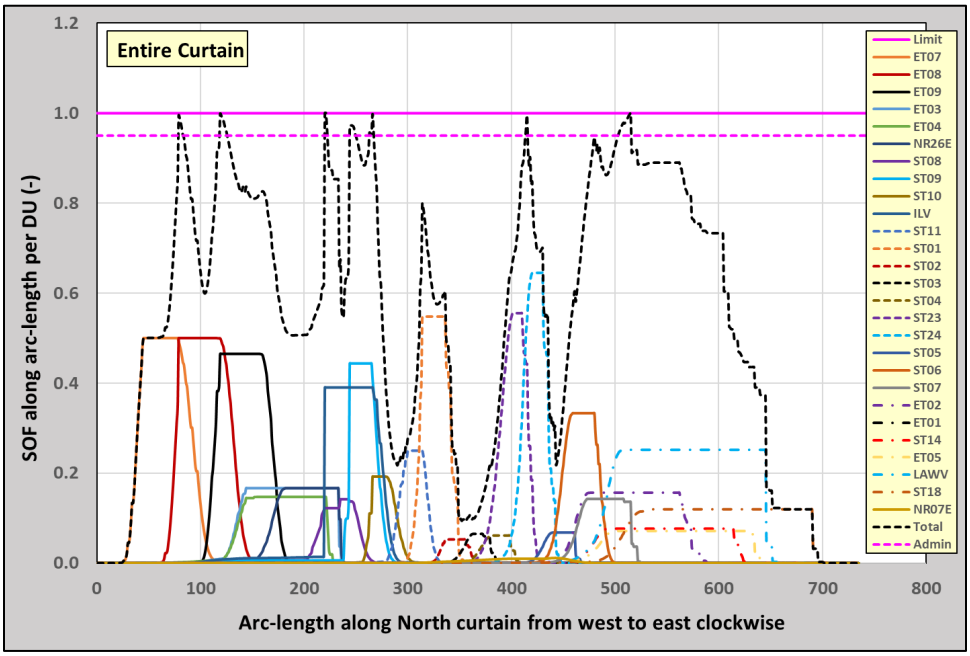


Figure H-57. Total Sum-of-Fractions Along Entire North Curtain Based on CWTS Projected Closure Inventories and Time-Windowing Inventory Limits

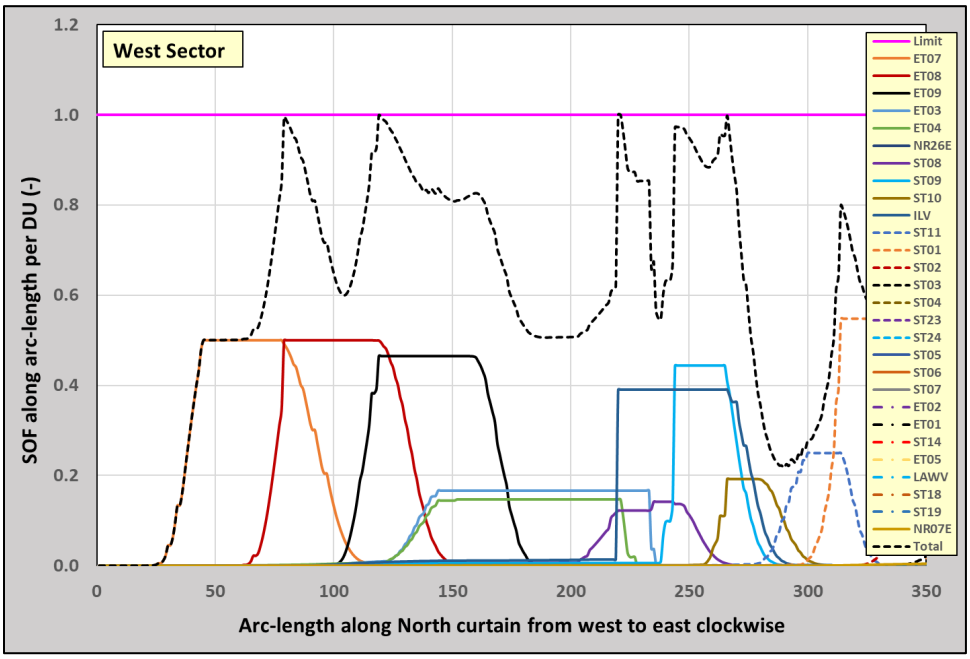


Figure H-58. Total Sum-of-Fractions Along West PIF Aquifer Cutout of North Curtain Based on CWTS Projected Closure Inventories and Time-Windowing Inventory Limits

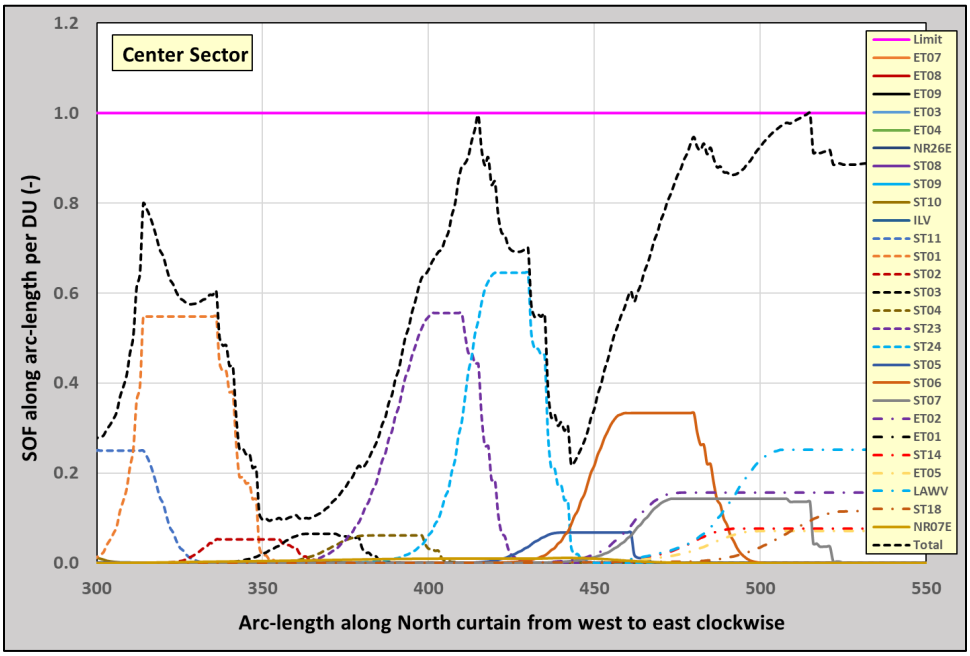


Figure H-59. Total Sum-of-Fractions Along Center PIF Aquifer Cutout of North Curtain Based on CWTS Projected Closure Inventories and Time-Windowing Inventory Limits

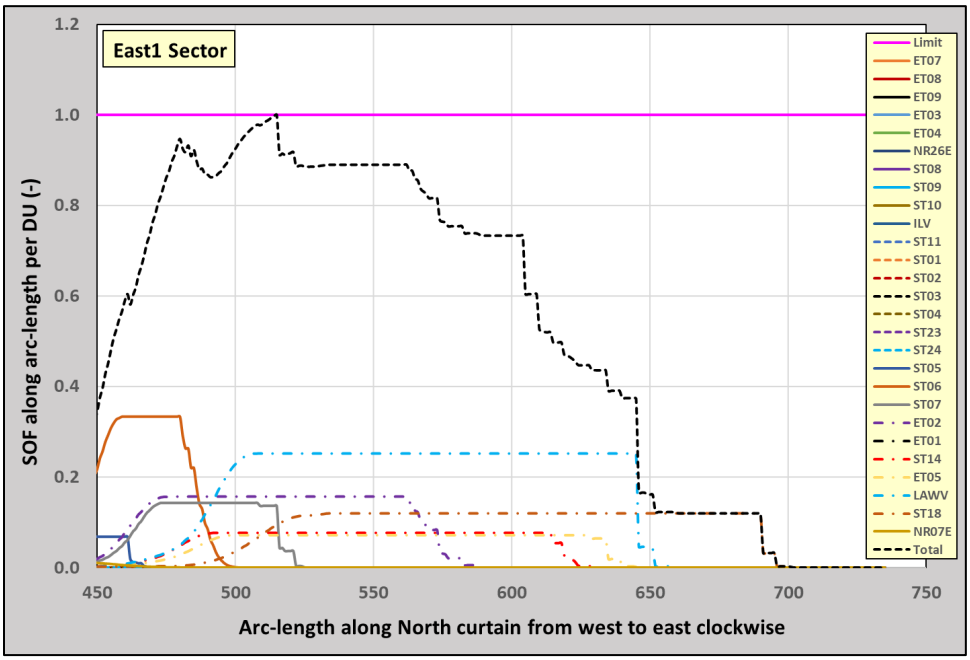


Figure H-60. Total Sum-of-Fractions Along East1 PIF Aquifer Cutout of North Curtain Based on CWTS Projected Closure Inventories and Time-Windowing Inventory Limits

H.1.1.5.2. Total Sum-of-Fractions Profiles Along South Curtain

The South curtain of the 100-meter POA is defined and discussed in Appendix C, Section C.1.1.2. The segment associated with the West PIF aquifer cutout is omitted because only negligible concentrations are observed across this upgradient region.

As the DU-specific, composited PIPs along the South curtain (Figure H-49 through Figure H-56) indicate, only six DUs—ST18, ST19, ST20, ST21, ST22, and NR07E—will have inventory limits imposed along the South curtain. All 27 other DUs are limited along the North curtain. Note that ST19, ST20, ST21, and ST22 are excluded from future operations within this PA (see Section H.1.1.6); therefore, the total SOF along the South curtain is dominated by the two remaining PA2022 DUs, ST18 and NR07E, as shown in Figure H-61. The maximum total SOF along the South curtain is only 0.120, which is associated with ST18 at an index value of 286.

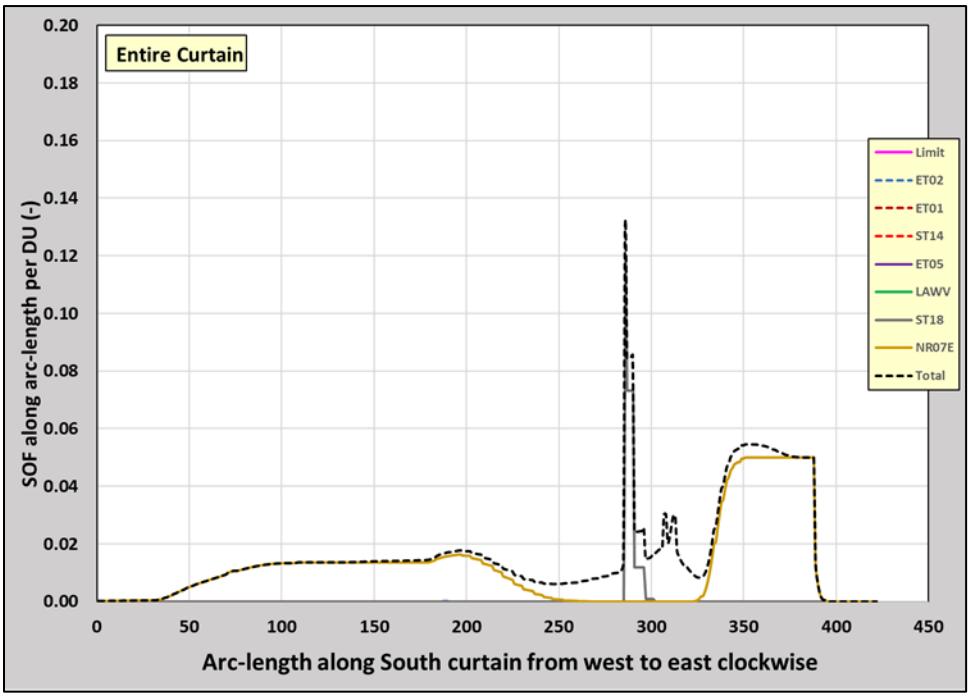


Figure H-61. Total Sum-of-Fractions Along Entire South Curtain Based on CWTS Projected Closure Inventories and Time-Windowing Inventory Limits

H.1.1.6. Exclusion of Disposal Units from Future Consideration

As the total SOF profiles (Figure H-60) indicate, significant plume overlap exists among the various DUs within the East1 PIF aquifer cutout. The substantial plume overlap is a direct result of the adverse aquifer flow direction and its transient rotation following application of a degrading final closure cap.

Within the East1 PIF aquifer cutout, ET02 (open), ET01 (closed), ST14 (open), and LAWV (open) all contain existing inventories that require a minimum activity capacity to retain their maximum total SOF values at or below 1.0. Based on existing inventories as of March 31, 2021, and the current versus new inventory limits, Table H-4 lists the existing capacity values generated by the CWTS emulator (Section H.8) for these four existing DUs.

Table H-4. Activity and Volume Capacities as of March 31, 2021, for Existing Disposal Units in East1 PIF Aquifer Cutout

DU	DU Status	%Volume Filled (March 31, 2021)	Current [a] Total SOF % (March 31, 2021)	New [b] Total SOF % (March 31, 2021)
ET02	Open	79.0%	76.1%	75.1%
ET01	Closed	100.0%	86.7%	100.0%
ST14	Open	89.5%	89.6%	94.3%
LAWV	Open	32.4%	13.3%	30.8%

Notes:

[a] Maximum total SOF based on current CWTS inventory limits.

[b] Maximum total SOF based on new inventory limits calculated in PA2022.

The existing DUs in the northern section of the East1 PIF aquifer cutout are more than 75% full on an activity-capacity basis. To accommodate these existing DUs and provide future capacity for other DUs, a reallocation process is employed.

The GW PIF for closed ET01 is adjusted upward to 4.684 where its maximum total SOF equals 1.0. By adjusting ET01's GW PIF upward, activity capacity is reallocated among one or more of its neighboring DUs to meet the following key operational objectives:

1. Addition of at least one more ET and ST in the East1 PIF aquifer cutout.
2. Retain adequate margin in ET02 and ST14 to accommodate remaining planned disposals.
3. Retain acceptable LAWV margin for future disposals.
4. Retain entry access to LAWV operations.

Several of the originally planned, future DUs within the East1 PIF aquifer cutout are placed in an excluded category. The adjustment of the GW PIF for ET01 assists in meeting Objectives 1, 2, and 3, while including ET06 on the excluded list helps with achieving Objective 1. Adding ST17, ST19, ST20, ST21, and ST22 to the excluded list assists in satisfying Objectives 3 and 4. Finally, ST18 is retained to meet Objectives 1 and 4.

Figure H-62 presents the individual and total SOF profiles for ET02, ET01, ST14, ET05, LAWV, and ST18 to show how the remaining DUs within the East1 PIF aquifer cutout contribute to the maximum total SOF along the North curtain. As the black-dashed curve illustrates, a compounding effect begins around index 700 and travels northwest to the peak maximum total SOF of 1.0 around index 515.

Due to the adverse aquifer flow direction, the upstream DUs—ET06, ST17, ST19, ST20, ST21, and ST22—are excluded from PA2022. To successfully reinstate these DUs for potential future activity capacity, a future SA will be required wherein some assumptions employed in the GW PIF approach are reevaluated.

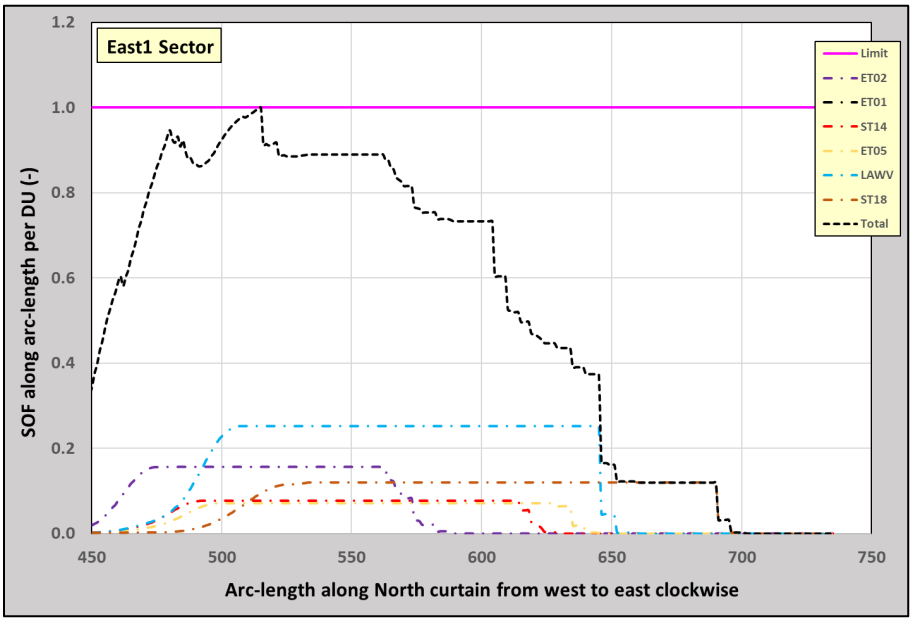


Figure H-62. Maximum Total Sum-of-Fractions Along East1 PIF Aquifer Cutout Section of North Curtain Based on CWTS Projected Closure Inventories and Time-Windowing Inventory Limits for Disposal Units Included in PA2022 East1 PIF Aquifer Cutout

H.1.1.7. Inventory Allocation Among Neighboring Disposal Units

To better illustrate the use of PIPs in determining GW PIFs for a given DU, two of the 27 PA2022 DUs (e.g., here ST23 and ST24) are examined more closely. The red-dashed curves in Figure H-39 represent the normalized PIPs for ST23 and ST24. The results presented in Figure H-63 are extracted from the final results obtained using the Microsoft Excel CWTS emulator worksheet.

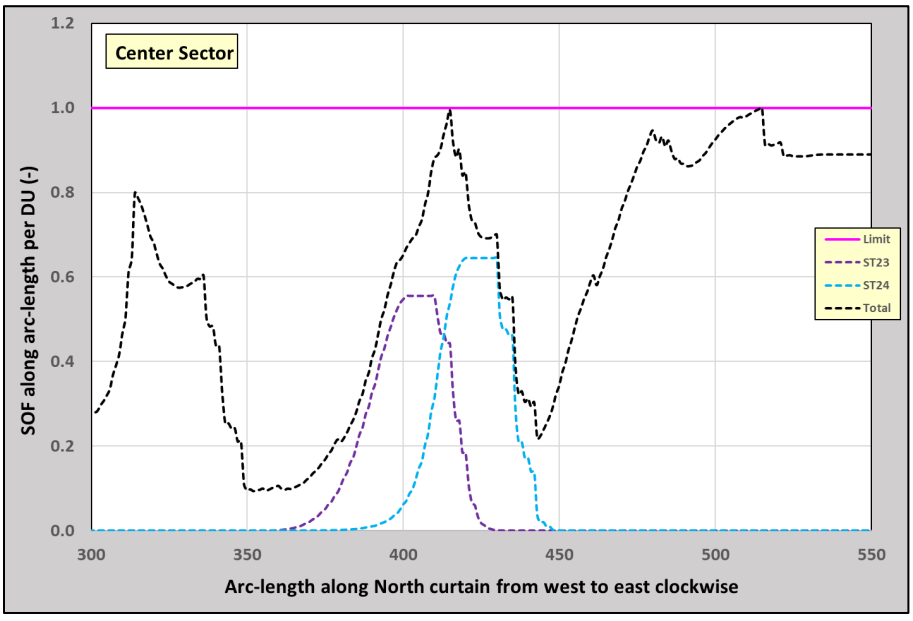


Figure H-63. Maximum Total Sum-of-Fractions Along Center Section of North Curtain Based on CWTS Projected Closure Inventories and Time-Windowing Inventory Limits for ST23 and ST24 Only

The maximum total SOF profiles for ST23 and ST24 are shown as purple- and cyan-dashed curves, respectively. The overall maximum total SOF profile along the North curtain, which contains the contributions from all the DUs, is shown as a black-dashed curve. These results are not unique, but near optimal, and are referred to as the baseline case.

To see the impact of changing GW PIF settings, one possible alternative (Case 1) to the baseline set of GW PIFs is to shift the activity allocation from ST23 to ST24. From a PIF perspective, by increasing ST23's GW PIF (1.80 to 2.74), ST24's GW PIF must be lowered (1.55 to 1.20) so as not to exceed a SOF of 1.0 over the entire North curtain. Details are provided in Table H-5.

Table H-5. Impact of Reassignment of Groundwater Plume Interaction Factors for ST23 and ST24

DU	Total Existing Inventory (Ci)	PIF (unitless)			Total Future Inventory (Ci)		
		Baseline	Case 1	% Change	Baseline	Case 1	% Change
ST23	7451.1	1.80	2.74	52%	654.26	389.06	-41%
ST24	0.0	1.55	1.20	-23%	362.82	468.65	29%

Given the adjusted GW PIF values in Case 1, total future inventories for ST23 and ST24 are updated such that their maximum total SOFs equal 1.0. As Table H-5 indicates, activity capacity has shifted from ST23 to ST24. The resulting maximum total SOF profiles are given in Figure H-64.

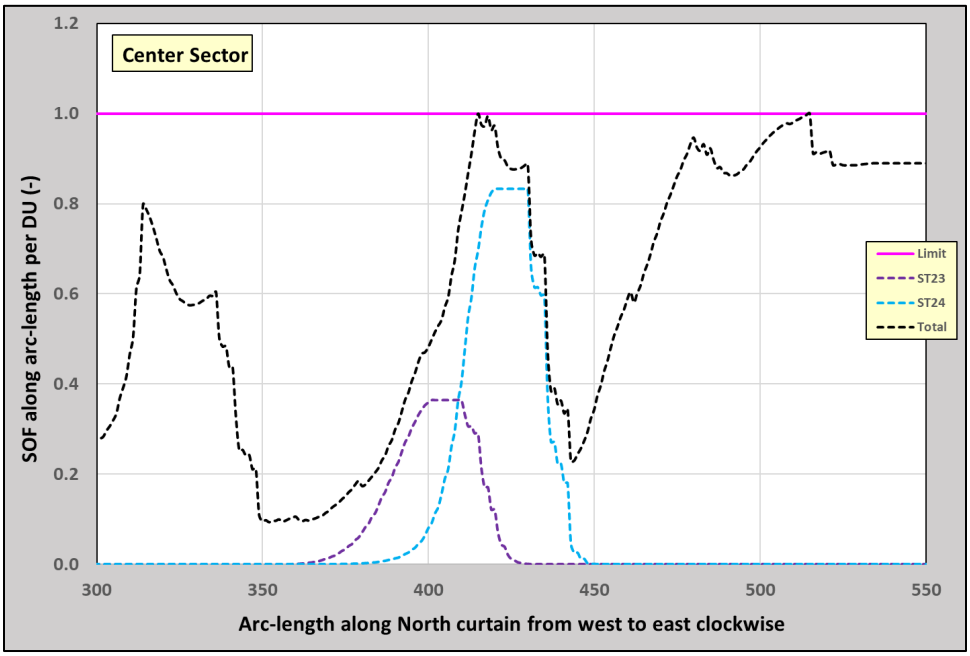


Figure H-64. Maximum Total Sum-of-Fractions Along Center Section of North Curtain Based on Case 1 Projected Closure Inventories and Time-Windowing Inventory Limits for ST23 and ST24 Only

H.1.1.8. Compositional Independence of Plume Interaction Factor Approach

The PIF-SOF approach is conservative (pessimistically leaning) in that the maximum total SOF profile along a specific curtain will exceed the actual SOF profile. The coupling of the PIF and

SOF methods also provides SWM operational flexibility regarding the actual inventory compositions that are allowable within a given DU. This approach does not constrain a DU's final composition. Given a list of parent radionuclides requiring inventory limits within a given DU, its final composition can be at any extreme pure component of that list or any mixture of its components.

To illustrate this, the future compositional vector for ST24 is varied significantly to show how the overall limits system responds. The GW PIF settings are unchanged and remain at their baseline values. For each composition vector considered, the total future inventory is adjusted such that the CWTS maximum total SOF equals 1.0. Results from this study are tabulated in Table H-6.

Table H-6. Impact of Varying Closure Composition for ST24

Parent Radionuclide	Baseline	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8
	Inventory (Ci)								
C-14	0.116	89.59						0.919	0.471
H-3	4.72		4.73						
I-129	0.00031			0.0013					0.00127
Np-237	0.027				0.102				
Sr-90	111.345					60,907.3			
Tc-99	0.119						0.95	0.948	452.62
Others	246.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Future Inventory (Ci)	362.82	89.59	4.73	0.0013	0.102	60,907.3	0.95	1.867	453.09
Most Limiting Pathway/ Time Window	BG1	BG3	BG1	BG2	GA1	BG2	BG2	BG2	BG2
CWTS Maximum Total SOF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Curtain Maximum Total SOF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

In addition to results for the baseline composition, eight varying closure compositions (Case 1 through Case 8) are analyzed as summarized in Table H-6. Case 1 through Case 6 are pure-component cases addressing the six traditionally key ELLWF radionuclide contributors out of a total of 39 parent radionuclides. The most limiting GW pathway and time window are shaded in green. Case 7 and Case 8 are mixtures of two and three key components, respectively. In every case, the overall maximum total SOF along the 100-meter POA does not exceed 1.0.

The above examples illustrate that there is complete independence between a DU's final closure composition and its maximum contribution at the 100-meter POA. As Table H-6 highlights, a DU's activity capacity is directly impacted by its composition; however, it still remains within the POs for any possible inventory composition.

H.1.2 Time-Windowing Aspects

Different time windows can be applied on a DU and pathway basis. In principle, time windows can also be set as small as desired (e.g., down to a one-year windowing period). However, in practice, only a small set of time windows are employed (e.g., in PA2008, one to three window periods were used and imposed on groupings of DUs). A minimum of one time window covering the entire compliance period (i.e., Year 0 to Year 1,171) is required, full coverage is required, and

overlapping is not allowed. The use of multiple time windows typically increases the inventory capacity of a DU, with diminishing returns beyond four to five windows.

A variety of parent radionuclides are disposed in each DU. The resulting parent radionuclides and their progeny are uniquely characterized by a range of half-lives and K_d values. As a result, transport times from the waste zones to the 100-meter POA vary significantly (e.g., mobile versus immobile species). Time windowing allows these transport differences to be treated in an efficient fashion.

Time windowing is employed only for the GW protection pathways and all-pathways analyses as follows:

- Entire compliance period (Year 0 to Year 1,171): beta gamma, gross alpha, radium, and uranium
- Post-IC compliance period (Year 171 to Year 1,171): all-pathways

The IHI, air, and radon exposure pathways employ a single time window that encompasses the entire compliance period for each pathway. These pathways generally are not limiting, and multiple time windows do not increase DU activity capacities.

Time windows are established for each DU and GW pathway as listed in Table H-7.

Table H-7. Selected Groundwater Pathways and All-Pathways Time Windows

DU	GW Pathways Time Windows (Year)						All-Pathways Time Windows (Year)	
	Beta-Gamma			Gross-Alpha	Radium	Uranium		
	BG1	BG2	BG3	GA	Rad	Uran	AP1	AP2
STs & ETs	0-171	171-1,000	1,000-1,171	0-1,171	0-1,171	0-1,171	171-1,000	1,000-1,171
LAWV	0-700	700-1,171	NA	0-1,171	0-1,171	0-1,171	171-700	700-1,171
ILV	0-400	400-1,171	NA	0-1,171	0-1,171	0-1,171	171-400	400-1,171
NR07E	0-1,171	NA	NA	0-1,171	0-1,171	0-1,171	0-1,171	NA
NR26E	0-400	400-1,171	NA	0-1,171	0-1,171	0-1,171	171-400	400-1,171

Table H-7 indicates the following:

- All STs and ETs are grouped in the same set of time windows.
- Vaults and NRCDAs are not grouped and have separate time windows.
- A single time window is selected for the gross-alpha, radium, and uranium GW pathways.

Pathway-dependent dose history time profiles for all parent radionuclides are presented for every slit and engineered trench, vault, and NRCDA in Sections H.1.2.1, H.1.2.2, and H.1.2.3, respectively. The pathway-dependent values shown are normalized doses that are computed for each parent radionuclide within a given DU as follows:

- First, the dose history time profiles are used, where the doses represent the rolled-up, full-chain contributions of parent radionuclides containing progeny.

- Second, the doses are normalized to the maximum dose within each GW pathway's compliance period.

For all DUs, the dose history time profiles for the gross-alpha, radium, and uranium pathways indicate that no inventory capacity can be gained through time windowing; therefore, single time windows are employed. For these three pathways, plots are shown for ET01 only (i.e., these plots are omitted for all other DUs).

Note that the overall shape of the beta-gamma and all-pathways profiles are similar for each parent radionuclide, which implies that time windowing for these two pathways should be similar as well. For periods where both pathways are active (i.e., Years 171-1,000 and Years 1,000-1,171) as shown in Table H-7, their time windows are identical.

H.1.2.1. Slit and Engineered Trenches

Normalized dose (i.e., SOF) history time profiles are shown for all 20 STs and nine ETs in Figure H-65 through Figure H-93. All five GW pathways are shown for ET01 (Figure H-85); only the beta-gamma and all-pathways profiles are provided for the remaining 28 STs and ETs.

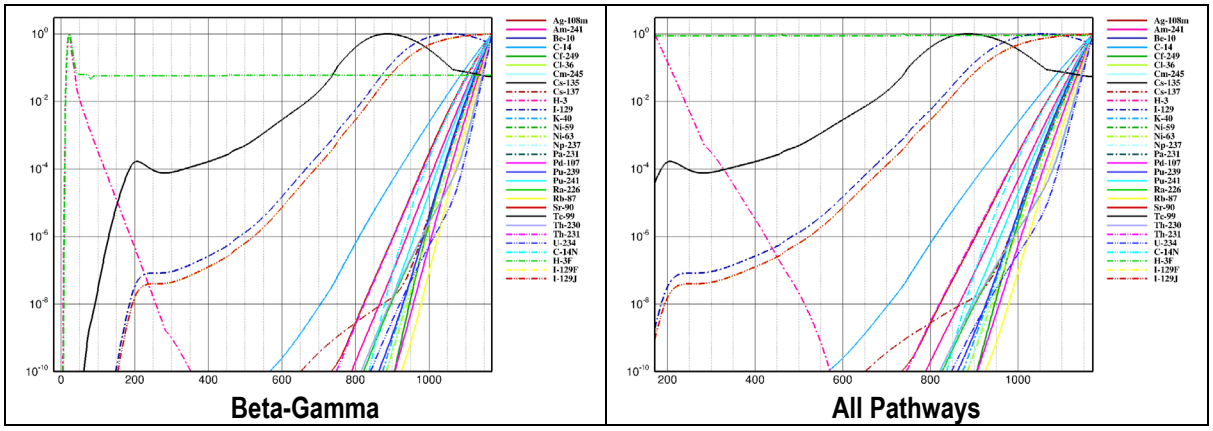


Figure H-65. Normalized Dose History Time Profiles for ST01

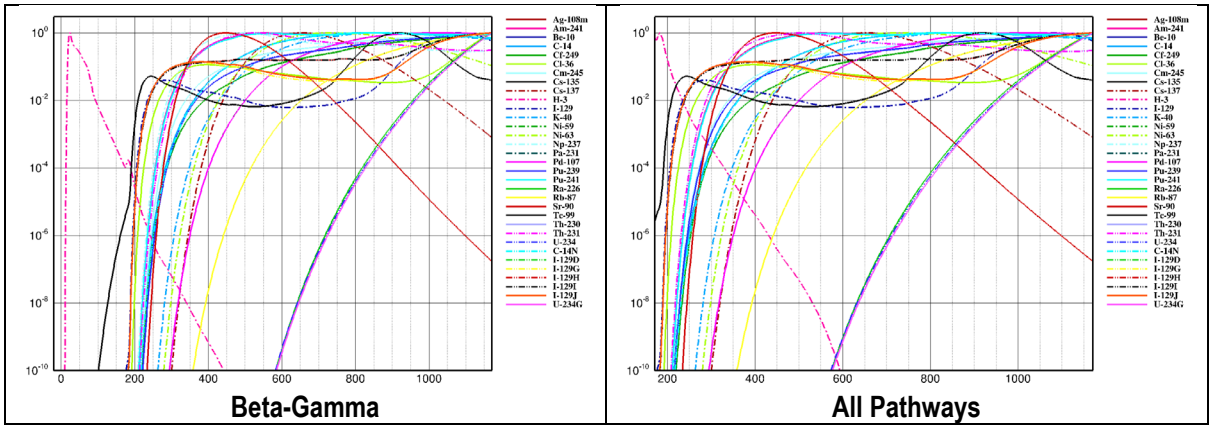


Figure H-66. Normalized Dose History Time Profiles for ST02

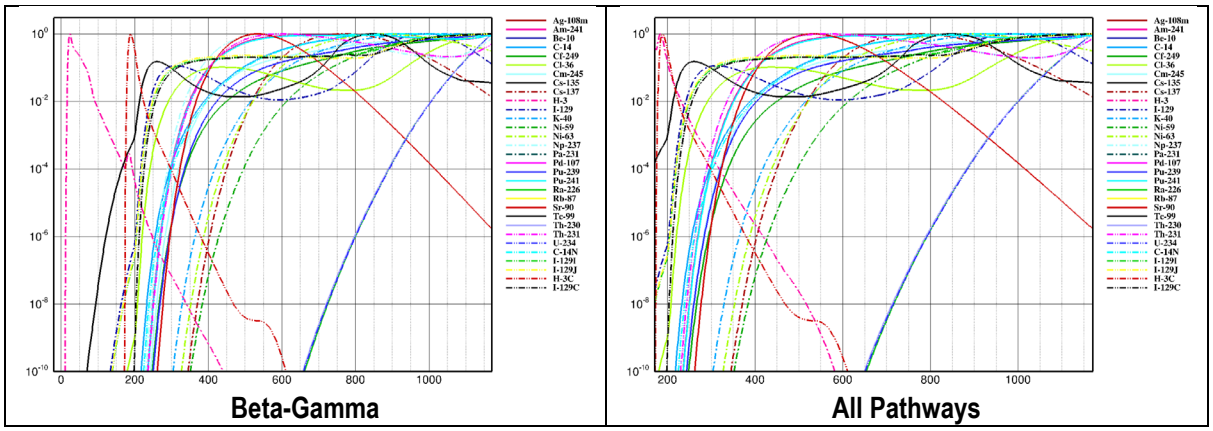


Figure H-67. Normalized Dose History Time Profiles for ST03

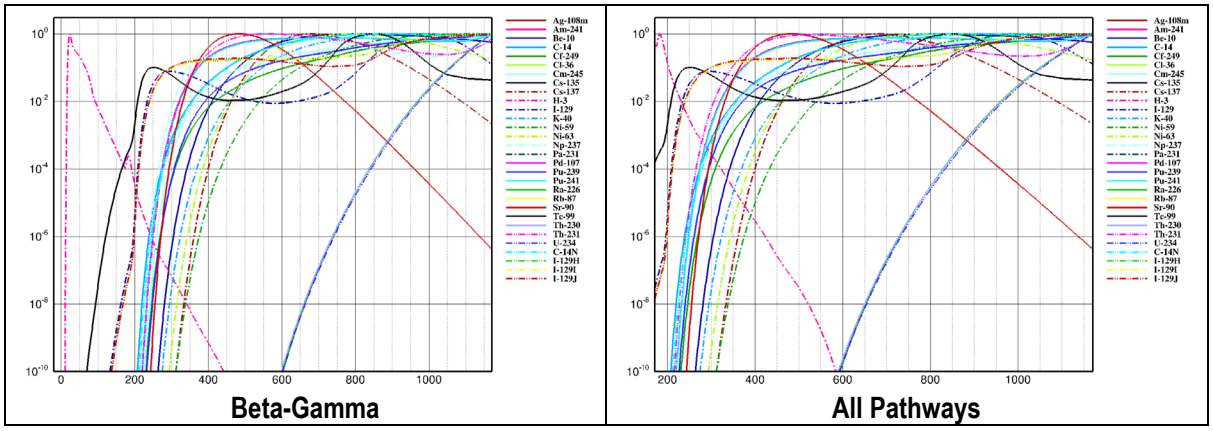


Figure H-68. Normalized Dose History Time Profiles for ST04

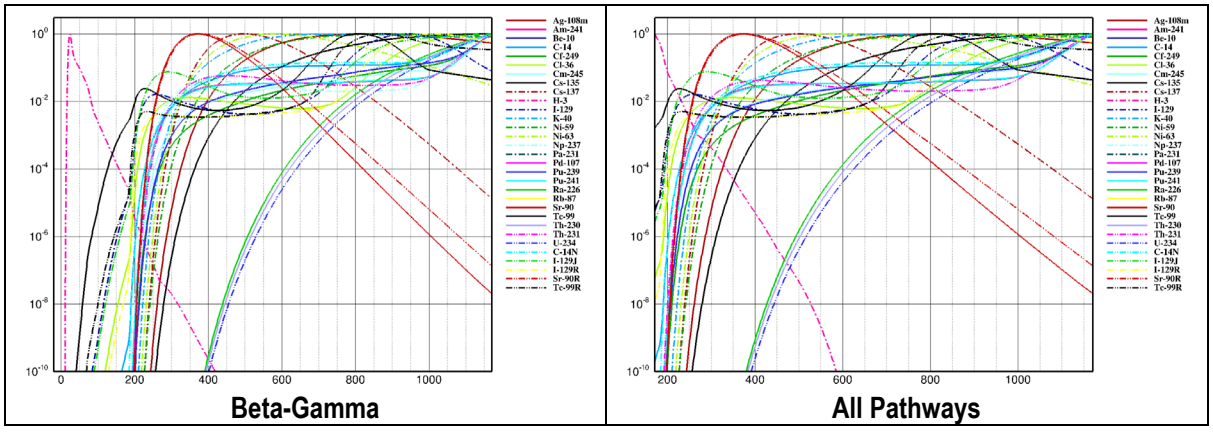


Figure H-69. Normalized Dose History Time Profiles for ST05

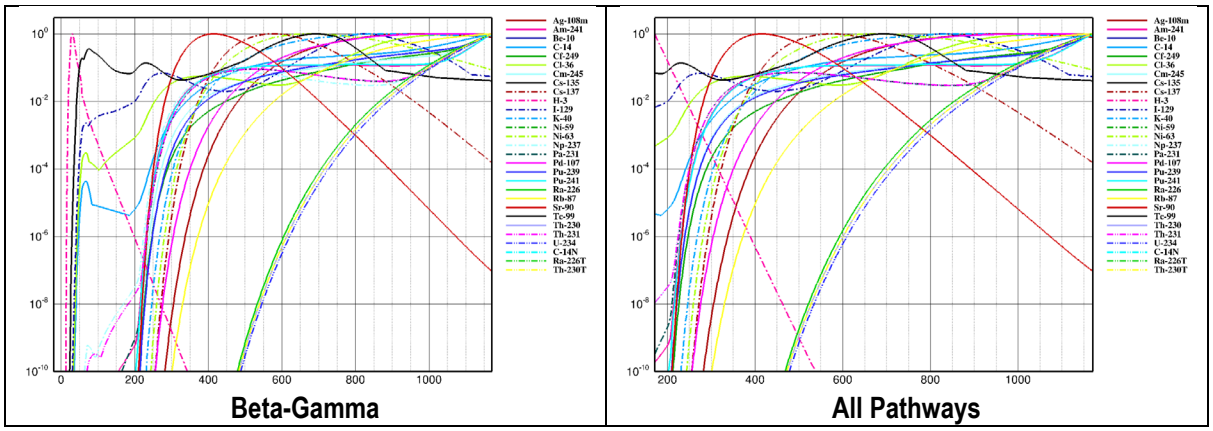


Figure H-70. Normalized Dose History Time Profiles for ST06

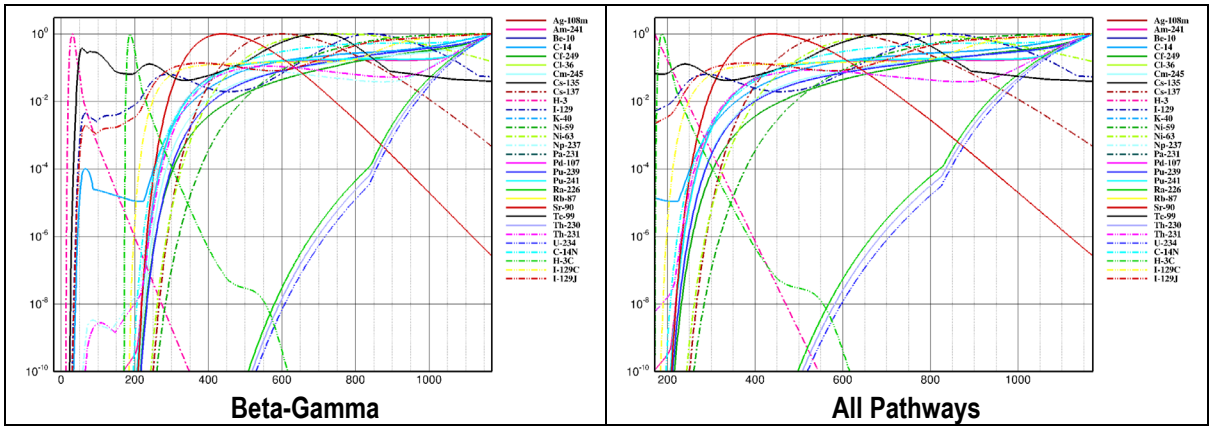


Figure H-71. Normalized Dose History Time Profiles for ST07

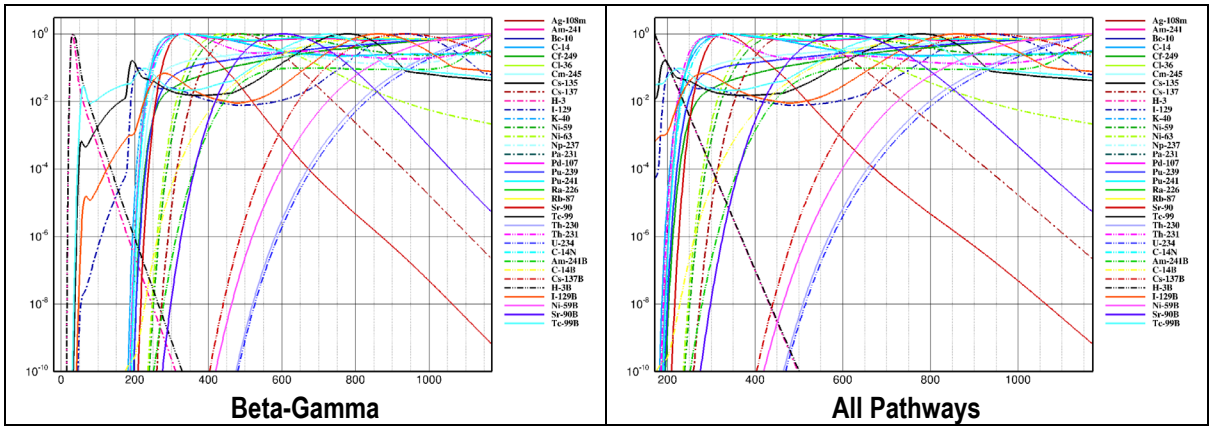


Figure H-72. Normalized Dose History Time Profiles for ST08

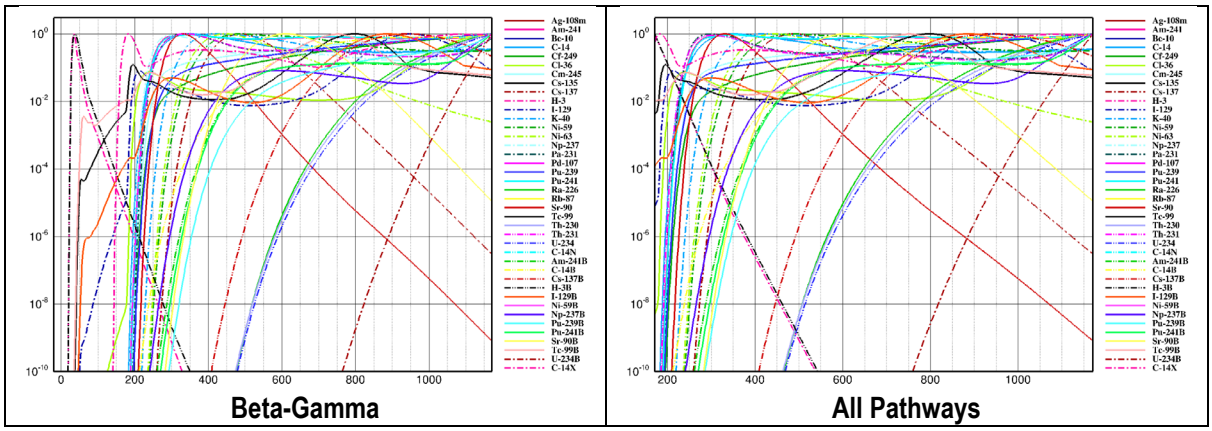


Figure H-73. Normalized Dose History Time Profiles for ST09

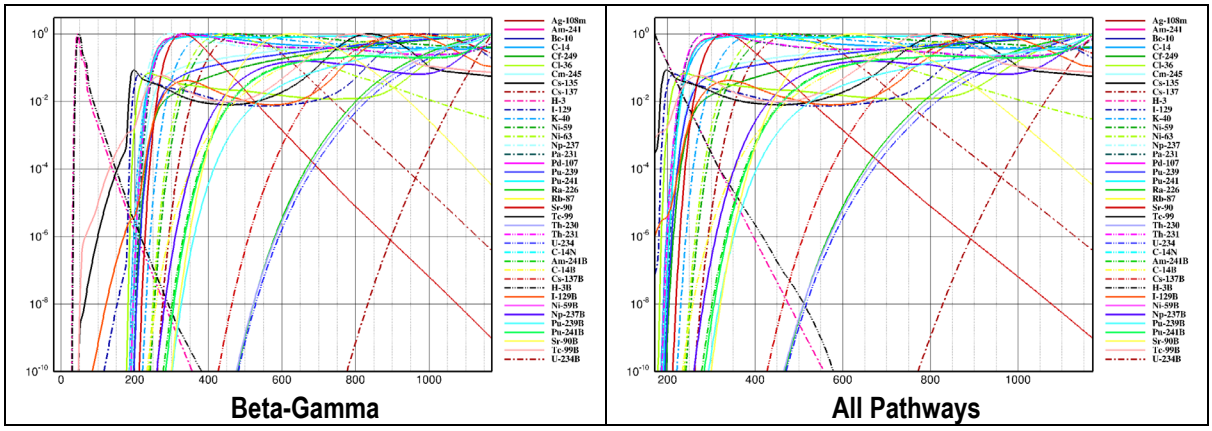


Figure H-74. Normalized Dose History Time Profiles for ST10

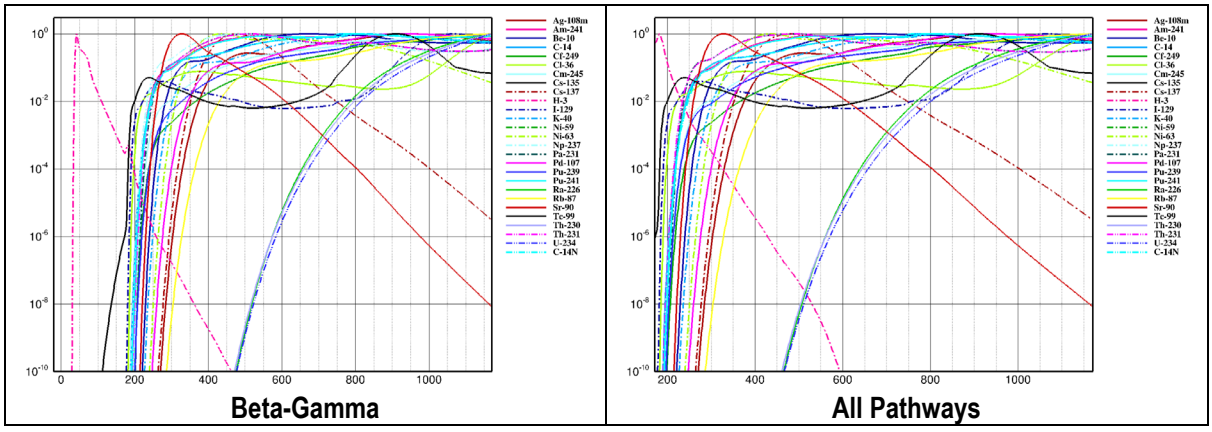


Figure H-75. Normalized Dose History Time Profiles for ST11

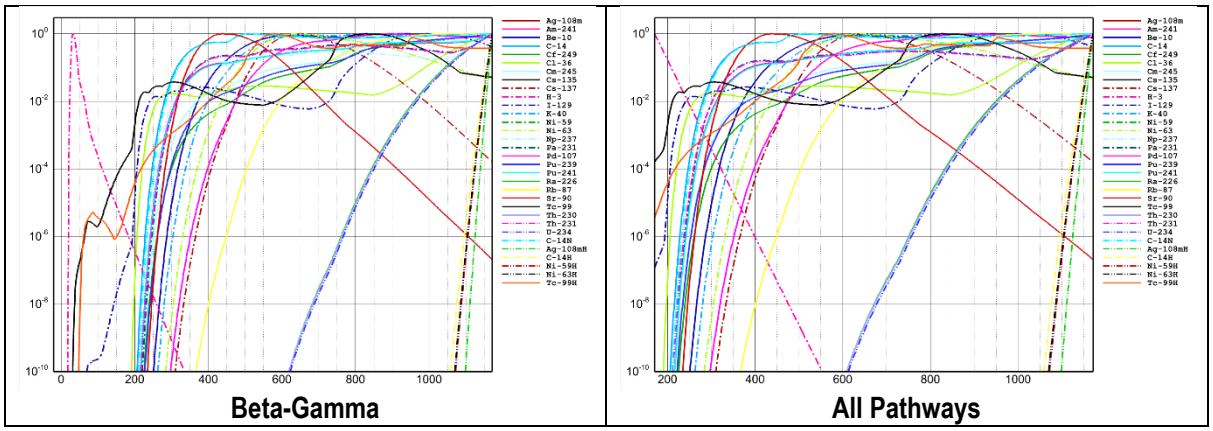


Figure H-76. Normalized Dose History Time Profiles for ST14

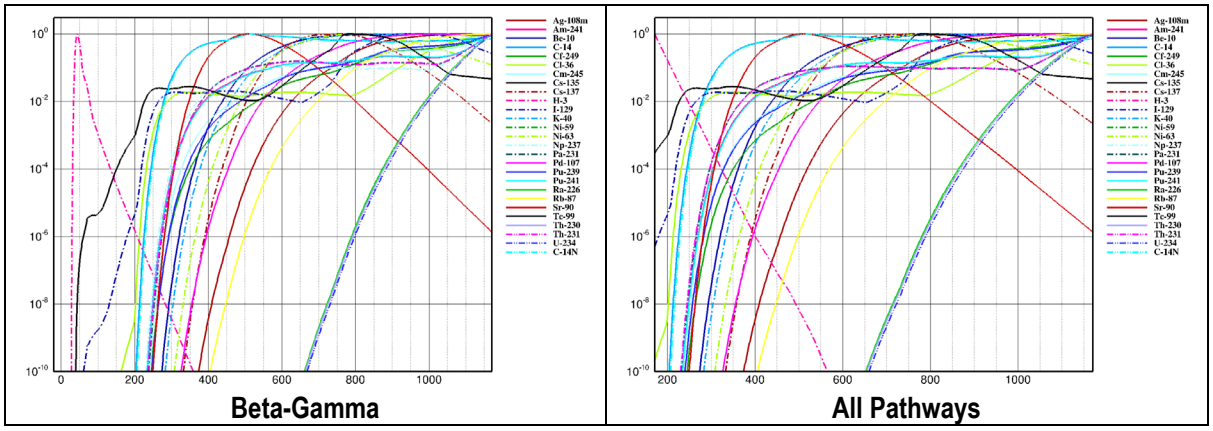


Figure H-77. Normalized Dose History Time Profiles for ST17

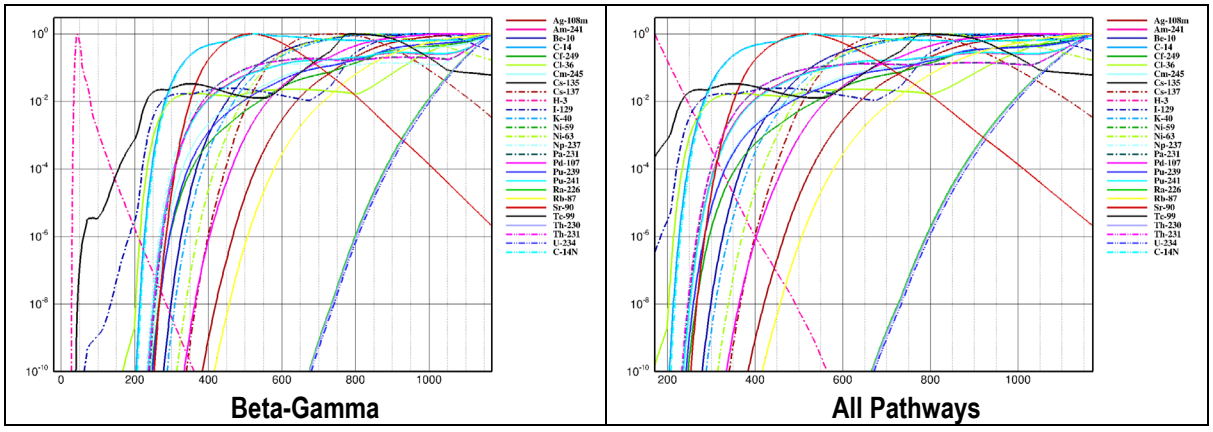


Figure H-78. Normalized Dose History Time Profiles for ST18

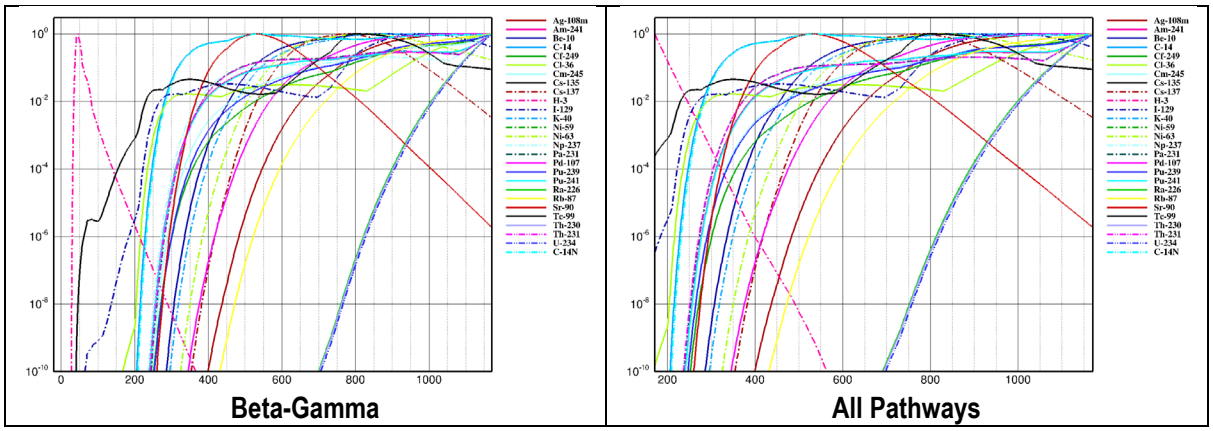


Figure H-79. Normalized Dose History Time Profiles for ST19

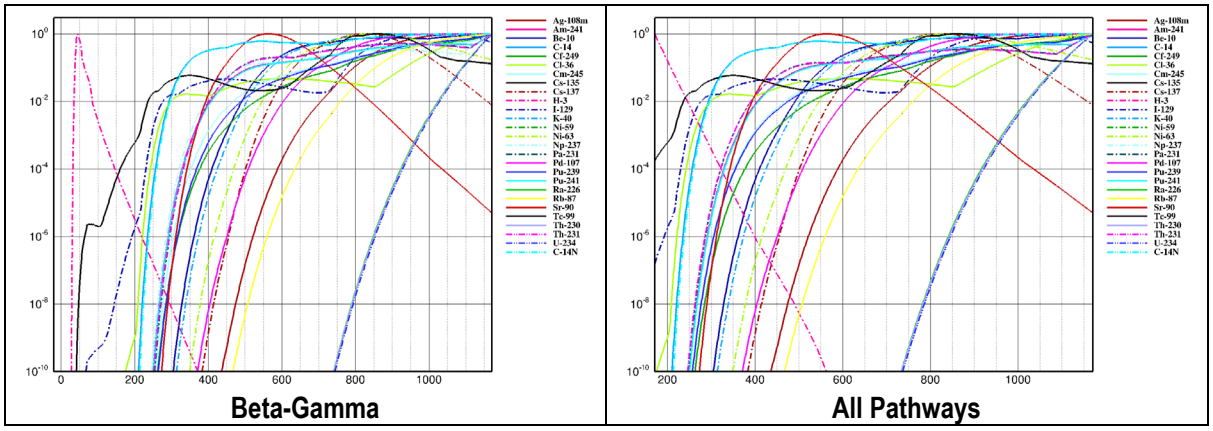


Figure H-80. Normalized Dose History Time Profiles for ST20

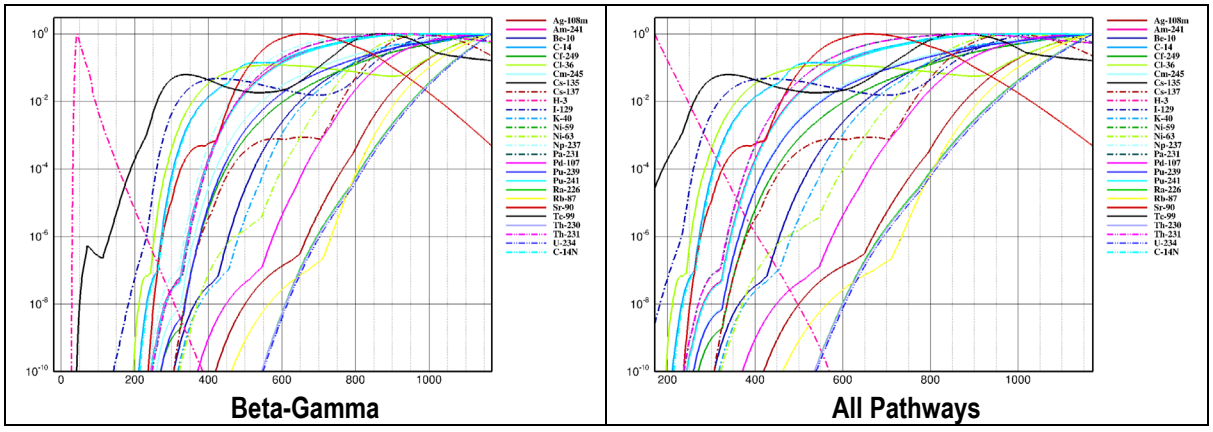


Figure H-81. Normalized Dose History Time Profiles for ST21

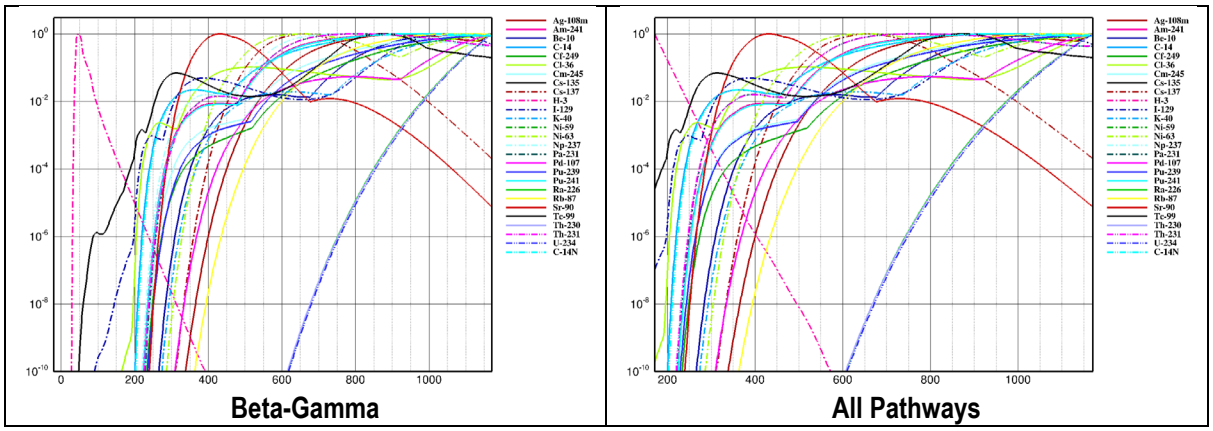


Figure H-82. Normalized Dose History Time Profiles for ST22

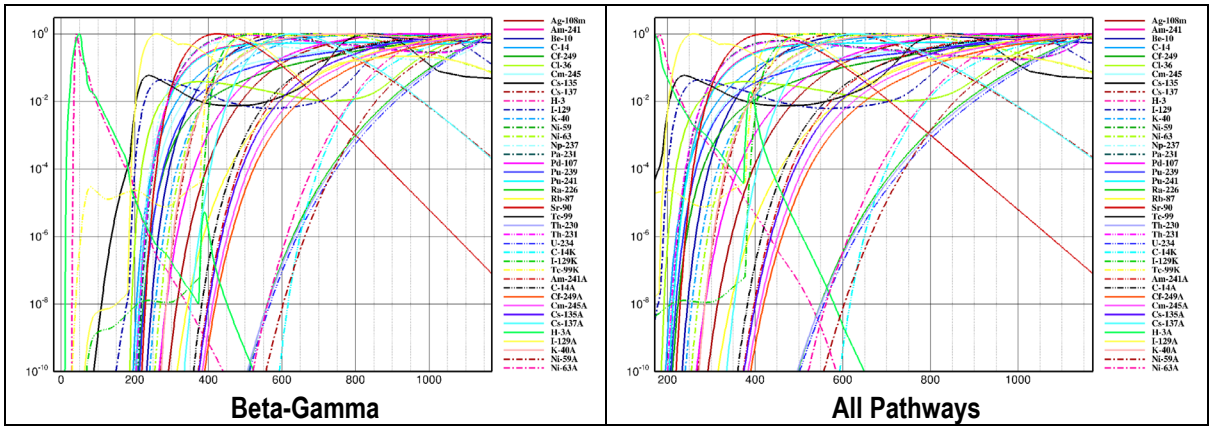


Figure H-83. Normalized Dose History Time Profiles for ST23

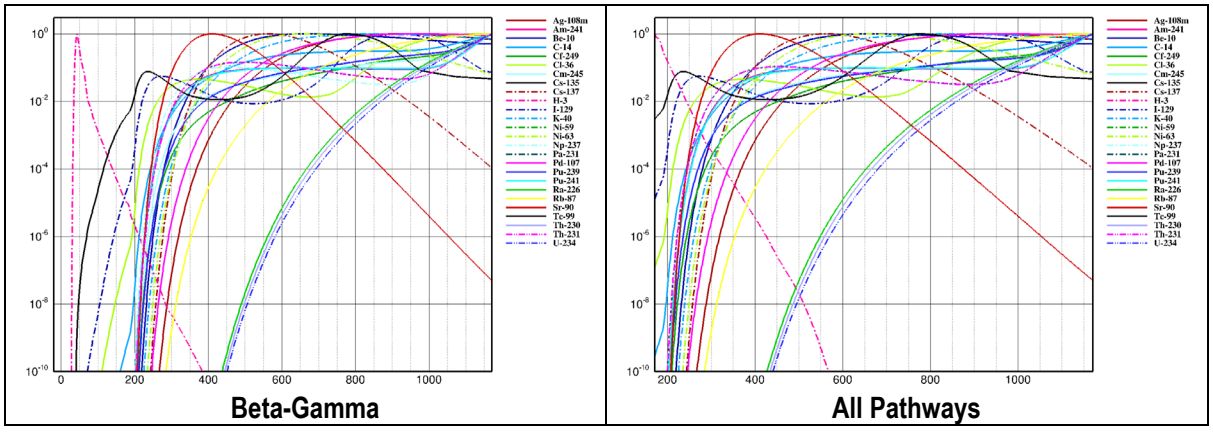


Figure H-84. Normalized Dose History Time Profiles for ST24

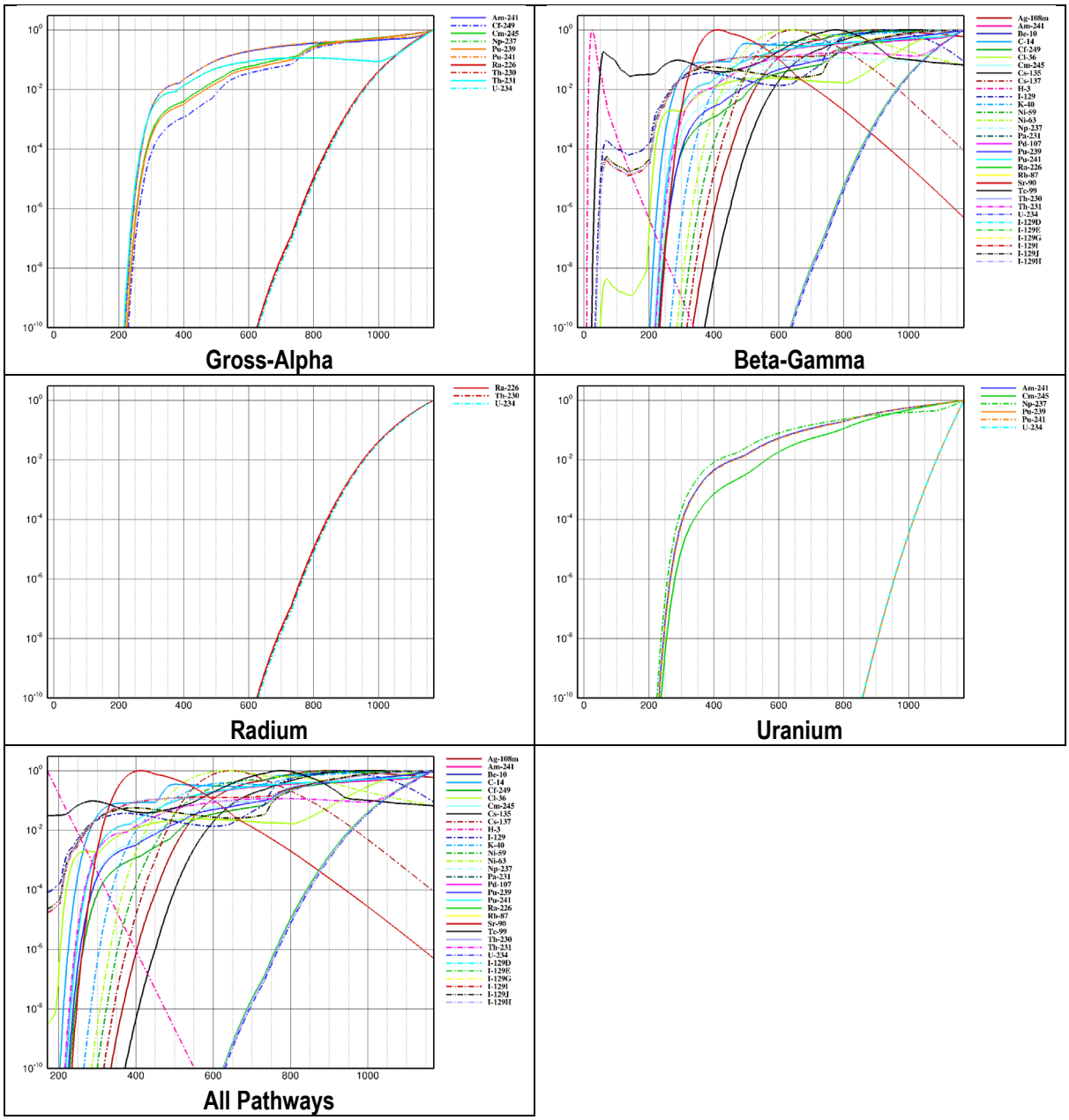


Figure H-85. Normalized Dose History Time Profiles for ET01

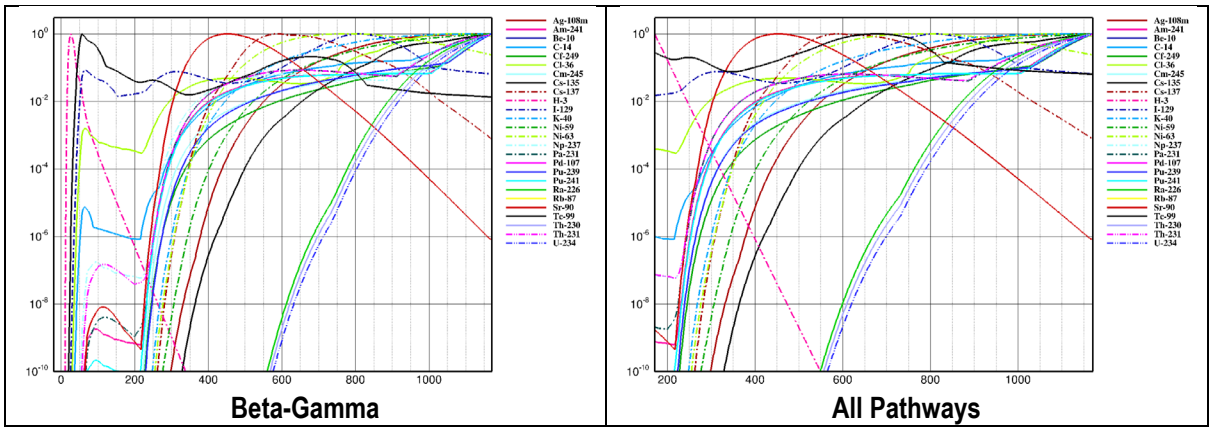


Figure H-86. Normalized Dose History Time Profiles for ET02

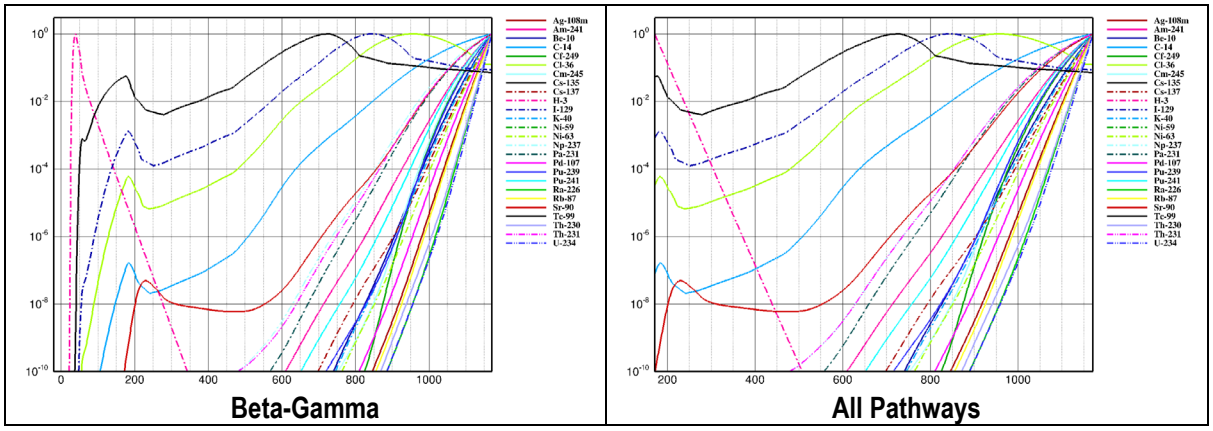


Figure H-87. Normalized Dose History Time Profiles for ET03

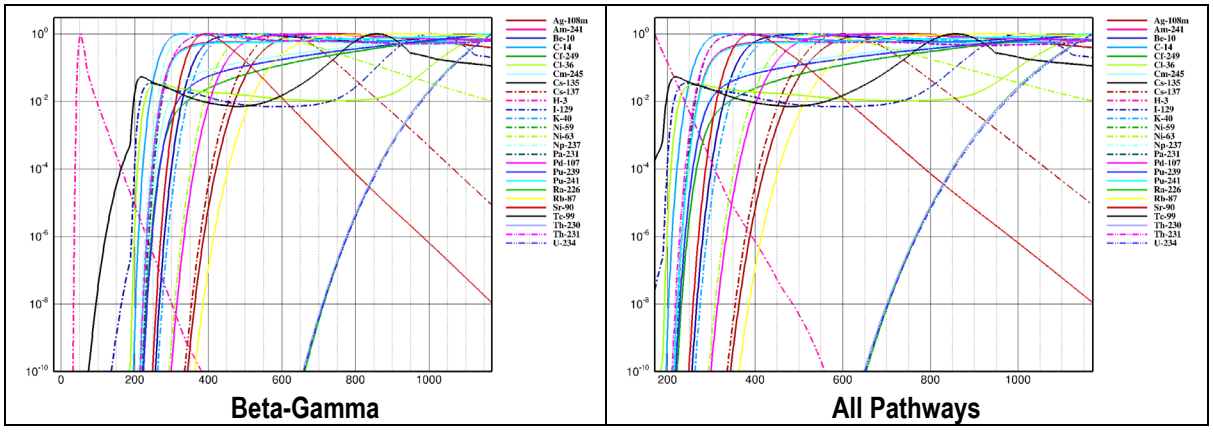


Figure H-88. Normalized Dose History Time Profiles for ET04

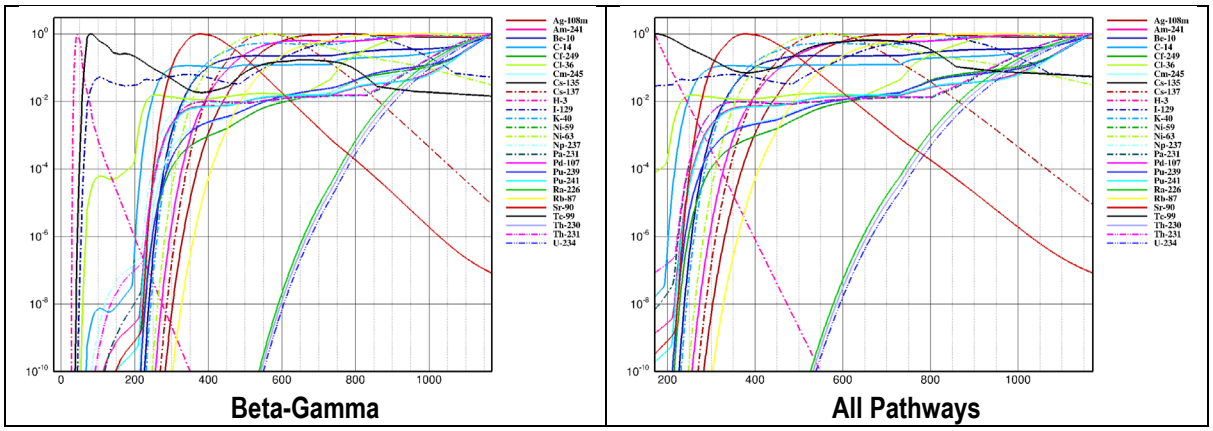


Figure H-89. Normalized Dose History Time Profiles for ET05

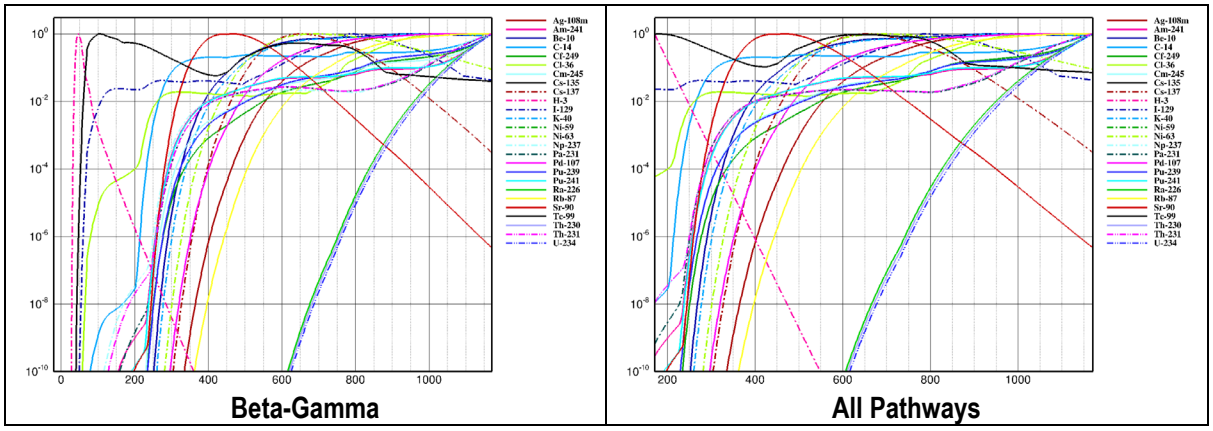


Figure H-90. Normalized Dose History Time Profiles for ET06

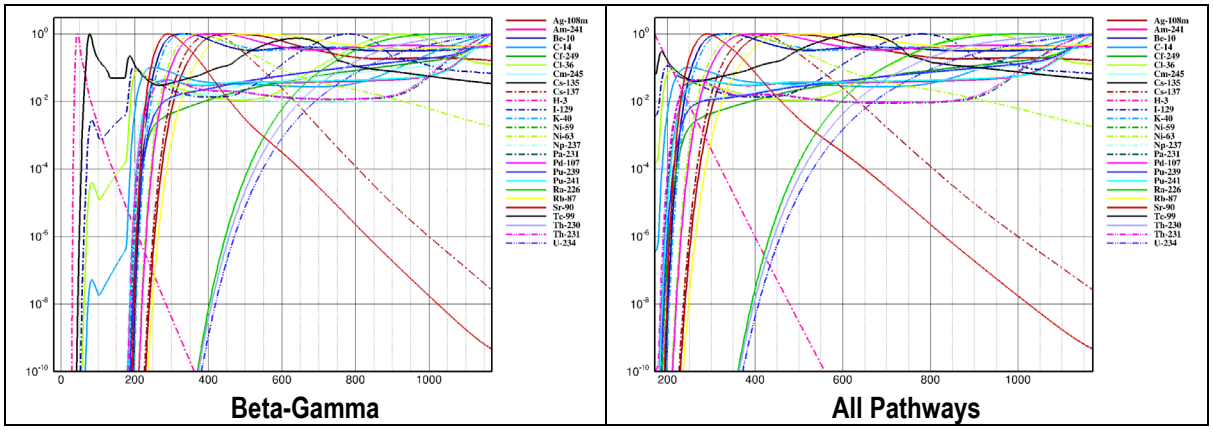


Figure H-91. Normalized Dose History Time Profiles for ET07

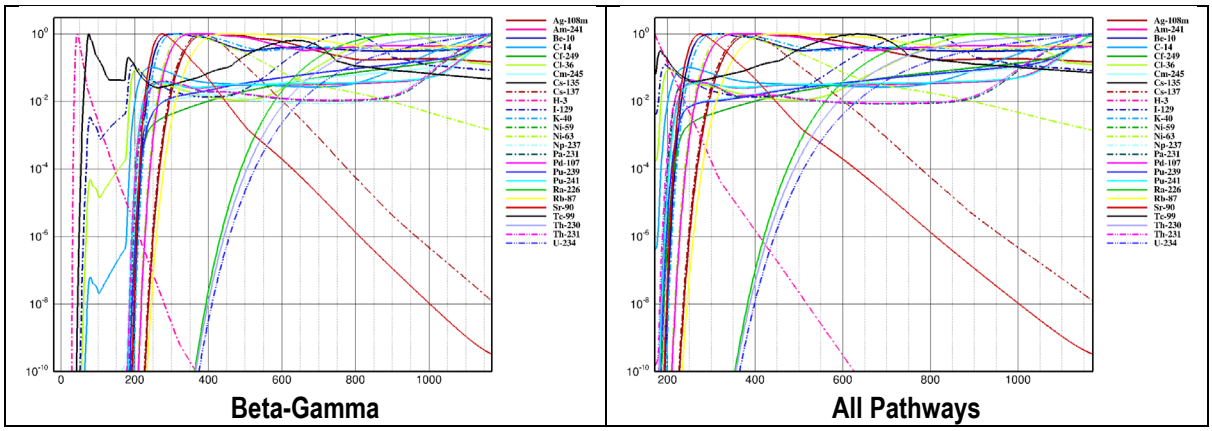


Figure H-92. Normalized Dose History Time Profiles for ET08

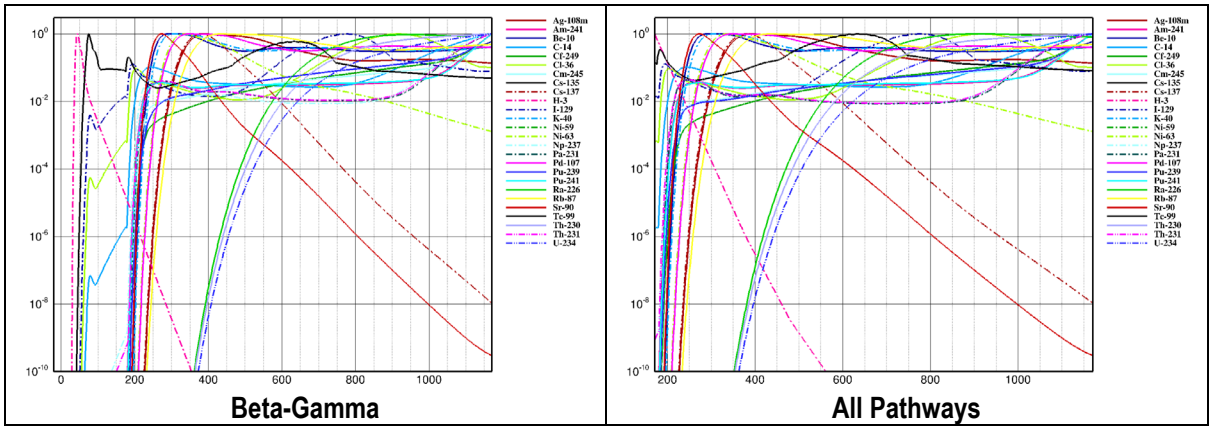


Figure H-93. Normalized Dose History Time Profiles for ET09

H.1.2.2. Low-Activity Waste and Intermediate-Level Vaults

Normalized dose (i.e., SOF) history time profiles for all five GW pathways are shown for the LAWV and ILV in Figure H-94 and Figure H-95, respectively.

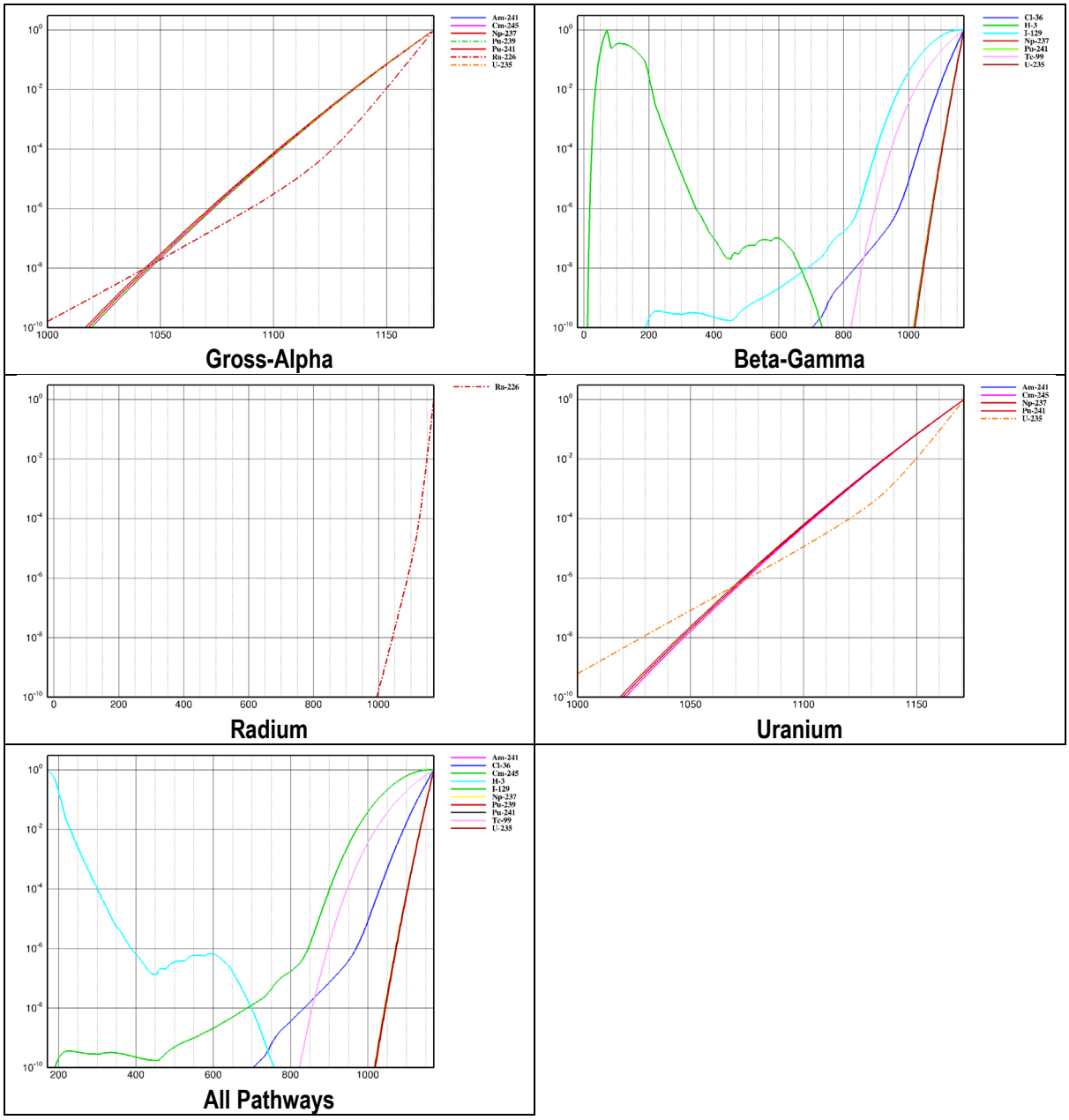


Figure H-94. Normalized Dose History Time Profiles for LAWV

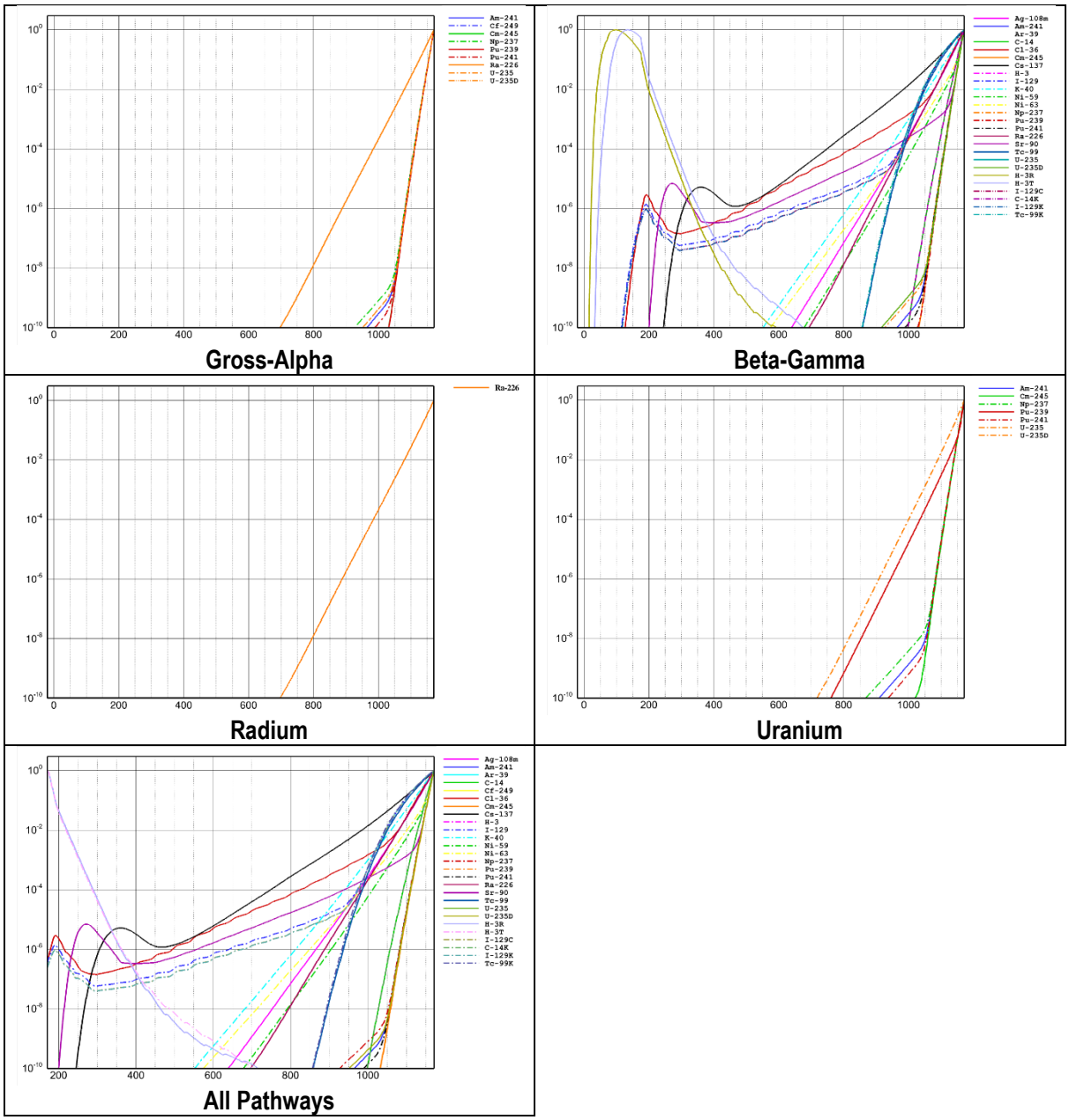


Figure H-95. Normalized Dose History Time Profiles for ILV

H.1.2.3. Naval Reactor Component Disposal Areas

Normalized dose history time profiles for all five GW pathways are shown for NR07E and NR26E in Figure H-96 and Figure H-97, respectively. For the two NRCDAs, there are no inventory limits for the GW pathways for Ra-226 and Ra-226S; therefore, no radium profiles are provided.

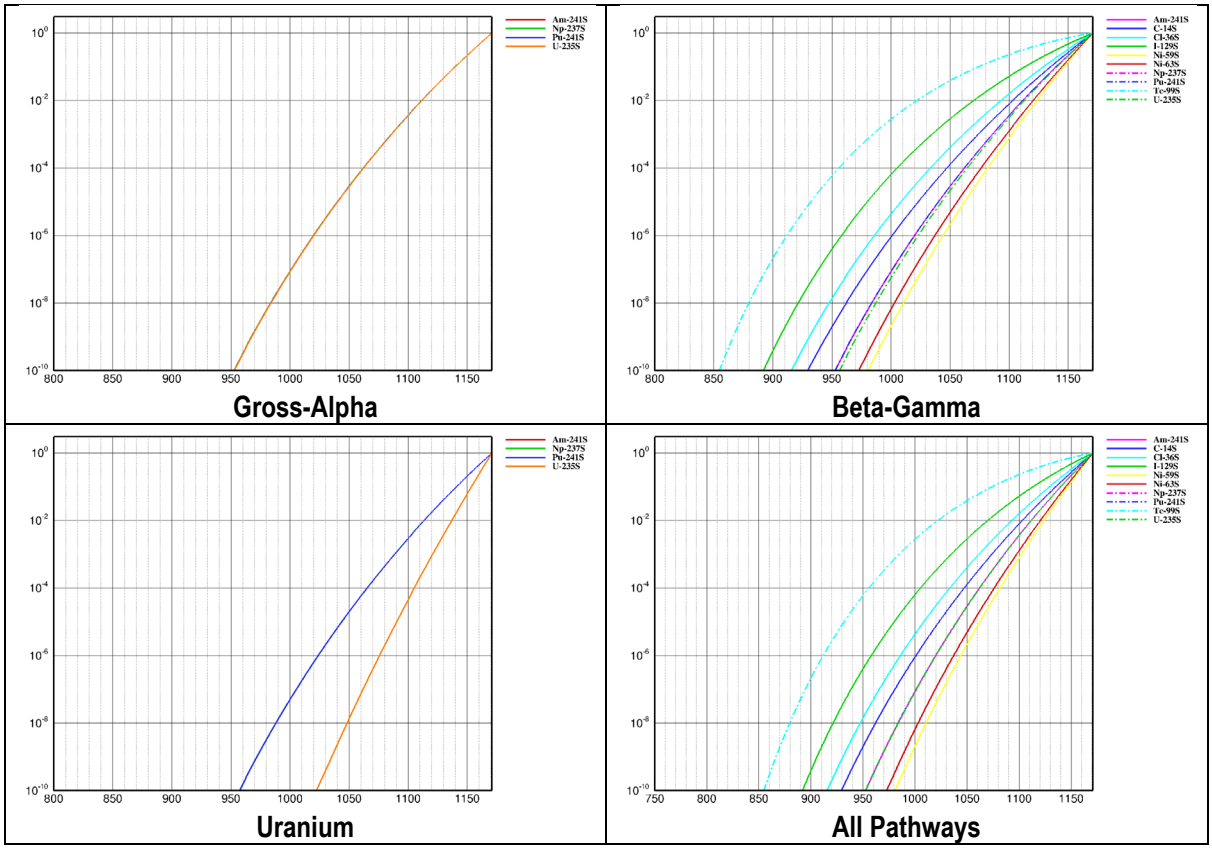


Figure H-96. Normalized Dose History Time Profiles for NR07E

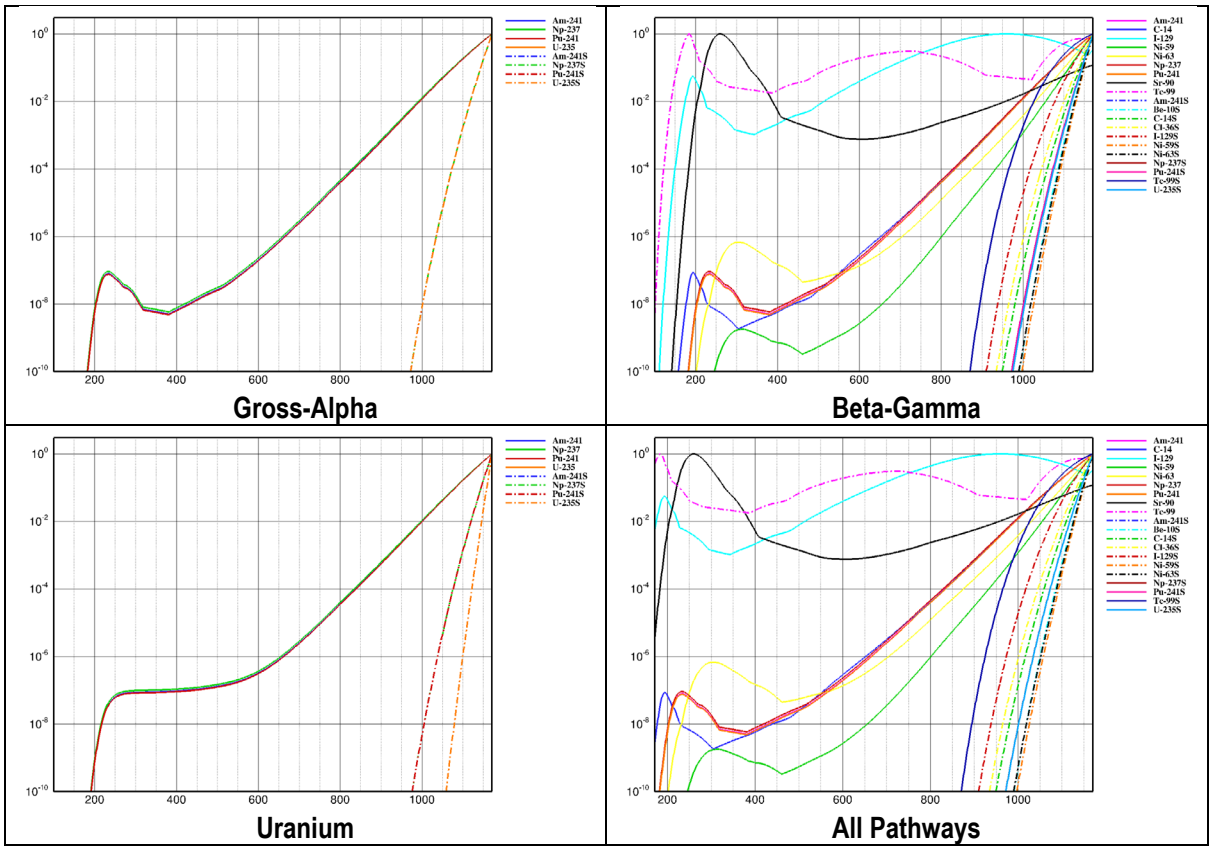


Figure H-97. Normalized Dose History Time Profiles for NR26E

H.1.3 Preliminary Inventory Limits

In this section, DU-specific preliminary inventory limits are provided for every generic waste form and SWF parent radionuclide requiring an inventory limit for the GW pathways. The preliminary inventory limits for all 33 ELLWF DUs cover the entire range of GW pathways of interest and include time windowing for specific pathways.

The preliminary inventory limits do not account for 100-meter POA contributions from neighboring DUs. Table H-8 indicates how generic and special waste forms are addressed within the CWTS limits system based on waste-form type, future burial plans, and handling within the transport modeling process.

Table H-8. Handling of Generic and Special Waste Form Parent Radionuclides in Limits System

Shading Legend for Radionuclides	Waste Form	Plans for Future Burial?	Type of Inventory Limit
	Generic	Yes	Generic
	SWF	Yes	SWF
	SWF	Yes	Generic
	SWF	No	SWF
	SWF	No	Generic

For example, the HWCTR reactor vessel and its internals disposed in ST14 are modeled as a SWF with SWF inventory limits, meaning that explicit credit is taken in the VZ transport model for the waste form "containers." HWCTR represents a one-time disposal event, and its unique set of isotopes of interest is shaded in yellow as indicated in Table H-8.

H.1.3.1. Slit and Engineered Trenches

The DU-specific preliminary inventory limits for the GW pathways are provided for slit and engineered trenches in Table H-9 through Table H-37. The inventory limits are time-window based but do not account for plume overlap from neighboring DUs. Final inventory limits are computed from these preliminary values using DU-specific GW PIFs.

Table H-9. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST01

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	---	---	---	---	---	---	---
Am-241	---	2.70E+12	1.29E+08	6.45E+06	---	1.32E+17	1.12E+12	5.36E+07
Be-10	---	3.58E+15	1.80E+10	---	---	---	3.81E+16	1.91E+11
C-14	---	8.17E+08	1.97E+06	---	---	---	5.09E+09	1.23E+07
Cf-249	---	1.68E+16	4.30E+10	2.15E+09	---	5.03E+19	6.98E+15	1.79E+10
Cl-36	3.99E+13	2.10E+02	6.38E+00	---	---	---	1.46E+03	4.43E+01
Cm-245	---	1.08E+14	4.63E+08	2.32E+07	---	5.29E+17	4.50E+13	1.92E+08
Cs-135	---	---	---	---	---	---	---	---
Cs-137	---	---	---	---	---	---	---	---
H-3	9.06E+00	2.82E+06	---	---	---	---	7.70E+07	---
I-129	1.01E+06	2.45E-03	1.97E-03	---	---	---	2.62E-01	2.10E-01
K-40	---	1.26E+17	4.44E+11	---	---	---	8.17E+17	2.89E+12
Ni-59	---	---	3.15E+16	---	---	---	---	1.89E+19
Ni-63	---	---	1.83E+19	---	---	---	---	---
Np-237	---	5.53E+06	1.69E+03	8.47E+01	---	1.38E+12	2.30E+06	7.04E+02
Pa-231	---	1.20E+08	2.09E+04	1.06E+02	---	---	9.30E+05	2.01E+02
Pd-107	---	---	2.91E+18	---	---	---	---	2.36E+19
Pu-239	---	2.53E+19	9.65E+13	4.06E+11	---	---	1.54E+17	7.70E+11
Pu-241	---	2.44E+14	4.66E+09	2.33E+08	---	4.97E+18	1.01E+14	1.94E+09
Ra-226	---	---	---	---	---	---	---	---
Rb-87	---	---	---	---	---	---	---	---
Sr-90	---	---	---	---	---	---	---	---
Tc-99	3.62E+04	1.43E+00	4.13E+00	---	---	---	1.36E+01	3.91E+01
Th-230	---	---	---	---	---	---	---	---
Th-231	---	7.46E+14	1.89E+11	9.72E+08	---	---	6.01E+12	1.85E+09
U-234	---	---	---	---	---	---	---	---
C-14N	---	5.61E+10	1.11E+07	---	---	---	3.50E+11	6.95E+07
H-3F	9.06E+00	2.82E+06	---	---	---	---	7.70E+07	---
I-129F	1.83E+08	3.57E-01	1.65E-01	---	---	---	3.81E+01	1.77E+01
I-129J	1.61E+07	3.17E-02	1.49E-02	---	---	---	3.38E+00	1.60E+00

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-10. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST02

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.03E+03	1.03E+03	---	---	---	8.62E+03	8.62E+03
Am-241	---	4.61E+05	5.11E+05	2.30E+04	---	1.33E+13	1.92E+05	2.12E+05
Be-10	---	2.02E+02	3.48E+02	---	---	---	2.15E+03	3.70E+03
C-14	---	6.28E+02	7.20E+02	---	---	---	3.92E+03	4.49E+03
Cf-249	---	2.87E+07	1.90E+07	9.49E+05	---	1.28E+15	1.19E+07	7.89E+06
Cl-36	1.89E+15	6.96E+01	8.00E+00	---	---	---	4.83E+02	5.56E+01
Cm-245	---	5.13E+05	3.93E+05	1.97E+04	---	2.02E+13	2.13E+05	1.63E+05
Cs-135	---	1.26E+03	6.84E+02	---	---	---	5.91E+03	3.21E+03
Cs-137	---	4.38E+10	2.07E+12	---	---	---	1.84E+11	8.70E+12
H-3	2.62E+02	1.53E+06	---	---	---	---	4.18E+07	---
I-129	4.13E+07	3.06E-03	1.88E-03	---	---	---	3.27E-01	2.00E-01
K-40	---	4.92E+01	5.58E+01	---	---	---	3.19E+02	3.63E+02
Ni-59	---	1.01E+02	1.01E+02	---	---	---	6.11E+04	6.08E+04
Ni-63	---	6.20E+03	1.60E+04	---	---	---	9.02E+06	2.33E+07
Np-237	---	3.64E+01	1.16E+02	1.82E+00	---	1.73E+09	1.51E+01	4.80E+01
Pa-231	---	1.68E+02	4.74E+02	1.82E+00	---	---	3.46E+00	1.12E+01
Pd-107	---	9.40E+03	9.37E+03	---	---	---	7.63E+04	7.60E+04
Pu-239	---	3.60E+10	2.56E+10	2.75E+08	---	---	7.38E+08	5.24E+08
Pu-241	---	1.40E+07	1.53E+07	6.98E+05	---	4.07E+14	5.80E+06	6.36E+06
Ra-226	---	2.65E+08	8.64E+06	2.61E+05	2.61E+05	---	4.44E+07	1.71E+06
Rb-87	---	4.19E+02	2.28E+02	---	---	---	6.74E+03	3.66E+03
Sr-90	---	6.25E+05	5.22E+10	---	---	---	3.34E+07	2.79E+12
Tc-99	5.23E+05	1.41E+00	2.71E+00	---	---	---	1.33E+01	2.56E+01
Th-230	---	2.73E+09	8.61E+07	2.58E+06	2.59E+06	---	4.58E+08	1.69E+07
Th-231	---	1.90E+09	5.31E+09	2.05E+07	---	---	3.91E+07	1.25E+08
U-234	---	2.67E+12	7.64E+10	2.26E+09	2.27E+09	---	4.43E+11	1.48E+10
C-14N	---	6.28E+02	7.21E+02	---	---	---	3.91E+03	4.49E+03
I-129D	7.87E+10	3.43E+00	1.57E+00	---	---	---	3.66E+02	1.68E+02
I-129G	5.85E+08	3.45E-02	1.33E-02	---	---	---	3.69E+00	1.42E+00
I-129H	4.41E+09	1.94E-01	8.91E-02	---	---	---	2.07E+01	9.52E+00
I-129I	1.16E+11	5.04E+00	2.32E+00	---	---	---	5.38E+02	2.47E+02
I-129J	6.63E+08	3.88E-02	1.50E-02	---	---	---	4.14E+00	1.60E+00
U-234G	---	5.73E+15	1.52E+14	4.48E+12	4.49E+12	---	9.45E+14	2.93E+13

Notes: Numerical values exceeding 1.0E20 indicated by "---". All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-11. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST03

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	7.12E+02	5.08E+02	---	---	---	5.94E+03	4.24E+03
Am-241	---	1.53E+05	1.44E+05	7.18E+03	---	4.96E+12	6.37E+04	5.97E+04
Be-10	---	6.74E+01	7.68E+01	---	---	---	7.17E+02	8.17E+02
C-14	6.42E+16	1.92E+02	1.96E+02	---	---	---	1.20E+03	1.22E+03
Cf-249	---	1.07E+07	6.56E+06	3.28E+05	---	5.02E+14	4.46E+06	2.73E+06
Cl-36	7.41E+10	8.08E+00	2.29E+00	---	---	---	5.61E+01	1.59E+01
Cm-245	---	1.87E+05	1.30E+05	6.50E+03	---	7.74E+12	7.78E+04	5.40E+04
Cs-135	---	1.78E+03	5.26E+02	---	---	---	8.35E+03	2.47E+03
Cs-137	---	5.66E+11	2.96E+12	---	---	---	2.37E+12	1.24E+13
H-3	1.91E+02	6.43E+05	---	---	---	---	1.76E+07	---
I-129	7.13E+04	1.89E-03	1.91E-03	---	---	---	2.02E-01	2.04E-01
K-40	---	1.63E+01	1.62E+01	---	---	---	1.06E+02	1.05E+02
Ni-59	---	4.48E+01	3.42E+01	---	---	---	2.70E+04	2.06E+04
Ni-63	---	5.41E+03	7.04E+03	---	---	---	7.86E+06	1.02E+07
Np-237	---	1.31E+01	1.78E+01	6.54E-01	---	6.38E+08	5.43E+00	7.39E+00
Pa-231	---	5.90E+01	1.22E+02	6.52E-01	---	---	1.24E+00	1.78E+00
Pd-107	---	4.15E+03	3.17E+03	---	---	---	3.37E+04	2.57E+04
Pu-239	---	1.34E+10	9.10E+09	9.33E+07	---	---	2.75E+08	1.78E+08
Pu-241	---	4.66E+06	4.36E+06	2.18E+05	---	1.52E+14	1.94E+06	1.81E+06
Ra-226	---	7.71E+10	6.72E+08	1.79E+07	1.80E+07	---	1.13E+10	1.18E+08
Rb-87	---	5.93E+02	1.75E+02	---	---	---	9.53E+03	2.82E+03
Sr-90	---	1.71E+06	1.12E+10	---	---	---	9.13E+07	5.96E+11
Tc-99	9.20E+03	1.44E+00	1.09E+01	---	---	---	1.36E+01	1.03E+02
Th-230	---	8.31E+11	7.23E+09	1.92E+08	1.93E+08	---	1.21E+11	1.26E+09
Th-231	---	6.66E+08	1.32E+09	7.36E+06	---	---	1.40E+07	1.93E+07
U-234	---	8.52E+14	6.91E+12	1.83E+11	1.83E+11	---	1.24E+14	1.20E+12
C-14N	---	1.92E+02	1.95E+02	---	---	---	1.19E+03	1.22E+03
I-129I	2.00E+08	2.87E+00	2.26E+00	---	---	---	3.07E+02	2.41E+02
I-129J	1.15E+06	2.02E-02	1.50E-02	---	---	---	2.16E+00	1.60E+00
H-3C	---	9.34E+05	---	---	---	---	2.55E+07	---
I-129C	---	2.20E+00	1.65E+00	---	---	---	2.36E+02	1.76E+02

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-12. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST04

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	6.09E+02	5.77E+02	---	---	---	5.08E+03	4.82E+03
Am-241	---	2.15E+05	1.63E+05	8.13E+03	---	6.43E+12	8.95E+04	6.75E+04
Be-10	---	9.74E+01	1.18E+02	---	---	---	1.04E+03	1.26E+03
C-14	5.08E+16	2.66E+02	2.82E+02	---	---	---	1.66E+03	1.76E+03
Cf-249	---	1.33E+07	8.05E+06	4.03E+05	---	6.11E+14	5.54E+06	3.35E+06
Cl-36	6.11E+10	7.67E+00	2.20E+00	---	---	---	5.33E+01	1.53E+01
Cm-245	---	2.40E+05	1.58E+05	7.92E+03	---	9.64E+12	9.97E+04	6.59E+04
Cs-135	---	9.11E+02	4.01E+02	---	---	---	4.28E+03	1.88E+03
Cs-137	---	6.71E+10	1.46E+12	---	---	---	2.82E+11	6.14E+12
H-3	2.04E+02	8.28E+05	---	---	---	---	2.26E+07	---
I-129	6.24E+04	1.83E-03	1.84E-03	---	---	---	1.95E-01	1.97E-01
K-40	---	2.29E+01	2.30E+01	---	---	---	1.49E+02	1.50E+02
Ni-59	---	5.11E+01	4.72E+01	---	---	---	3.08E+04	2.84E+04
Ni-63	---	4.13E+03	7.99E+03	---	---	---	6.00E+06	1.16E+07
Np-237	9.70E+19	1.88E+01	1.77E+01	8.84E-01	---	8.31E+08	7.83E+00	7.34E+00
Pa-231	---	8.53E+01	1.24E+02	9.33E-01	---	---	1.79E+00	1.78E+00
Pd-107	---	4.74E+03	4.37E+03	---	---	---	3.84E+04	3.55E+04
Pu-239	---	1.69E+10	1.13E+10	1.14E+08	---	---	3.46E+08	2.17E+08
Pu-241	---	6.52E+06	4.97E+06	2.48E+05	---	1.97E+14	2.71E+06	2.06E+06
Ra-226	---	4.59E+08	1.15E+07	3.39E+05	3.40E+05	---	7.45E+07	2.22E+06
Rb-87	---	3.04E+02	1.34E+02	---	---	---	4.88E+03	2.15E+03
Sr-90	---	6.34E+05	1.71E+10	---	---	---	3.38E+07	9.14E+11
Tc-99	8.88E+03	1.39E+00	1.06E+01	---	---	---	1.31E+01	1.00E+02
Th-230	---	4.95E+09	1.19E+08	3.49E+06	3.50E+06	---	8.02E+08	2.29E+07
Th-231	---	9.61E+08	1.34E+09	1.01E+07	---	---	2.02E+07	1.92E+07
U-234	---	4.87E+12	1.07E+11	3.09E+09	3.10E+09	---	7.84E+11	2.03E+10
C-14N	---	2.66E+02	2.82E+02	---	---	---	1.66E+03	1.75E+03
I-129H	6.66E+06	1.08E-01	8.40E-02	---	---	---	1.15E+01	8.98E+00
I-129I	1.75E+08	2.83E+00	2.20E+00	---	---	---	3.02E+02	2.35E+02
I-129J	1.00E+06	1.97E-02	1.44E-02	---	---	---	2.11E+00	1.54E+00

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-13. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST05

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	2.06E+03	2.51E+03	---	---	---	1.72E+04	2.09E+04
Am-241	---	8.14E+05	4.35E+04	2.17E+03	---	1.19E+13	3.38E+05	1.81E+04
Be-10	---	5.41E+02	7.32E+02	---	---	---	5.75E+03	7.78E+03
C-14	9.07E+11	8.92E+02	1.79E+02	---	---	---	5.56E+03	1.11E+03
Cf-249	---	5.03E+07	5.82E+06	2.91E+05	---	1.42E+15	2.09E+07	2.42E+06
Cl-36	3.72E+07	3.54E+00	2.17E+00	---	---	---	2.46E+01	1.51E+01
Cm-245	---	9.09E+05	8.16E+04	4.08E+03	---	2.10E+13	3.78E+05	3.39E+04
Cs-135	---	1.45E+03	1.26E+03	---	---	---	6.79E+03	5.92E+03
Cs-137	---	1.12E+09	2.04E+12	---	---	---	4.71E+09	8.56E+12
H-3	6.19E+01	1.32E+06	---	---	---	---	3.60E+07	---
I-129	3.23E+02	1.85E-03	2.28E-03	---	---	---	1.98E-01	2.44E-01
K-40	---	1.35E+02	1.59E+02	---	---	---	8.76E+02	1.03E+03
Ni-59	---	2.66E+02	2.85E+02	---	---	---	1.60E+05	1.72E+05
Ni-63	---	4.85E+03	4.38E+04	---	---	---	7.06E+06	6.36E+07
Np-237	3.41E+14	9.00E+01	4.04E+00	2.02E-01	---	1.08E+09	3.74E+01	1.68E+00
Pa-231	1.20E+18	4.53E+02	2.66E+01	2.07E-01	---	---	9.04E+00	3.94E-01
Pd-107	---	2.47E+04	2.65E+04	---	---	---	2.01E+05	2.15E+05
Pu-239	---	6.61E+10	9.19E+09	6.77E+07	---	---	1.30E+09	1.29E+08
Pu-241	---	2.48E+07	1.35E+06	6.74E+04	---	3.69E+14	1.03E+07	5.60E+05
Ra-226	---	1.15E+05	2.80E+04	1.04E+03	1.05E+03	---	2.55E+04	6.80E+03
Rb-87	---	4.82E+02	4.20E+02	---	---	---	7.75E+03	6.76E+03
Sr-90	---	1.33E+05	1.13E+11	---	---	---	7.10E+06	6.04E+12
Tc-99	8.46E+02	1.39E+00	1.61E+01	---	---	---	1.31E+01	1.53E+02
Th-230	---	9.85E+05	2.03E+05	7.37E+03	7.39E+03	---	2.14E+05	4.81E+04
Th-231	---	5.10E+09	2.96E+08	2.31E+06	---	---	9.76E+07	4.40E+06
U-234	---	6.93E+08	1.15E+08	4.04E+06	4.05E+06	---	1.47E+08	2.63E+07
C-14N	---	1.16E+03	2.21E+02	---	---	---	7.21E+03	1.38E+03
I-129J	5.17E+03	1.79E-02	1.39E-02	---	---	---	1.92E+00	1.49E+00
I-129R	1.79E+07	2.23E-01	2.22E-01	---	---	---	2.39E+01	2.37E+01
Sr-90R	---	6.45E+07	9.92E+12	---	---	---	3.45E+09	5.30E+14
Tc-99R	2.54E+07	1.73E+02	3.40E+02	---	---	---	1.63E+03	3.22E+03

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-14. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST06

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	8.77E+02	8.84E+02	---	---	---	7.31E+03	7.37E+03
Am-241	2.47E+14	3.62E+05	4.59E+04	2.30E+03	---	7.33E+12	1.50E+05	1.91E+04
Be-10	1.32E+17	1.81E+02	2.33E+02	---	---	---	1.92E+03	2.48E+03
C-14	2.56E+06	2.76E+02	1.10E+02	---	---	---	1.72E+03	6.84E+02
Cf-249	---	2.02E+07	5.27E+06	2.63E+05	---	7.79E+14	8.41E+06	2.19E+06
Cl-36	5.74E+03	2.95E+00	2.70E+00	---	---	---	2.05E+01	1.87E+01
Cm-245	5.67E+17	3.67E+05	8.07E+04	4.04E+03	---	1.20E+13	1.52E+05	3.35E+04
Cs-135	---	7.99E+02	5.16E+02	---	---	---	3.75E+03	2.42E+03
Cs-137	---	5.42E+09	1.13E+12	---	---	---	2.27E+10	4.75E+12
H-3	5.83E+00	1.00E+06	---	---	---	---	2.73E+07	---
I-129	3.03E-01	2.03E-03	6.20E-03	---	---	---	2.17E-01	6.63E-01
K-40	3.82E+17	4.22E+01	4.42E+01	---	---	---	2.74E+02	2.87E+02
Ni-59	---	8.75E+01	8.68E+01	---	---	---	5.27E+04	5.23E+04
Ni-63	---	3.78E+03	1.33E+04	---	---	---	5.49E+06	1.94E+07
Np-237	2.08E+08	2.00E+01	2.25E+00	1.12E-01	---	4.17E+08	8.33E+00	9.33E-01
Pa-231	8.66E+10	1.37E+02	1.30E+01	1.14E-01	---	---	2.05E+00	2.17E-01
Pd-107	---	8.12E+03	8.05E+03	---	---	---	6.59E+04	6.53E+04
Pu-239	---	2.62E+10	7.97E+09	6.45E+07	---	---	5.25E+08	1.23E+08
Pu-241	6.75E+16	1.12E+07	1.47E+06	7.34E+04	---	2.31E+14	4.67E+06	6.10E+05
Ra-226	---	1.37E+06	1.64E+05	5.62E+03	5.63E+03	---	2.72E+05	3.67E+04
Rb-87	---	2.66E+02	1.72E+02	---	---	---	4.28E+03	2.76E+03
Sr-90	5.48E+16	2.02E+05	3.06E+10	---	---	---	1.08E+07	1.63E+12
Tc-99	5.18E+00	1.87E+00	3.43E+01	---	---	---	1.77E+01	3.25E+02
Th-230	---	1.46E+07	1.52E+06	5.10E+04	5.12E+04	---	2.86E+06	3.34E+05
Th-231	2.20E+16	1.45E+09	1.46E+08	1.28E+06	---	---	2.17E+07	2.44E+06
U-234	---	1.21E+10	1.07E+09	3.53E+07	3.54E+07	---	2.34E+09	2.31E+08
C-14N	---	5.02E+02	2.22E+02	---	---	---	3.13E+03	1.38E+03
Ra-226T	---	1.37E+06	1.64E+05	5.62E+03	5.63E+03	---	2.72E+05	3.67E+04
Th-230T	---	1.46E+07	1.52E+06	5.10E+04	5.12E+04	---	2.86E+06	3.34E+05

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-15. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST07

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.21E+03	1.17E+03	---	---	---	1.01E+04	9.78E+03
Am-241	6.46E+14	4.16E+05	7.22E+04	3.61E+03	---	9.94E+12	1.73E+05	3.00E+04
Be-10	6.17E+17	1.97E+02	2.36E+02	---	---	---	2.10E+03	2.51E+03
C-14	1.52E+06	3.72E+02	1.54E+02	---	---	---	2.32E+03	9.61E+02
Cf-249	---	2.40E+07	7.74E+06	3.87E+05	---	1.02E+15	9.97E+06	3.22E+06
Cl-36	5.23E+03	3.32E+00	2.88E+00	---	---	---	2.31E+01	2.00E+01
Cm-245	1.57E+18	4.25E+05	1.22E+05	6.12E+03	---	1.59E+13	1.77E+05	5.09E+04
Cs-135	---	1.46E+03	7.67E+02	---	---	---	6.84E+03	3.60E+03
Cs-137	---	2.48E+10	2.10E+12	---	---	---	1.04E+11	8.82E+12
H-3	6.79E+00	1.14E+06	---	---	---	---	3.13E+07	---
I-129	4.31E-01	2.21E-03	5.91E-03	---	---	---	2.36E-01	6.31E-01
K-40	1.21E+18	4.84E+01	4.85E+01	---	---	---	3.14E+02	3.15E+02
Ni-59	---	1.07E+02	9.79E+01	---	---	---	6.44E+04	5.89E+04
Ni-63	---	7.37E+03	1.63E+04	---	---	---	1.07E+07	2.38E+07
Np-237	5.28E+08	3.12E+01	3.09E+00	1.54E-01	---	6.01E+08	1.30E+01	1.28E+00
Pa-231	3.01E+11	1.67E+02	1.85E+01	1.57E-01	---	---	3.21E+00	2.99E-01
Pd-107	---	9.91E+03	9.07E+03	---	---	---	8.04E+04	7.36E+04
Pu-239	---	3.08E+10	1.15E+10	9.65E+07	---	---	6.17E+08	1.84E+08
Pu-241	1.81E+17	1.27E+07	2.33E+06	1.16E+05	---	3.12E+14	5.28E+06	9.67E+05
Ra-226	---	5.45E+05	2.64E+04	8.79E+02	8.82E+02	---	9.22E+04	5.75E+03
Rb-87	---	4.85E+02	2.56E+02	---	---	---	7.80E+03	4.11E+03
Sr-90	1.48E+17	6.25E+05	3.07E+10	---	---	---	3.34E+07	1.64E+12
Tc-99	5.35E+00	2.05E+00	3.70E+01	---	---	---	1.94E+01	3.50E+02
Th-230	---	4.77E+06	1.77E+05	5.78E+03	5.80E+03	---	7.69E+05	3.78E+04
Th-231	5.59E+16	1.88E+09	2.06E+08	1.77E+06	---	---	3.39E+07	3.36E+06
U-234	---	3.10E+09	9.03E+07	2.87E+06	2.88E+06	---	4.76E+08	1.88E+07
C-14N	---	5.94E+02	3.16E+02	---	---	---	3.70E+03	1.97E+03
H-3C	---	2.29E+06	---	---	---	---	6.24E+07	---
I-129C	1.18E+19	2.16E+00	1.67E+00	---	---	---	2.31E+02	1.78E+02
I-129J	6.78E+00	1.91E-02	1.51E-02	---	---	---	2.04E+00	1.62E+00

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-16. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST08

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	2.82E+02	1.93E+03	---	---	---	2.35E+03	1.61E+04
Am-241	---	3.56E+05	3.68E+05	1.78E+04	---	1.11E+13	1.48E+05	1.53E+05
Be-10	---	1.15E+02	3.71E+02	---	---	---	1.22E+03	3.94E+03
C-14	1.33E+14	2.57E+02	7.99E+02	---	---	---	1.60E+03	4.98E+03
Cf-249	---	2.13E+07	1.43E+07	7.14E+05	---	8.65E+14	8.87E+06	5.93E+06
Cl-36	5.28E+07	7.53E+00	2.19E+00	---	---	---	5.23E+01	1.52E+01
Cm-245	---	4.31E+05	3.11E+05	1.56E+04	---	1.49E+13	1.79E+05	1.29E+05
Cs-135	---	2.82E+02	4.64E+02	---	---	---	1.32E+03	2.18E+03
Cs-137	---	1.16E+07	6.78E+11	---	---	---	4.88E+07	2.84E+12
H-3	5.34E+00	2.52E+06	---	---	---	---	6.87E+07	---
I-129	3.79E+01	1.92E-03	2.60E-03	---	---	---	2.05E-01	2.77E-01
K-40	---	2.67E+01	8.20E+01	---	---	---	1.73E+02	5.33E+02
Ni-59	---	5.72E+01	1.95E+02	---	---	---	3.44E+04	1.17E+05
Ni-63	---	2.10E+02	3.75E+04	---	---	---	3.05E+05	5.45E+07
Np-237	2.56E+14	2.02E+01	1.63E+01	8.16E-01	---	1.28E+09	8.39E+00	6.78E+00
Pa-231	2.71E+18	1.01E+02	1.23E+02	8.89E-01	---	---	1.91E+00	1.69E+00
Pd-107	---	5.32E+03	1.81E+04	---	---	---	4.32E+04	1.47E+05
Pu-239	---	2.85E+10	1.99E+10	2.09E+08	---	---	5.83E+08	3.98E+08
Pu-241	---	1.16E+07	1.17E+07	5.78E+05	---	3.41E+14	4.81E+06	4.85E+06
Ra-226	---	3.37E+03	8.90E+02	3.40E+01	3.41E+01	---	7.42E+02	2.22E+02
Rb-87	---	9.38E+01	1.55E+02	---	---	---	1.51E+03	2.48E+03
Sr-90	---	2.73E+03	5.49E+10	---	---	---	1.46E+05	2.93E+12
Tc-99	1.35E+02	1.58E+00	2.47E+01	---	---	---	1.50E+01	2.34E+02
Th-230	---	3.47E+04	7.80E+03	2.90E+02	2.91E+02	---	7.49E+03	1.89E+03
Th-231	---	1.14E+09	1.29E+09	9.35E+06	---	---	2.16E+07	1.78E+07
U-234	---	2.94E+07	5.42E+06	1.96E+05	1.97E+05	---	6.22E+06	1.28E+06
C-14N	---	2.62E+02	1.04E+03	---	---	---	1.63E+03	6.47E+03
Am-241B	3.79E+17	4.54E+05	4.43E+04	2.21E+03	---	9.42E+12	1.89E+05	1.84E+04
C-14B	5.09E+12	5.29E+02	4.03E+02	---	---	---	3.30E+03	2.51E+03
Cs-137B	---	4.96E+13	5.68E+13	---	---	---	2.08E+14	2.38E+14
H-3B	1.28E+01	1.81E+06	---	---	---	---	4.95E+07	---
I-129B	3.71E+00	2.42E-03	8.11E-03	---	---	---	2.58E-01	8.66E-01
Ni-59B	---	1.32E+02	7.71E+01	---	---	---	7.95E+04	4.64E+04
Sr-90B	---	1.68E+07	3.52E+10	---	---	---	8.98E+08	1.88E+12
Tc-99B	6.19E+01	1.90E+00	2.49E+01	---	---	---	1.80E+01	2.35E+02

Notes: Numerical values exceeding 1.0E20 indicated by "---". Shaded entries are associated with SWFs where the highlighting color reflects how they are addressed (see Table H-8).

Table H-17. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST09

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	3.12E+02	1.57E+03	---	---	---	2.60E+03	1.31E+04
Am-241	---	4.03E+05	3.95E+05	1.98E+04	---	1.13E+13	1.67E+05	1.64E+05
Be-10	---	1.29E+02	3.76E+02	---	---	---	1.37E+03	4.00E+03
C-14	1.42E+15	2.97E+02	8.37E+02	---	---	---	1.85E+03	5.22E+03
Cf-249	---	2.18E+07	1.46E+07	7.32E+05	---	8.91E+14	9.06E+06	6.09E+06
Cl-36	4.79E+08	9.40E+00	2.42E+00	---	---	---	6.53E+01	1.68E+01
Cm-245	---	4.35E+05	3.19E+05	1.60E+04	---	1.52E+13	1.81E+05	1.33E+05
Cs-135	---	3.15E+02	4.53E+02	---	---	---	1.48E+03	2.13E+03
Cs-137	---	1.29E+07	6.07E+11	---	---	---	5.42E+07	2.54E+12
H-3	5.38E+00	8.61E+05	---	---	---	---	2.35E+07	---
I-129	2.37E+02	1.89E-03	2.28E-03	---	---	---	2.02E-01	2.43E-01
K-40	---	3.00E+01	8.44E+01	---	---	---	1.95E+02	5.49E+02
Ni-59	---	6.38E+01	1.99E+02	---	---	---	3.84E+04	1.20E+05
Ni-63	---	2.38E+02	3.01E+04	---	---	---	3.45E+05	4.37E+07
Np-237	4.87E+15	2.30E+01	2.05E+01	1.03E+00	---	1.36E+09	9.57E+00	8.54E+00
Pa-231	---	1.14E+02	1.53E+02	1.12E+00	---	---	2.17E+00	2.13E+00
Pd-107	---	5.94E+03	1.84E+04	---	---	---	4.82E+04	1.49E+05
Pu-239	---	2.89E+10	2.03E+10	2.14E+08	---	---	5.92E+08	4.09E+08
Pu-241	---	1.30E+07	1.24E+07	6.19E+05	---	3.48E+14	5.41E+06	5.14E+06
Ra-226	---	3.95E+03	1.07E+03	4.12E+01	4.14E+01	---	8.71E+02	2.68E+02
Rb-87	---	1.05E+02	1.51E+02	---	---	---	1.69E+03	2.43E+03
Sr-90	---	2.90E+03	5.05E+10	---	---	---	1.55E+05	2.70E+12
Tc-99	3.38E+02	1.45E+00	1.85E+01	---	---	---	1.38E+01	1.75E+02
Th-230	---	4.17E+04	9.58E+03	3.58E+02	3.59E+02	---	9.03E+03	2.33E+03
Th-231	---	1.30E+09	1.60E+09	1.18E+07	---	---	2.46E+07	2.24E+07
U-234	---	3.57E+07	6.68E+06	2.42E+05	2.42E+05	---	7.55E+06	1.58E+06
C-14N	---	3.00E+02	1.02E+03	---	---	---	1.87E+03	6.35E+03
Am-241B	5.98E+18	4.27E+05	5.73E+04	2.86E+03	---	1.05E+13	1.77E+05	2.38E+04
C-14B	5.13E+13	5.86E+02	4.61E+02	---	---	---	3.65E+03	2.87E+03
Cs-137B	---	7.11E+13	7.98E+13	---	---	---	2.98E+14	3.35E+14
H-3B	1.27E+01	7.65E+05	---	---	---	---	2.09E+07	---
I-129B	1.86E+01	2.28E-03	4.94E-03	---	---	---	2.43E-01	5.28E-01
Ni-59B	---	1.83E+02	9.29E+01	---	---	---	1.10E+05	5.60E+04
Np-237B	4.62E+12	3.95E+01	3.26E+00	1.63E-01	---	7.46E+08	1.64E+01	1.36E+00
Pu-239B	---	3.83E+10	1.12E+10	8.46E+07	---	---	7.64E+08	1.61E+08

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Pu-241B	---	1.30E+07	1.81E+06	9.06E+04	---	3.29E+14	5.40E+06	7.53E+05
Sr-90B	---	2.56E+07	2.68E+10	---	---	---	1.37E+09	1.43E+12
Tc-99B	1.73E+02	1.72E+00	1.99E+01	---	---	---	1.63E+01	1.88E+02
U-234B	---	---	1.81E+18	3.80E+16	3.81E+16	---	---	2.51E+17
C-14X	1.07E+01	6.10E+00	6.32E+00	---	---	---	3.80E+01	3.94E+01
H-3X	6.13E+02	1.18E+05	1.26E+05	---	---	---	3.21E+06	3.45E+06

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-18. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST10

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	3.14E+02	1.12E+03	---	---	---	2.62E+03	9.35E+03
Am-241	---	4.33E+05	3.82E+05	1.91E+04	---	1.06E+13	1.80E+05	1.59E+05
Be-10	---	1.37E+02	3.47E+02	---	---	---	1.46E+03	3.69E+03
C-14	2.06E+17	3.23E+02	8.49E+02	---	---	---	2.01E+03	5.29E+03
Cf-249	---	2.09E+07	1.40E+07	6.99E+05	---	8.69E+14	8.69E+06	5.81E+06
Cl-36	6.74E+10	1.60E+01	2.47E+00	---	---	---	1.11E+02	1.71E+01
Cm-245	---	4.09E+05	3.01E+05	1.50E+04	---	1.46E+13	1.70E+05	1.25E+05
Cs-135	---	3.40E+02	4.28E+02	---	---	---	1.59E+03	2.01E+03
Cs-137	---	1.04E+07	4.54E+11	---	---	---	4.36E+07	1.91E+12
H-3	5.07E+00	4.81E+05	---	---	---	---	1.31E+07	---
I-129	2.35E+04	1.80E-03	1.81E-03	---	---	---	1.92E-01	1.93E-01
K-40	---	3.22E+01	7.85E+01	---	---	---	2.09E+02	5.10E+02
Ni-59	---	6.83E+01	1.46E+02	---	---	---	4.11E+04	8.81E+04
Ni-63	---	2.29E+02	2.02E+04	---	---	---	3.33E+05	2.94E+07
Np-237	4.28E+18	2.52E+01	3.31E+01	1.26E+00	---	1.35E+09	1.05E+01	1.38E+01
Pa-231	---	1.23E+02	2.30E+02	1.24E+00	---	---	2.37E+00	3.42E+00
Pd-107	---	6.36E+03	1.36E+04	---	---	---	5.16E+04	1.10E+05
Pu-239	---	2.75E+10	1.93E+10	2.04E+08	---	---	5.63E+08	3.89E+08
Pu-241	---	1.35E+07	1.17E+07	5.84E+05	---	3.25E+14	5.61E+06	4.86E+06
Ra-226	---	3.82E+03	1.08E+03	4.18E+01	4.20E+01	---	8.46E+02	2.72E+02
Rb-87	---	1.13E+02	1.43E+02	---	---	---	1.82E+03	2.29E+03

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Sr-90	---	2.36E+03	3.62E+10	---	---	---	1.26E+05	1.94E+12
Tc-99	4.29E+03	1.27E+00	1.17E+01	---	---	---	1.20E+01	1.10E+02
Th-230	---	4.14E+04	9.84E+03	3.70E+02	3.71E+02	---	8.99E+03	2.41E+03
Th-231	---	1.39E+09	2.44E+09	1.42E+07	---	---	2.70E+07	3.60E+07
U-234	---	3.69E+07	7.00E+06	2.54E+05	2.55E+05	---	7.81E+06	1.66E+06
C-14N	---	3.24E+02	9.19E+02	---	---	---	2.02E+03	5.73E+03
Am-241B	---	3.91E+05	8.68E+04	4.34E+03	---	1.23E+13	1.63E+05	3.61E+04
C-14B	1.85E+16	6.19E+02	5.44E+02	---	---	---	3.86E+03	3.39E+03
Cs-137B	---	1.41E+14	1.50E+14	---	---	---	5.91E+14	6.31E+14
H-3B	1.22E+01	6.10E+05	---	---	---	---	1.67E+07	---
I-129B	2.06E+03	2.15E-03	2.93E-03	---	---	---	2.29E-01	3.13E-01
Ni-59B	---	3.28E+02	1.26E+02	---	---	---	1.97E+05	7.59E+04
Np-237B	7.48E+15	4.01E+01	6.26E+00	3.13E-01	---	1.17E+09	1.67E+01	2.60E+00
Pu-239B	---	4.14E+10	1.49E+10	1.19E+08	---	---	8.21E+08	2.27E+08
Pu-241B	---	1.20E+07	2.71E+06	1.35E+05	---	3.81E+14	4.98E+06	1.12E+06
Sr-90B	---	5.07E+07	1.86E+10	---	---	---	2.71E+09	9.92E+11
Tc-99B	2.09E+03	1.70E+00	1.56E+01	---	---	---	1.61E+01	1.48E+02
U-234B	---	---	6.36E+18	1.32E+17	1.32E+17	---	---	8.71E+17

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-19. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST11

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	7.52E+02	7.85E+02	---	---	---	6.27E+03	6.54E+03
Am-241	---	3.99E+05	4.73E+05	1.99E+04	---	1.22E+13	1.66E+05	1.96E+05
Be-10	---	1.94E+02	3.50E+02	---	---	---	2.06E+03	3.72E+03
C-14	---	5.29E+02	7.23E+02	---	---	---	3.30E+03	4.50E+03
Cf-249	---	2.61E+07	1.72E+07	8.62E+05	---	1.14E+15	1.08E+07	7.16E+06
Cl-36	1.66E+14	6.74E+01	5.19E+00	---	---	---	4.68E+02	3.61E+01
Cm-245	---	4.75E+05	3.60E+05	1.80E+04	---	1.82E+13	1.98E+05	1.50E+05
Cs-135	---	6.53E+02	4.72E+02	---	---	---	3.07E+03	2.22E+03
Cs-137	---	7.31E+07	6.72E+11	---	---	---	3.06E+08	2.82E+12
H-3	2.10E+02	4.09E+05	---	---	---	---	1.12E+07	---
I-129	5.21E+07	2.50E-03	1.77E-03	---	---	---	2.67E-01	1.89E-01
K-40	---	4.23E+01	5.81E+01	---	---	---	2.74E+02	3.78E+02
Ni-59	---	8.66E+01	9.04E+01	---	---	---	5.21E+04	5.44E+04
Ni-63	---	1.95E+03	1.24E+04	---	---	---	2.84E+06	1.80E+07
Np-237	---	3.62E+01	9.72E+01	1.81E+00	---	1.58E+09	1.51E+01	4.04E+01
Pa-231	---	1.65E+02	4.89E+02	1.81E+00	---	---	3.45E+00	9.59E+00
Pd-107	---	8.03E+03	8.38E+03	---	---	---	6.52E+04	6.80E+04
Pu-239	---	3.31E+10	2.34E+10	2.50E+08	---	---	6.78E+08	4.77E+08
Pu-241	---	1.21E+07	1.42E+07	6.05E+05	---	3.73E+14	5.03E+06	5.89E+06
Ra-226	---	2.83E+04	8.83E+03	3.46E+02	3.48E+02	---	6.35E+03	2.25E+03
Rb-87	---	2.18E+02	1.57E+02	---	---	---	3.50E+03	2.53E+03
Sr-90	---	1.83E+04	3.34E+10	---	---	---	9.79E+05	1.79E+12
Tc-99	1.47E+06	1.33E+00	2.98E+00	---	---	---	1.26E+01	2.82E+01
Th-230	---	2.97E+05	7.79E+04	2.96E+03	2.98E+03	---	6.55E+04	1.93E+04
Th-231	---	1.86E+09	5.43E+09	2.04E+07	---	---	3.88E+07	1.06E+08
U-234	---	2.61E+08	5.44E+07	1.99E+06	2.00E+06	---	5.63E+07	1.30E+07
C-14N	---	5.29E+02	7.25E+02	---	---	---	3.30E+03	4.52E+03

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-20. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST14

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.79E+03	1.93E+03	---	---	---	1.49E+04	1.61E+04
Am-241	---	1.01E+06	5.40E+05	2.70E+04	---	2.17E+13	4.20E+05	2.25E+05
Be-10	---	7.03E+02	7.08E+02	---	---	---	7.47E+03	7.53E+03
C-14	---	2.34E+03	2.31E+03	---	---	---	1.46E+04	1.44E+04
Cf-249	---	4.61E+07	2.77E+07	1.39E+06	---	1.27E+15	1.92E+07	1.15E+07
Cl-36	3.00E+12	5.90E+01	7.11E+00	---	---	---	4.10E+02	4.94E+01
Cm-245	---	8.81E+05	5.54E+05	2.77E+04	---	2.31E+13	3.66E+05	2.30E+05
Cs-135	---	8.43E+02	8.10E+02	---	---	---	3.96E+03	3.81E+03
Cs-137	---	8.88E+09	1.10E+12	---	---	---	3.72E+10	4.60E+12
H-3	5.07E+00	2.38E+06	---	---	---	---	6.51E+07	---
I-129	3.61E+04	4.21E-03	4.21E-03	---	---	---	4.50E-01	4.50E-01
K-40	---	1.61E+02	1.68E+02	---	---	---	1.05E+03	1.09E+03
Ni-59	---	2.38E+02	2.60E+02	---	---	---	1.43E+05	1.56E+05
Ni-63	---	6.51E+03	3.84E+04	---	---	---	9.46E+06	5.58E+07
Np-237	2.42E+17	1.28E+02	3.79E+01	1.89E+00	---	3.76E+09	5.34E+01	1.57E+01
Pa-231	---	5.72E+02	2.71E+02	2.01E+00	---	---	1.23E+01	3.83E+00
Pd-107	---	2.21E+04	2.41E+04	---	---	---	1.79E+05	1.95E+05
Pu-239	---	6.07E+10	3.92E+10	3.91E+08	---	---	1.23E+09	7.45E+08
Pu-241	---	3.02E+07	1.67E+07	8.37E+05	---	6.54E+14	1.26E+07	6.95E+06
Ra-226	---	2.19E+06	7.36E+04	2.31E+03	2.32E+03	---	3.53E+05	1.51E+04
Rb-87	---	2.81E+02	2.70E+02	---	---	---	4.51E+03	4.34E+03
Sr-90	---	1.07E+06	8.54E+10	---	---	---	5.72E+07	4.56E+12
Tc-99	1.98E+04	3.19E+00	1.09E+01	---	---	---	3.02E+01	1.03E+02
Th-230	---	2.42E+07	7.56E+05	2.35E+04	2.36E+04	---	3.88E+06	1.54E+05
Th-231	---	6.43E+09	2.90E+09	2.17E+07	---	---	1.38E+08	4.13E+07
U-234	---	2.36E+10	6.56E+08	2.01E+07	2.02E+07	---	3.75E+09	1.32E+08
C-14N	---	2.32E+03	2.34E+03	---	---	---	1.45E+04	1.46E+04
Ag-108mH	---	---	---	---	---	---	---	---
C-14H	---	---	4.05E+15	---	---	---	---	2.52E+16
Ni-59H	---	---	---	---	---	---	---	---
Ni-63H	---	---	---	---	---	---	---	---
Tc-99H	3.04E+06	1.58E+01	2.74E+01	---	---	---	1.49E+02	2.60E+02

Notes: Numerical values exceeding 1.0E20 indicated by "---". All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-21. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST17

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.71E+03	1.54E+03	---	---	---	1.43E+04	1.29E+04
Am-241	---	6.62E+05	1.42E+05	7.09E+03	---	1.40E+13	2.75E+05	5.90E+04
Be-10	---	3.95E+02	3.98E+02	---	---	---	4.20E+03	4.24E+03
C-14	3.09E+16	1.09E+03	1.26E+03	---	---	---	6.82E+03	7.87E+03
Cf-249	---	3.90E+07	1.42E+07	7.10E+05	---	1.03E+15	1.62E+07	5.90E+06
Cl-36	1.88E+10	1.33E+01	4.11E+00	---	---	---	9.22E+01	2.86E+01
Cm-245	---	7.05E+05	2.27E+05	1.14E+04	---	1.74E+13	2.93E+05	9.44E+04
Cs-135	---	8.38E+02	5.57E+02	---	---	---	3.93E+03	2.61E+03
Cs-137	---	5.97E+10	8.51E+11	---	---	---	2.50E+11	3.57E+12
H-3	8.99E+00	9.93E+05	---	---	---	---	2.71E+07	---
I-129	7.32E+03	3.73E-03	3.84E-03	---	---	---	3.99E-01	4.11E-01
K-40	---	8.72E+01	8.92E+01	---	---	---	5.67E+02	5.80E+02
Ni-59	---	1.45E+02	1.44E+02	---	---	---	8.71E+04	8.67E+04
Ni-63	---	8.58E+03	1.98E+04	---	---	---	1.25E+07	2.88E+07
Np-237	9.42E+14	1.04E+02	1.11E+01	5.56E-01	---	1.60E+09	4.32E+01	4.62E+00
Pa-231	6.28E+19	4.75E+02	7.40E+01	5.74E-01	---	---	9.96E+00	1.09E+00
Pd-107	---	1.34E+04	1.34E+04	---	---	---	1.09E+05	1.08E+05
Pu-239	---	4.93E+10	2.11E+10	1.78E+08	---	---	1.01E+09	3.39E+08
Pu-241	---	1.98E+07	4.41E+06	2.20E+05	---	4.26E+14	8.25E+06	1.83E+06
Ra-226	---	2.53E+07	3.69E+05	1.05E+04	1.06E+04	---	3.82E+06	6.92E+04
Rb-87	---	2.79E+02	1.86E+02	---	---	---	4.49E+03	2.98E+03
Sr-90	---	3.33E+06	3.69E+10	---	---	---	1.78E+08	1.97E+12
Tc-99	9.19E+03	2.73E+00	1.62E+01	---	---	---	2.58E+01	1.53E+02
Th-230	---	2.96E+08	3.84E+06	1.09E+05	1.09E+05	---	4.43E+07	7.13E+05
Th-231	---	5.34E+09	8.16E+08	6.36E+06	---	---	1.12E+08	1.21E+07
U-234	---	2.99E+11	3.29E+09	9.13E+07	9.15E+07	---	4.42E+10	5.99E+08
C-14N	---	1.08E+03	1.52E+03	---	---	---	6.75E+03	9.46E+03

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-22. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST18

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	2.38E+03	1.95E+03	---	---	---	1.99E+04	1.63E+04
Am-241	---	7.49E+05	2.05E+05	1.02E+04	---	1.76E+13	3.11E+05	8.50E+04
Be-10	---	4.35E+02	4.37E+02	---	---	---	4.63E+03	4.65E+03
C-14	5.30E+16	1.34E+03	1.52E+03	---	---	---	8.35E+03	9.48E+03
Cf-249	---	4.68E+07	1.97E+07	9.87E+05	---	1.31E+15	1.95E+07	8.21E+06
Cl-36	3.19E+10	1.67E+01	4.85E+00	---	---	---	1.16E+02	3.37E+01
Cm-245	---	8.30E+05	3.22E+05	1.61E+04	---	2.21E+13	3.45E+05	1.34E+05
Cs-135	---	1.29E+03	6.92E+02	---	---	---	6.06E+03	3.25E+03
Cs-137	---	1.14E+11	1.32E+12	---	---	---	4.77E+11	5.54E+12
H-3	9.74E+00	9.10E+05	---	---	---	---	2.48E+07	---
I-129	1.27E+04	4.30E-03	4.39E-03	---	---	---	4.60E-01	4.69E-01
K-40	---	9.75E+01	9.89E+01	---	---	---	6.34E+02	6.43E+02
Ni-59	---	1.68E+02	1.60E+02	---	---	---	1.01E+05	9.64E+04
Ni-63	---	1.24E+04	2.31E+04	---	---	---	1.81E+07	3.35E+07
Np-237	1.88E+15	1.15E+02	1.59E+01	7.94E-01	---	2.27E+09	4.77E+01	6.60E+00
Pa-231	---	5.14E+02	1.06E+02	8.20E-01	---	---	1.10E+01	1.56E+00
Pd-107	---	1.56E+04	1.48E+04	---	---	---	1.26E+05	1.20E+05
Pu-239	---	5.85E+10	2.89E+10	2.51E+08	---	---	1.20E+09	4.79E+08
Pu-241	---	2.25E+07	6.36E+06	3.18E+05	---	5.34E+14	9.34E+06	2.64E+06
Ra-226	---	6.13E+07	7.67E+05	2.16E+04	2.17E+04	---	9.13E+06	1.42E+05
Rb-87	---	4.30E+02	2.31E+02	---	---	---	6.91E+03	3.71E+03
Sr-90	---	5.57E+06	4.04E+10	---	---	---	2.97E+08	2.16E+12
Tc-99	1.37E+04	3.14E+00	1.57E+01	---	---	---	2.98E+01	1.49E+02
Th-230	---	7.36E+08	8.20E+06	2.31E+05	2.32E+05	---	1.09E+08	1.52E+06
Th-231	---	5.79E+09	1.17E+09	9.08E+06	---	---	1.24E+08	1.73E+07
U-234	---	7.63E+11	7.11E+09	1.97E+08	1.97E+08	---	1.09E+11	1.29E+09
C-14N	---	1.33E+03	1.80E+03	---	---	---	8.28E+03	1.12E+04

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-23. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST19

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	3.19E+03	2.82E+03	---	---	---	2.66E+04	2.35E+04
Am-241	---	1.06E+06	3.05E+05	1.53E+04	---	2.52E+13	4.42E+05	1.27E+05
Be-10	---	6.29E+02	6.33E+02	---	---	---	6.69E+03	6.73E+03
C-14	7.74E+16	2.06E+03	2.12E+03	---	---	---	1.29E+04	1.32E+04
Cf-249	---	6.58E+07	2.88E+07	1.44E+06	---	1.89E+15	2.73E+07	1.20E+07
Cl-36	4.51E+10	2.42E+01	6.67E+00	---	---	---	1.68E+02	4.63E+01
Cm-245	---	1.14E+06	4.78E+05	2.39E+04	---	3.16E+13	4.74E+05	1.99E+05
Cs-135	---	1.87E+03	1.05E+03	---	---	---	8.80E+03	4.92E+03
Cs-137	---	1.71E+11	1.91E+12	---	---	---	7.15E+11	8.01E+12
H-3	1.18E+01	8.52E+05	---	---	---	---	2.33E+07	---
I-129	1.67E+04	5.70E-03	5.79E-03	---	---	---	6.09E-01	6.19E-01
K-40	---	1.34E+02	1.40E+02	---	---	---	8.73E+02	9.09E+02
Ni-59	---	2.39E+02	2.25E+02	---	---	---	1.44E+05	1.35E+05
Ni-63	---	1.70E+04	3.29E+04	---	---	---	2.47E+07	4.78E+07
Np-237	4.59E+15	1.17E+02	2.36E+01	1.18E+00	---	3.43E+09	4.85E+01	9.83E+00
Pa-231	---	5.23E+02	1.58E+02	1.22E+00	---	---	1.12E+01	2.32E+00
Pd-107	---	2.22E+04	2.08E+04	---	---	---	1.80E+05	1.69E+05
Pu-239	---	8.19E+10	4.21E+10	3.69E+08	---	---	1.67E+09	7.03E+08
Pu-241	---	3.18E+07	9.49E+06	4.75E+05	---	7.65E+14	1.32E+07	3.95E+06
Ra-226	---	1.63E+08	1.35E+06	3.72E+04	3.73E+04	---	2.31E+07	2.44E+05
Rb-87	---	6.25E+02	3.49E+02	---	---	---	1.00E+04	5.61E+03
Sr-90	---	6.95E+06	5.89E+10	---	---	---	3.71E+08	3.15E+12
Tc-99	1.72E+04	4.25E+00	1.58E+01	---	---	---	4.02E+01	1.50E+02
Th-230	---	1.95E+09	1.46E+07	3.99E+05	4.00E+05	---	2.74E+08	2.62E+06
Th-231	---	5.89E+09	1.74E+09	1.35E+07	---	---	1.26E+08	2.57E+07
U-234	---	2.04E+12	1.32E+10	3.54E+08	3.55E+08	---	2.84E+11	2.33E+09
C-14N	---	2.04E+03	2.14E+03	---	---	---	1.27E+04	1.33E+04

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-24. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST20

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	5.02E+03	4.33E+03	---	---	---	4.19E+04	3.61E+04
Am-241	---	1.16E+06	5.54E+05	2.77E+04	---	4.01E+13	4.84E+05	2.30E+05
Be-10	---	9.59E+02	7.29E+02	---	---	---	1.02E+04	7.75E+03
C-14	2.80E+17	2.26E+03	2.19E+03	---	---	---	1.41E+04	1.36E+04
Cf-249	---	1.05E+08	5.03E+07	2.52E+06	---	3.09E+15	4.36E+07	2.09E+07
Cl-36	1.56E+11	3.92E+01	1.03E+01	---	---	---	2.73E+02	7.15E+01
Cm-245	---	1.79E+06	8.36E+05	4.18E+04	---	5.15E+13	7.43E+05	3.47E+05
Cs-135	---	3.20E+03	1.75E+03	---	---	---	1.50E+04	8.22E+03
Cs-137	---	6.74E+11	3.29E+12	---	---	---	2.83E+12	1.38E+13
H-3	1.67E+01	8.22E+05	---	---	---	---	2.24E+07	---
I-129	5.27E+04	8.49E-03	8.20E-03	---	---	---	9.07E-01	8.76E-01
K-40	---	2.00E+02	2.14E+02	---	---	---	1.30E+03	1.39E+03
Ni-59	---	3.65E+02	3.55E+02	---	---	---	2.20E+05	2.14E+05
Ni-63	---	2.70E+04	5.00E+04	---	---	---	3.92E+07	7.27E+07
Np-237	1.64E+16	1.22E+02	4.14E+01	2.07E+00	---	5.50E+09	5.05E+01	1.72E+01
Pa-231	---	5.44E+02	2.82E+02	2.14E+00	---	---	1.17E+01	4.08E+00
Pd-107	---	3.38E+04	3.29E+04	---	---	---	2.74E+05	2.67E+05
Pu-239	---	1.32E+11	7.24E+10	6.45E+08	---	---	2.64E+09	1.23E+09
Pu-241	---	3.59E+07	1.72E+07	8.61E+05	---	1.22E+15	1.49E+07	7.16E+06
Ra-226	---	3.14E+09	1.19E+07	3.04E+05	3.05E+05	---	4.17E+08	2.00E+06
Rb-87	---	1.07E+03	5.83E+02	---	---	---	1.71E+04	9.38E+03
Sr-90	---	2.03E+07	9.12E+10	---	---	---	1.08E+09	4.87E+12
Tc-99	3.23E+04	5.73E+00	1.66E+01	---	---	---	5.43E+01	1.58E+02
Th-230	---	3.87E+10	1.36E+08	3.45E+06	3.46E+06	---	5.11E+09	2.27E+07
Th-231	---	6.13E+09	3.09E+09	2.37E+07	---	---	1.31E+08	4.50E+07
U-234	---	4.28E+13	1.33E+11	3.33E+09	3.34E+09	---	5.61E+12	2.19E+10
C-14N	---	2.27E+03	2.20E+03	---	---	---	1.42E+04	1.37E+04

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-25. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST21

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.24E+05	2.30E+04	---	---	---	1.04E+06	1.92E+05
Am-241	---	1.10E+06	1.10E+06	5.48E+04	---	5.13E+13	4.55E+05	4.55E+05
Be-10	---	1.01E+03	6.69E+02	---	---	---	1.07E+04	7.12E+03
C-14	---	1.95E+03	1.94E+03	---	---	---	1.22E+04	1.21E+04
Cf-249	---	1.89E+08	9.48E+07	4.74E+06	---	9.04E+15	7.86E+07	3.94E+07
Cl-36	1.21E+14	1.24E+02	2.41E+01	---	---	---	8.64E+02	1.68E+02
Cm-245	---	2.32E+06	1.52E+06	7.58E+04	---	1.20E+14	9.65E+05	6.30E+05
Cs-135	---	1.11E+05	1.15E+04	---	---	---	5.22E+05	5.41E+04
Cs-137	---	1.37E+14	1.38E+14	---	---	---	5.75E+14	5.79E+14
H-3	2.92E+01	7.41E+05	---	---	---	---	2.02E+07	---
I-129	2.79E+06	8.64E-03	7.52E-03	---	---	---	9.23E-01	8.03E-01
K-40	---	4.08E+02	2.18E+02	---	---	---	2.65E+03	1.41E+03
Ni-59	---	1.34E+03	8.17E+02	---	---	---	8.04E+05	4.92E+05
Ni-63	---	1.88E+05	1.88E+05	---	---	---	2.73E+08	2.73E+08
Np-237	5.55E+17	1.10E+02	1.32E+02	5.50E+00	---	5.09E+09	4.57E+01	5.47E+01
Pa-231	---	4.93E+02	5.47E+02	5.53E+00	---	---	1.05E+01	1.27E+01
Pd-107	---	1.24E+05	7.56E+04	---	---	---	1.01E+06	6.14E+05
Pu-239	---	1.96E+11	1.13E+11	1.21E+09	---	---	3.79E+09	2.30E+09
Pu-241	---	3.37E+07	3.35E+07	1.68E+06	---	1.60E+15	1.40E+07	1.39E+07
Ra-226	---	3.19E+14	1.15E+13	3.50E+11	3.51E+11	---	5.43E+13	2.29E+12
Rb-87	---	3.71E+04	3.84E+03	---	---	---	5.96E+05	6.18E+04
Sr-90	---	1.77E+09	9.78E+10	---	---	---	9.45E+10	5.23E+12
Tc-99	1.98E+05	5.43E+00	1.45E+01	---	---	---	5.14E+01	1.37E+02
Th-230	---	3.89E+15	1.30E+14	3.93E+12	3.94E+12	---	6.57E+14	2.57E+13
Th-231	---	5.55E+09	6.15E+09	6.22E+07	---	---	1.19E+08	1.42E+08
U-234	---	4.23E+18	1.26E+17	3.74E+15	3.75E+15	---	7.08E+17	2.45E+16
C-14N	---	1.96E+03	1.95E+03	---	---	---	1.22E+04	1.21E+04

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-26. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST22

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.30E+05	1.26E+05	---	---	---	1.09E+06	1.05E+06
Am-241	---	1.18E+06	1.22E+06	5.90E+04	---	5.07E+13	4.91E+05	5.07E+05
Be-10	---	6.86E+02	6.16E+02	---	---	---	7.30E+03	6.55E+03
C-14	1.67E+17	2.01E+03	2.02E+03	---	---	---	1.25E+04	1.26E+04
Cf-249	---	1.68E+08	9.67E+07	4.84E+06	---	9.01E+15	7.00E+07	4.02E+07
Cl-36	1.22E+11	2.22E+02	2.33E+01	---	---	---	1.54E+03	1.62E+02
Cm-245	---	2.18E+06	1.60E+06	8.02E+04	---	1.12E+14	9.07E+05	6.67E+05
Cs-135	---	6.48E+04	6.12E+04	---	---	---	3.04E+05	2.87E+05
Cs-137	---	7.80E+11	8.25E+13	---	---	---	3.27E+12	3.46E+14
H-3	3.50E+01	6.05E+05	---	---	---	---	1.65E+07	---
I-129	7.00E+04	8.66E-03	7.60E-03	---	---	---	9.25E-01	8.12E-01
K-40	---	2.83E+02	1.67E+02	---	---	---	1.84E+03	1.09E+03
Ni-59	---	5.03E+03	8.56E+02	---	---	---	3.03E+06	5.15E+05
Ni-63	---	3.40E+05	3.97E+05	---	---	---	4.95E+08	5.77E+08
Np-237	1.18E+16	1.20E+02	1.81E+02	6.02E+00	---	5.34E+09	5.00E+01	7.51E+01
Pa-231	---	5.38E+02	7.23E+02	6.04E+00	---	---	1.15E+01	1.74E+01
Pd-107	---	4.66E+05	7.93E+04	---	---	---	3.78E+06	6.43E+05
Pu-239	---	1.77E+11	1.18E+11	1.26E+09	---	---	3.53E+09	2.40E+09
Pu-241	---	3.62E+07	3.72E+07	1.81E+06	---	1.58E+15	1.51E+07	1.55E+07
Ra-226	---	6.25E+09	1.15E+08	3.27E+06	3.28E+06	---	9.91E+08	2.15E+07
Rb-87	---	2.16E+04	2.04E+04	---	---	---	3.47E+05	3.28E+05
Sr-90	---	2.57E+07	6.47E+10	---	---	---	1.37E+09	3.45E+12
Tc-99	2.23E+05	5.76E+00	1.56E+01	---	---	---	5.46E+01	1.48E+02
Th-230	---	7.69E+10	1.34E+09	3.78E+07	3.79E+07	---	1.22E+10	2.48E+08
Th-231	---	6.05E+09	8.13E+09	6.80E+07	---	---	1.30E+08	1.96E+08
U-234	---	8.67E+13	1.36E+12	3.78E+10	3.79E+10	---	1.36E+13	2.48E+11
C-14N	---	2.03E+03	2.03E+03	---	---	---	1.27E+04	1.27E+04

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-27. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST23

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	7.95E+02	8.15E+02	---	---	---	6.63E+03	6.80E+03
Am-241	---	4.17E+05	2.30E+05	1.15E+04	---	1.12E+13	1.73E+05	9.54E+04
Be-10	---	1.84E+02	2.67E+02	---	---	---	1.95E+03	2.84E+03
C-14	8.11E+17	5.07E+02	4.87E+02	---	---	---	3.16E+03	3.03E+03
Cf-249	---	2.34E+07	1.36E+07	6.78E+05	---	1.05E+15	9.74E+06	5.63E+06
Cl-36	7.60E+11	7.84E+00	2.22E+00	---	---	---	5.45E+01	1.54E+01
Cm-245	---	4.27E+05	2.58E+05	1.29E+04	---	1.67E+13	1.78E+05	1.07E+05
Cs-135	---	7.53E+02	4.84E+02	---	---	---	3.53E+03	2.27E+03
Cs-137	---	5.25E+09	7.65E+11	---	---	---	2.20E+10	3.21E+12
H-3	6.77E+01	4.54E+05	---	---	---	---	1.24E+07	---
I-129	5.33E+05	1.84E-03	1.86E-03	---	---	---	1.97E-01	1.98E-01
K-40	---	4.32E+01	4.87E+01	---	---	---	2.81E+02	3.16E+02
Ni-59	---	8.83E+01	8.86E+01	---	---	---	5.32E+04	5.33E+04
Ni-63	---	3.30E+03	1.21E+04	---	---	---	4.80E+06	1.77E+07
Np-237	---	3.43E+01	2.04E+01	1.02E+00	---	1.40E+09	1.43E+01	8.46E+00
Pa-231	---	1.55E+02	1.49E+02	1.08E+00	---	---	3.26E+00	2.06E+00
Pd-107	---	8.19E+03	8.21E+03	---	---	---	6.64E+04	6.66E+04
Pu-239	---	2.98E+10	1.91E+10	1.87E+08	---	---	6.11E+08	3.56E+08
Pu-241	---	1.26E+07	7.07E+06	3.54E+05	---	3.45E+14	5.23E+06	2.94E+06
Ra-226	---	2.82E+06	2.60E+05	8.66E+03	8.69E+03	---	5.44E+05	5.66E+04
Rb-87	---	2.51E+02	1.61E+02	---	---	---	4.03E+03	2.59E+03
Sr-90	---	1.58E+05	2.50E+10	---	---	---	8.45E+06	1.33E+12
Tc-99	2.91E+04	1.40E+00	1.11E+01	---	---	---	1.32E+01	1.06E+02
Th-230	---	3.11E+07	2.55E+06	8.34E+04	8.37E+04	---	5.92E+06	5.46E+05
Th-231	---	1.75E+09	1.60E+09	1.17E+07	---	---	3.68E+07	2.22E+07
U-234	---	2.91E+10	2.00E+09	6.43E+07	6.45E+07	---	5.43E+09	4.20E+08
C-14K	---	3.14E+01	1.30E+01	---	---	---	1.96E+02	8.09E+01
I-129K	1.11E+07	4.59E-02	5.42E-02	---	---	---	4.91E+00	5.79E+00
Tc-99K	3.03E+05	8.99E+00	1.10E+01	---	---	---	8.51E+01	1.04E+02
Am-241A	---	6.88E+05	5.69E+05	2.84E+04	---	3.62E+13	2.86E+05	2.36E+05
C-14A	---	2.53E+02	2.03E+02	---	---	---	1.58E+03	1.26E+03
Cf-249A	---	2.46E+07	1.21E+07	6.07E+05	---	1.30E+15	1.02E+07	5.05E+06
Cm-245A	---	4.22E+05	2.43E+05	1.22E+04	---	2.26E+13	1.75E+05	1.01E+05
Cs-135A	---	7.95E+00	6.03E+00	---	---	---	3.73E+01	2.83E+01
Cs-137A	---	8.58E+07	1.18E+10	---	---	---	3.60E+08	4.97E+10

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
H-3A	2.30E+04	2.37E+05	---	---	---	---	6.48E+06	---
I-129A	2.93E+04	4.80E-04	2.31E-03	---	---	---	5.13E-02	2.47E-01
K-40A	---	6.33E-01	7.12E-01	---	---	---	4.11E+00	4.62E+00
Ni-59A	---	1.71E+01	3.67E+00	---	---	---	1.03E+04	2.21E+03
Ni-63A	---	2.75E+03	1.83E+03	---	---	---	3.99E+06	2.66E+06
Np-237A	---	1.09E+06	1.11E+05	5.54E+03	---	2.89E+13	4.54E+05	4.60E+04
Pd-107A	---	8.96E+04	1.25E+04	---	---	---	7.27E+05	1.01E+05
Pu-239A	---	8.06E+12	1.05E+12	9.21E+09	---	---	1.20E+11	1.75E+10
Pu-241A	---	3.99E+07	3.30E+07	1.65E+06	---	2.09E+15	1.66E+07	1.37E+07
Ra-226A	---	---	1.87E+18	3.21E+16	3.22E+16	---	---	2.13E+17
Rb-87A	---	2.65E+00	2.01E+00	---	---	---	4.26E+01	3.23E+01
Sr-90A	---	9.50E+05	4.54E+08	---	---	---	5.07E+07	2.42E+10
Tc-99A	4.99E+02	2.81E-01	4.12E+00	---	---	---	2.66E+00	3.90E+01
Th-231A	---	1.56E+14	1.44E+13	1.21E+11	---	---	2.23E+12	2.30E+11
U-234A	---	---	---	---	---	---	---	---

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-28. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ST24

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	6.99E+02	7.38E+02	---	---	---	5.83E+03	6.16E+03
Am-241	5.38E+19	3.80E+05	3.70E+04	1.85E+03	---	6.62E+12	1.58E+05	1.54E+04
Be-10	---	1.65E+02	2.52E+02	---	---	---	1.75E+03	2.68E+03
C-14	4.83E+11	3.87E+02	1.39E+02	---	---	---	2.41E+03	8.65E+02
Cf-249	---	2.00E+07	4.41E+06	2.21E+05	---	7.18E+14	8.30E+06	1.83E+06
Cl-36	1.85E+07	3.23E+00	2.26E+00	---	---	---	2.24E+01	1.57E+01
Cm-245	---	3.66E+05	6.52E+04	3.26E+03	---	1.09E+13	1.52E+05	2.71E+04
Cs-135	---	6.02E+02	4.21E+02	---	---	---	2.83E+03	1.98E+03
Cs-137	---	2.17E+09	6.02E+11	---	---	---	9.12E+09	2.53E+12
H-3	7.32E+00	5.27E+05	---	---	---	---	1.44E+07	---
I-129	1.52E+02	1.99E-03	2.72E-03	---	---	---	2.12E-01	2.90E-01
K-40	---	3.87E+01	4.35E+01	---	---	---	2.51E+02	2.83E+02
Ni-59	---	7.97E+01	8.00E+01	---	---	---	4.80E+04	4.82E+04
Ni-63	---	2.45E+03	1.10E+04	---	---	---	3.57E+06	1.59E+07
Np-237	2.75E+13	3.04E+01	3.18E+00	1.59E-01	---	6.25E+08	1.26E+01	1.32E+00
Pa-231	1.66E+17	1.38E+02	2.00E+01	1.62E-01	---	---	2.90E+00	3.08E-01
Pd-107	---	7.39E+03	7.42E+03	---	---	---	6.00E+04	6.02E+04
Pu-239	---	2.59E+10	6.70E+09	5.30E+07	---	---	5.21E+08	1.01E+08
Pu-241	---	1.15E+07	1.15E+06	5.73E+04	---	2.05E+14	4.77E+06	4.77E+05
Ra-226	---	5.95E+05	8.62E+04	3.00E+03	3.01E+03	---	1.23E+05	1.96E+04
Rb-87	---	2.01E+02	1.40E+02	---	---	---	3.22E+03	2.26E+03
Sr-90	---	9.44E+04	2.32E+10	---	---	---	5.04E+06	1.24E+12
Tc-99	4.89E+02	1.47E+00	2.00E+01	---	---	---	1.40E+01	1.89E+02
Th-230	---	6.32E+06	7.98E+05	2.73E+04	2.74E+04	---	1.28E+06	1.78E+05
Th-231	---	1.55E+09	2.25E+08	1.82E+06	---	---	3.26E+07	3.46E+06
U-234	---	5.41E+09	5.70E+08	1.90E+07	1.91E+07	---	1.08E+09	1.24E+08

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-29. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ET01

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	3.61E+03	4.19E+03	---	---	---	3.01E+04	3.50E+04
Am-241	4.80E+18	1.19E+06	5.44E+05	2.72E+04	---	3.02E+13	4.95E+05	2.26E+05
Be-10	---	8.52E+02	8.01E+02	---	---	---	9.06E+03	8.52E+03
C-14	4.16E+17	2.93E+03	2.72E+03	---	---	---	1.83E+04	1.70E+04
Cf-249	---	7.06E+07	3.76E+07	1.88E+06	---	1.94E+15	2.94E+07	1.56E+07
Cl-36	1.21E+09	1.91E+01	5.54E+00	---	---	---	1.32E+02	3.85E+01
Cm-245	---	1.30E+06	7.11E+05	3.56E+04	---	3.45E+13	5.39E+05	2.96E+05
Cs-135	---	1.71E+03	1.71E+03	---	---	---	8.05E+03	8.05E+03
Cs-137	---	1.36E+10	2.77E+12	---	---	---	5.71E+10	1.16E+13
H-3	1.04E+01	3.69E+06	---	---	---	---	1.01E+08	---
I-129	2.26E+01	4.68E-03	6.57E-03	---	---	---	5.00E-01	7.02E-01
K-40	---	2.52E+02	2.20E+02	---	---	---	1.64E+03	1.43E+03
Ni-59	---	5.25E+02	4.96E+02	---	---	---	3.16E+05	2.98E+05
Ni-63	---	1.68E+04	8.82E+04	---	---	---	2.44E+07	1.28E+08
Np-237	3.86E+12	1.34E+02	1.53E+01	7.67E-01	---	2.49E+09	5.57E+01	6.38E+00
Pa-231	5.99E+15	5.97E+02	1.06E+02	8.04E-01	---	---	1.29E+01	1.53E+00
Pd-107	---	4.87E+04	4.59E+04	---	---	---	3.95E+05	3.73E+05
Pu-239	---	9.25E+10	5.32E+10	5.17E+08	---	---	1.85E+09	9.85E+08
Pu-241	---	3.60E+07	1.82E+07	9.08E+05	---	9.28E+14	1.50E+07	7.55E+06
Ra-226	---	1.82E+06	5.78E+04	1.82E+03	1.82E+03	---	2.91E+05	1.19E+04
Rb-87	---	5.71E+02	5.71E+02	---	---	---	9.18E+03	9.18E+03
Sr-90	---	3.62E+06	1.31E+11	---	---	---	1.93E+08	7.02E+12
Tc-99	2.60E+01	4.77E+00	4.75E+01	---	---	---	4.51E+01	4.50E+02
Th-230	---	1.94E+07	5.76E+05	1.79E+04	1.80E+04	---	3.07E+06	1.17E+05
Th-231	---	6.72E+09	1.15E+09	8.78E+06	---	---	1.45E+08	1.67E+07
U-234	---	1.76E+10	4.84E+08	1.48E+07	1.48E+07	---	2.77E+09	9.69E+07
I-129D	2.62E+04	1.51E+00	1.10E+00	---	---	---	1.61E+02	1.17E+02
I-129E	6.00E+04	3.46E+00	2.52E+00	---	---	---	3.70E+02	2.69E+02
I-129G	2.03E+02	1.51E-02	1.22E-02	---	---	---	1.61E+00	1.30E+00
I-129H	1.47E+03	9.69E-02	6.91E-02	---	---	---	1.04E+01	7.38E+00
I-129I	3.85E+04	2.22E+00	1.62E+00	---	---	---	2.37E+02	1.73E+02
I-129J	2.29E+02	1.68E-02	1.32E-02	---	---	---	1.79E+00	1.40E+00

Notes: Numerical values exceeding 1.0E20 indicated by "---". All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-30. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ET02

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	5.10E+03	4.50E+03	---	---	---	4.26E+04	3.75E+04
Am-241	3.56E+13	9.67E+05	6.45E+04	3.23E+03	---	1.11E+13	4.02E+05	2.68E+04
Be-10	3.44E+15	4.91E+02	4.28E+02	---	---	---	5.22E+03	4.55E+03
C-14	3.45E+07	9.78E+02	2.57E+02	---	---	---	6.10E+03	1.60E+03
Cf-249	---	7.39E+07	7.33E+06	3.66E+05	---	1.35E+15	3.07E+07	3.05E+06
Cl-36	4.12E+03	7.23E+00	6.46E+00	---	---	---	5.02E+01	4.49E+01
Cm-245	7.38E+16	1.24E+06	1.09E+05	5.45E+03	---	1.99E+13	5.16E+05	4.53E+04
Cs-135	---	6.22E+03	3.38E+03	---	---	---	2.92E+04	1.58E+04
Cs-137	---	1.91E+11	9.86E+12	---	---	---	8.02E+11	4.14E+13
H-3	8.19E+00	2.70E+06	---	---	---	---	7.37E+07	---
I-129	5.98E-02	5.21E-03	4.30E-02	---	---	---	5.57E-01	4.59E+00
K-40	8.06E+15	1.36E+02	1.26E+02	---	---	---	8.81E+02	8.21E+02
Ni-59	7.83E+19	4.00E+02	2.94E+02	---	---	---	2.41E+05	1.77E+05
Ni-63	3.99E+19	3.53E+04	6.25E+04	---	---	---	5.13E+07	9.09E+07
Np-237	3.18E+07	2.18E+01	5.52E+00	2.76E-01	---	5.83E+08	9.08E+00	2.30E+00
Pa-231	8.09E+09	1.43E+02	3.27E+01	2.80E-01	---	---	2.13E+00	5.33E-01
Pd-107	---	3.71E+04	2.72E+04	---	---	---	3.01E+05	2.21E+05
Pu-239	---	9.31E+10	1.09E+10	8.91E+07	---	---	1.84E+09	1.70E+08
Pu-241	9.26E+15	2.97E+07	1.99E+06	9.94E+04	---	3.52E+14	1.23E+07	8.27E+05
Ra-226	---	2.21E+04	3.56E+03	1.37E+02	1.37E+02	---	4.19E+03	8.92E+02
Rb-87	---	2.07E+03	1.12E+03	---	---	---	3.33E+04	1.81E+04
Sr-90	4.35E+14	3.57E+06	6.84E+10	---	---	---	1.91E+08	3.66E+12
Tc-99	1.32E+00	6.27E+00	7.51E+01	---	---	---	5.94E+01	7.11E+02
Th-230	---	1.77E+05	2.18E+04	8.08E+02	8.11E+02	---	3.25E+04	5.27E+03
Th-231	2.45E+15	1.58E+09	3.66E+08	3.16E+06	---	---	2.37E+07	6.01E+06
U-234	---	1.15E+08	1.09E+07	3.88E+05	3.89E+05	---	2.04E+07	2.53E+06

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-31. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ET03

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.05E+18	4.87E+12	---	---	---	8.73E+18	4.07E+13
Am-241	3.80E+18	2.65E+07	7.11E+04	3.55E+03	---	3.87E+13	1.10E+07	2.95E+04
Be-10	---	3.03E+07	9.26E+03	---	---	---	3.22E+08	9.84E+04
C-14	5.49E+08	2.41E+02	4.36E+01	---	---	---	1.50E+03	2.72E+02
Cf-249	---	2.73E+10	1.29E+07	6.47E+05	---	8.32E+15	1.14E+10	5.38E+06
Cl-36	1.37E+05	4.51E+00	5.12E+00	---	---	---	3.14E+01	3.56E+01
Cm-245	---	2.52E+08	1.62E+05	8.09E+03	---	1.00E+14	1.05E+08	6.73E+04
Cs-135	---	8.48E+18	2.56E+13	---	---	---	3.98E+19	1.20E+14
Cs-137	---	---	---	---	---	---	---	---
H-3	2.13E+01	1.42E+06	---	---	---	---	3.89E+07	---
I-129	5.60E+00	4.70E-03	2.99E-02	---	---	---	5.02E-01	3.19E+00
K-40	---	4.36E+07	9.76E+03	---	---	---	2.83E+08	6.34E+04
Ni-59	---	1.18E+12	2.88E+07	---	---	---	7.10E+14	1.73E+10
Ni-63	---	1.82E+14	1.43E+10	---	---	---	2.64E+17	2.08E+13
Np-237	2.92E+12	1.28E+02	3.41E+00	1.71E-01	---	1.16E+09	5.34E+01	1.42E+00
Pa-231	8.17E+15	1.37E+03	2.18E+01	1.73E-01	---	---	1.45E+01	3.29E-01
Pd-107	---	1.09E+14	2.67E+09	---	---	---	8.88E+14	2.16E+10
Pu-239	---	5.52E+13	2.30E+10	1.39E+08	---	---	4.07E+11	2.65E+08
Pu-241	---	1.46E+09	2.28E+06	1.14E+05	---	1.29E+15	6.07E+08	9.47E+05
Ra-226	---	---	---	---	---	---	---	---
Rb-87	---	2.83E+18	8.54E+12	---	---	---	4.54E+19	1.37E+14
Sr-90	---	4.38E+15	7.84E+13	---	---	---	2.34E+17	4.19E+15
Tc-99	7.61E+01	4.04E+00	3.99E+01	---	---	---	3.82E+01	3.78E+02
Th-230	---	---	---	---	---	---	---	---
Th-231	---	1.29E+10	2.44E+08	1.95E+06	---	---	1.40E+08	3.71E+06
U-234	---	---	---	---	---	---	---	---

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-32. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ET04

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.75E+03	2.86E+03	---	---	---	1.46E+04	2.39E+04
Am-241	---	1.02E+06	8.36E+05	4.18E+04	---	2.85E+13	4.26E+05	3.47E+05
Be-10	---	5.02E+02	7.39E+02	---	---	---	5.34E+03	7.85E+03
C-14	6.77E+17	1.04E+03	1.65E+03	---	---	---	6.46E+03	1.03E+04
Cf-249	---	6.16E+07	3.73E+07	1.86E+06	---	2.72E+15	2.56E+07	1.55E+07
Cl-36	2.48E+11	3.87E+01	3.91E+00	---	---	---	2.69E+02	2.71E+01
Cm-245	---	1.10E+06	7.46E+05	3.73E+04	---	4.35E+13	4.55E+05	3.10E+05
Cs-135	---	1.21E+03	1.24E+03	---	---	---	5.69E+03	5.82E+03
Cs-137	---	6.05E+08	1.27E+12	---	---	---	2.54E+09	5.32E+12
H-3	2.73E+01	4.41E+05	---	---	---	---	1.20E+07	---
I-129	1.22E+05	3.31E-03	3.29E-03	---	---	---	3.53E-01	3.51E-01
K-40	---	1.18E+02	1.64E+02	---	---	---	7.64E+02	1.07E+03
Ni-59	---	2.53E+02	3.58E+02	---	---	---	1.52E+05	2.15E+05
Ni-63	---	1.79E+03	4.94E+04	---	---	---	2.60E+06	7.18E+07
Np-237	---	9.01E+01	1.28E+02	4.50E+00	---	3.44E+09	3.74E+01	5.32E+01
Pa-231	---	4.24E+02	6.65E+02	4.45E+00	---	---	8.48E+00	1.27E+01
Pd-107	---	2.35E+04	3.32E+04	---	---	---	1.91E+05	2.69E+05
Pu-239	---	7.88E+10	5.04E+10	5.31E+08	---	---	1.58E+09	1.01E+09
Pu-241	---	3.09E+07	2.53E+07	1.26E+06	---	8.77E+14	1.28E+07	1.05E+07
Ra-226	---	3.14E+06	6.81E+04	2.03E+03	2.04E+03	---	4.88E+05	1.33E+04
Rb-87	---	4.04E+02	4.13E+02	---	---	---	6.49E+03	6.64E+03
Sr-90	---	5.10E+04	7.73E+10	---	---	---	2.72E+06	4.13E+12
Tc-99	1.43E+04	2.58E+00	1.26E+01	---	---	---	2.44E+01	1.19E+02
Th-230	---	3.64E+07	7.68E+05	2.28E+04	2.28E+04	---	5.68E+06	1.49E+05
Th-231	---	4.79E+09	7.36E+09	5.06E+07	---	---	9.63E+07	1.39E+08
U-234	---	4.15E+10	7.73E+08	2.25E+07	2.26E+07	---	6.42E+09	1.48E+08

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-33. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ET05

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.79E+03	2.20E+03	---	---	---	1.49E+04	1.83E+04
Am-241	1.69E+13	3.40E+05	2.32E+04	1.16E+03	---	3.94E+12	1.41E+05	9.63E+03
Be-10	1.07E+15	5.05E+02	1.82E+02	---	---	---	5.37E+03	1.93E+03
C-14	1.77E+10	1.08E+03	2.92E+02	---	---	---	6.72E+03	1.82E+03
Cf-249	---	2.88E+07	3.09E+06	1.54E+05	---	4.81E+14	1.20E+07	1.28E+06
Cl-36	4.31E+04	3.36E+00	3.36E+00	---	---	---	2.34E+01	2.33E+01
Cm-245	2.49E+16	5.17E+05	4.39E+04	2.20E+03	---	7.31E+12	2.15E+05	1.83E+04
Cs-135	---	9.75E+02	9.87E+02	---	---	---	4.58E+03	4.63E+03
Cs-137	---	4.45E+08	9.72E+11	---	---	---	1.87E+09	4.08E+12
H-3	6.72E+00	1.07E+06	---	---	---	---	2.92E+07	---
I-129	8.44E-02	4.44E-03	2.15E-02	---	---	---	4.74E-01	2.30E+00
K-40	9.73E+15	1.09E+02	9.40E+01	---	---	---	7.11E+02	6.11E+02
Ni-59	---	2.15E+02	2.01E+02	---	---	---	1.30E+05	1.21E+05
Ni-63	8.20E+19	2.76E+03	2.97E+04	---	---	---	4.01E+06	4.32E+07
Np-237	1.83E+07	6.32E+00	1.53E+00	7.64E-02	---	1.43E+08	2.63E+00	6.35E-01
Pa-231	2.26E+09	4.18E+01	7.58E+00	7.60E-02	---	---	6.21E-01	1.45E-01
Pd-107	---	1.99E+04	1.86E+04	---	---	---	1.62E+05	1.51E+05
Pu-239	---	3.89E+10	4.74E+09	3.63E+07	---	---	7.37E+08	6.90E+07
Pu-241	3.74E+15	1.21E+07	7.36E+05	3.68E+04	---	1.30E+14	5.04E+06	3.06E+05
Ra-226	---	1.06E+04	1.52E+03	5.62E+01	5.64E+01	---	2.04E+03	3.66E+02
Rb-87	---	3.25E+02	3.29E+02	---	---	---	5.22E+03	5.28E+03
Sr-90	3.02E+14	9.81E+04	5.10E+10	---	---	---	5.24E+06	2.73E+12
Tc-99	1.70E+00	6.53E+00	9.10E+01	---	---	---	6.18E+01	8.62E+02
Th-230	---	1.14E+05	1.33E+04	4.76E+02	4.78E+02	---	2.16E+04	3.11E+03
Th-231	1.78E+15	4.56E+08	8.69E+07	8.71E+05	---	---	6.86E+06	1.66E+06
U-234	---	9.94E+07	9.10E+06	3.15E+05	3.16E+05	---	1.83E+07	2.06E+06

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-34. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ET06

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.70E+03	1.68E+03	---	---	---	1.42E+04	1.41E+04
Am-241	1.90E+14	5.09E+05	5.45E+04	2.72E+03	---	7.92E+12	2.11E+05	2.26E+04
Be-10	1.81E+17	3.59E+02	3.61E+02	---	---	---	3.82E+03	3.84E+03
C-14	3.19E+10	1.14E+03	3.60E+02	---	---	---	7.08E+03	2.24E+03
Cf-249	---	3.64E+07	7.61E+06	3.80E+05	---	8.39E+14	1.51E+07	3.16E+06
Cl-36	5.57E+04	3.47E+00	3.31E+00	---	---	---	2.41E+01	2.30E+01
Cm-245	3.05E+17	6.39E+05	1.10E+05	5.51E+03	---	1.33E+13	2.66E+05	4.58E+04
Cs-135	---	8.15E+02	6.84E+02	---	---	---	3.83E+03	3.21E+03
Cs-137	---	1.01E+10	8.03E+11	---	---	---	4.24E+10	3.37E+12
H-3	1.02E+01	9.30E+05	---	---	---	---	2.54E+07	---
I-129	1.45E-01	3.46E-03	1.48E-02	---	---	---	3.70E-01	1.58E+00
K-40	1.67E+18	8.26E+01	8.38E+01	---	---	---	5.37E+02	5.44E+02
Ni-59	---	1.63E+02	1.61E+02	---	---	---	9.84E+04	9.67E+04
Ni-63	---	6.52E+03	2.24E+04	---	---	---	9.48E+06	3.26E+07
Np-237	1.95E+08	1.45E+01	2.12E+00	1.06E-01	---	2.54E+08	6.04E+00	8.83E-01
Pa-231	4.60E+10	9.90E+01	1.17E+01	1.06E-01	---	---	1.47E+00	2.02E-01
Pd-107	---	1.52E+04	1.49E+04	---	---	---	1.23E+05	1.21E+05
Pu-239	---	4.64E+10	1.16E+10	8.98E+07	---	---	9.27E+08	1.71E+08
Pu-241	4.39E+16	1.67E+07	1.79E+06	8.94E+04	---	2.63E+14	6.96E+06	7.43E+05
Ra-226	---	1.22E+06	3.94E+04	1.21E+03	1.22E+03	---	2.00E+05	7.95E+03
Rb-87	---	2.72E+02	2.28E+02	---	---	---	4.37E+03	3.66E+03
Sr-90	5.74E+16	1.04E+06	3.47E+10	---	---	---	5.56E+07	1.85E+12
Tc-99	4.35E+00	7.91E+00	8.03E+01	---	---	---	7.49E+01	7.61E+02
Th-230	---	1.46E+07	4.07E+05	1.23E+04	1.24E+04	---	2.37E+06	8.08E+04
Th-231	2.89E+16	1.06E+09	1.33E+08	1.21E+06	---	---	1.58E+07	2.31E+06
U-234	---	1.43E+10	3.34E+08	9.92E+06	9.95E+06	---	2.28E+09	6.50E+07

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-35. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ET07

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	3.84E+02	1.98E+03	---	---	---	3.21E+03	1.65E+04
Am-241	1.47E+16	5.27E+05	2.97E+04	1.48E+03	---	7.74E+12	2.19E+05	1.23E+04
Be-10	---	1.74E+02	3.31E+02	---	---	---	1.85E+03	3.52E+03
C-14	8.20E+07	1.11E+02	2.80E+01	---	---	---	6.94E+02	1.74E+02
Cf-249	---	2.80E+07	4.37E+06	2.19E+05	---	8.90E+14	1.17E+07	1.82E+06
Cl-36	1.85E+04	2.61E+00	3.71E+00	---	---	---	1.81E+01	2.58E+01
Cm-245	2.81E+19	5.44E+05	6.16E+04	3.08E+03	---	1.39E+13	2.26E+05	2.56E+04
Cs-135	---	3.98E+02	8.11E+02	---	---	---	1.87E+03	3.81E+03
Cs-137	---	1.15E+06	1.15E+12	---	---	---	4.84E+06	4.80E+12
H-3	9.15E+00	8.37E+05	---	---	---	---	2.29E+07	---
I-129	7.90E-01	2.92E-03	2.50E-02	---	---	---	3.12E-01	2.67E+00
K-40	---	3.90E+01	9.40E+01	---	---	---	2.54E+02	6.11E+02
Ni-59	---	8.70E+01	1.95E+02	---	---	---	5.24E+04	1.17E+05
Ni-63	---	1.65E+02	2.70E+04	---	---	---	2.40E+05	3.92E+07
Np-237	1.36E+10	1.62E+01	1.28E+00	6.39E-02	---	2.90E+08	6.74E+00	5.31E-01
Pa-231	1.80E+13	1.31E+02	7.06E+00	6.33E-02	---	---	1.73E+00	1.21E-01
Pd-107	---	8.10E+03	1.81E+04	---	---	---	6.57E+04	1.47E+05
Pu-239	---	3.76E+10	7.09E+09	5.07E+07	---	---	7.51E+08	9.64E+07
Pu-241	3.69E+18	1.71E+07	9.68E+05	4.84E+04	---	2.54E+14	7.09E+06	4.02E+05
Ra-226	---	2.62E+02	2.56E+02	1.13E+01	1.13E+01	---	7.34E+01	7.32E+01
Rb-87	---	1.33E+02	2.70E+02	---	---	---	2.13E+03	4.34E+03
Sr-90	---	1.01E+03	5.71E+10	---	---	---	5.40E+04	3.05E+12
Tc-99	2.35E+00	3.13E+00	4.20E+01	---	---	---	2.96E+01	3.98E+02
Th-230	---	1.99E+03	1.36E+03	5.81E+01	5.84E+01	---	5.20E+02	3.77E+02
Th-231	1.67E+18	1.32E+09	8.07E+07	7.30E+05	---	---	1.76E+07	1.39E+06
U-234	---	1.21E+06	5.67E+05	2.29E+04	2.30E+04	---	2.99E+05	1.49E+05

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-36. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ET08

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	4.82E+02	2.63E+03	---	---	---	4.02E+03	2.19E+04
Am-241	1.24E+16	6.96E+05	3.53E+04	1.77E+03	---	9.58E+12	2.89E+05	1.47E+04
Be-10	---	2.38E+02	3.99E+02	---	---	---	2.53E+03	4.24E+03
C-14	9.66E+07	1.50E+02	3.82E+01	---	---	---	9.33E+02	2.38E+02
Cf-249	---	3.80E+07	5.15E+06	2.57E+05	---	1.13E+15	1.58E+07	2.14E+06
Cl-36	2.25E+04	3.63E+00	5.34E+00	---	---	---	2.52E+01	3.71E+01
Cm-245	2.31E+19	7.39E+05	7.22E+04	3.61E+03	---	1.75E+13	3.07E+05	3.00E+04
Cs-135	---	5.48E+02	1.09E+03	---	---	---	2.57E+03	5.13E+03
Cs-137	---	7.39E+05	1.54E+12	---	---	---	3.10E+06	6.45E+12
H-3	1.25E+01	7.77E+05	---	---	---	---	2.12E+07	---
I-129	1.01E+00	4.06E-03	3.39E-02	---	---	---	4.33E-01	3.62E+00
K-40	---	5.34E+01	1.24E+02	---	---	---	3.47E+02	8.05E+02
Ni-59	---	1.20E+02	2.75E+02	---	---	---	7.20E+04	1.65E+05
Ni-63	---	1.81E+02	3.80E+04	---	---	---	2.62E+05	5.53E+07
Np-237	1.17E+10	1.88E+01	1.69E+00	8.47E-02	---	3.67E+08	7.81E+00	7.04E-01
Pa-231	1.24E+13	1.52E+02	9.10E+00	8.37E-02	---	---	1.99E+00	1.59E-01
Pd-107	---	1.11E+04	2.55E+04	---	---	---	9.04E+04	2.07E+05
Pu-239	---	5.11E+10	8.34E+09	5.96E+07	---	---	1.02E+09	1.13E+08
Pu-241	3.08E+18	2.29E+07	1.14E+06	5.72E+04	---	3.14E+14	9.51E+06	4.75E+05
Ra-226	---	3.42E+02	3.45E+02	1.51E+01	1.52E+01	---	9.79E+01	1.01E+02
Rb-87	---	1.82E+02	3.64E+02	---	---	---	2.93E+03	5.85E+03
Sr-90	6.30E+19	8.56E+02	7.92E+10	---	---	---	4.57E+04	4.23E+12
Tc-99	2.80E+00	4.31E+00	4.20E+01	---	---	---	4.08E+01	3.97E+02
Th-230	---	2.20E+03	1.68E+03	7.21E+01	7.24E+01	---	5.95E+02	4.68E+02
Th-231	1.46E+18	1.54E+09	1.04E+08	9.67E+05	---	---	2.04E+07	1.84E+06
U-234	---	1.16E+06	6.16E+05	2.52E+04	2.53E+04	---	2.94E+05	1.64E+05

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-37. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ET09

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	5.29E+02	3.07E+03	---	---	---	4.42E+03	2.56E+04
Am-241	2.26E+15	8.12E+05	4.03E+04	2.01E+03	---	1.10E+13	3.37E+05	1.67E+04
Be-10	1.03E+19	2.75E+02	4.57E+02	---	---	---	2.92E+03	4.86E+03
C-14	2.73E+07	1.75E+02	4.46E+01	---	---	---	1.09E+03	2.78E+02
Cf-249	---	4.45E+07	5.87E+06	2.94E+05	---	1.30E+15	1.85E+07	2.44E+06
Cl-36	7.17E+03	4.37E+00	6.52E+00	---	---	---	3.03E+01	4.53E+01
Cm-245	3.71E+18	8.68E+05	8.23E+04	4.12E+03	---	2.01E+13	3.61E+05	3.42E+04
Cs-135	---	6.16E+02	1.28E+03	---	---	---	2.89E+03	6.00E+03
Cs-137	---	7.48E+05	1.80E+12	---	---	---	3.14E+06	7.56E+12
H-3	1.50E+01	7.22E+05	---	---	---	---	1.97E+07	---
I-129	3.67E-01	4.94E-03	4.00E-02	---	---	---	5.28E-01	4.27E+00
K-40	2.21E+19	6.05E+01	1.45E+02	---	---	---	3.93E+02	9.40E+02
Ni-59	---	1.35E+02	3.26E+02	---	---	---	8.11E+04	1.96E+05
Ni-63	---	1.96E+02	4.51E+04	---	---	---	2.85E+05	6.56E+07
Np-237	2.27E+09	2.12E+01	1.99E+00	9.93E-02	---	4.24E+08	8.82E+00	8.25E-01
Pa-231	1.25E+12	1.73E+02	1.06E+01	9.81E-02	---	---	2.25E+00	1.87E-01
Pd-107	---	1.25E+04	3.02E+04	---	---	---	1.02E+05	2.45E+05
Pu-239	---	6.00E+10	9.52E+09	6.80E+07	---	---	1.19E+09	1.29E+08
Pu-241	5.29E+17	2.68E+07	1.31E+06	6.53E+04	---	3.61E+14	1.11E+07	5.43E+05
Ra-226	---	3.91E+02	3.72E+02	1.72E+01	1.73E+01	---	1.12E+02	1.18E+02
Rb-87	---	2.05E+02	4.26E+02	---	---	---	3.30E+03	6.85E+03
Sr-90	2.78E+18	9.01E+02	9.35E+10	---	---	---	4.81E+04	5.00E+12
Tc-99	3.18E+00	5.31E+00	5.03E+01	---	---	---	5.03E+01	4.77E+02
Th-230	---	2.47E+03	1.93E+03	8.31E+01	8.35E+01	---	6.75E+02	5.39E+02
Th-231	3.24E+17	1.76E+09	1.21E+08	1.13E+06	---	---	2.30E+07	2.16E+06
U-234	---	1.26E+06	6.91E+05	2.83E+04	2.84E+04	---	3.22E+05	1.84E+05

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

H.1.3.2. Low-Activity Waste and Intermediate-Level Vaults

The DU-specific preliminary inventory limits for the GW pathways are provided for the LAWV and ILV in Table H-38 and Table H-39, respectively. The inventory limits are time-window based but do not account for plume overlap from neighboring DUs. Final inventory limits are computed from these preliminary values using DU-specific GW PIFs.

Table H-38. Preliminary Groundwater Protection and All-Pathways Inventory Limits for LAWV

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway						
	Beta-Gamma		Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-700	Years 700-1,171	Years 0-1,171			Years 171-700	Years 700-1,171
Ag-108m	---	---	---	---	---	---	---
Am-241	---	---	---	---	---	---	---
C-14	---	---	---	---	---	---	---
Ca-41	---	---	---	---	---	---	---
Cl-36	6.18E+13	5.61E+03	---	---	---	4.29E+14	3.90E+04
Cm-245	---	---	---	---	---	---	---
Cs-137	---	---	---	---	---	---	---
H-3	6.63E+09	4.67E+18	---	---	---	1.19E+12	---
I-129	1.82E+05	2.29E-03	---	---	---	1.95E+07	2.45E-01
K-40	---	---	---	---	---	---	---
Ni-59	---	---	---	---	---	---	---
Ni-63	---	---	---	---	---	---	---
Np-237	---	---	---	---	---	---	---
Pu-239	---	---	---	---	---	---	---
Pu-241	---	---	---	---	---	---	---
Ra-226	---	---	---	---	---	---	---
Sr-90	---	---	---	---	---	---	---
Tc-99	---	3.51E+03	---	---	---	---	3.32E+04
U-235	---	---	---	---	---	---	---
U-235D	---	---	---	---	---	---	---

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-39. Preliminary Groundwater Protection and All-Pathways Inventory Limits for ILV

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway						
	Beta-Gamma		Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-400	Years 400-1,171	Years 0-1,171			Years 171-400	Years 400-1,171
Ag-108m	---	---	---	---	---	---	---
Am-241	---	---	---	---	---	---	---
Ar-39	---	---	---	---	---	9.28E+08	2.87E+06
C-14	---	---	---	---	---	---	---
Cf-249	---	---	---	---	---	---	---
Cl-36	2.85E+08	8.42E+02	---	---	---	1.98E+09	5.85E+03
Cm-245	---	---	---	---	---	---	---
Cs-137	---	---	---	---	---	---	---
H-3	1.08E+08	3.57E+15	---	---	---	1.50E+10	9.74E+16
I-129	7.53E+03	1.04E-02	---	---	---	8.04E+05	1.11E+00
K-40	---	---	---	---	---	---	---
Ni-59	---	---	---	---	---	---	---
Ni-63	---	---	---	---	---	---	---
Np-237	---	---	---	---	---	---	---
Pu-239	---	---	---	---	---	---	---
Pu-241	---	---	---	---	---	---	---
Ra-226	---	---	---	---	---	---	---
Sr-90	---	---	---	---	---	---	---
Tc-99	---	5.01E+07	---	---	---	---	4.75E+08
U-235	---	---	---	---	---	---	---
U-235D	---	---	---	---	---	---	---
I-129C	4.75E+05	4.54E-01	---	---	---	5.07E+07	4.85E+01
C-14K	---	---	---	---	---	---	---
I-129K	2.92E+06	2.74E+00	---	---	---	3.12E+08	2.93E+02
Tc-99K	---	1.56E+09	---	---	---	---	1.48E+10
H-3R	1.08E+08	3.57E+15	---	---	---	1.50E+10	9.74E+16
Ar-39T	---	---	---	---	---	9.28E+08	2.87E+06
H-3T	7.35E+08	6.68E+15	---	---	---	3.33E+10	1.82E+17

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

H.1.3.3. Naval Reactor Component Disposal Areas

The DU-specific preliminary inventory limits for the GW pathways are provided for NR07E and NR26E in Table H-40 and Table H-41, respectively. The inventory limits are time-window based but do not account for plume overlap from neighboring DUs. Final inventory limits are computed from these preliminary values using DU-specific GW PIFs.

Table H-40. Preliminary Groundwater Protection and All-Pathways Inventory Limits for NR07E

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway				
	Beta-Gamma	Gross-Alpha	Radium	Uranium	All-Pathways
	Years 0-1,171				Years 171-1,171
Am-241S	1.27E+14	6.36E+12	---	---	5.29E+13
Be-10S	2.16E+17	---	---	---	2.30E+18
C-14S	3.07E+14	---	---	---	1.91E+15
Cl-36S	3.08E+06	---	---	---	2.14E+07
I-129S	6.51E-01	---	---	---	6.96E+01
Ni-59S	---	---	---	---	---
Ni-63S	---	---	---	---	---
Np-237S	1.85E+10	9.24E+08	---	2.67E+19	7.68E+09
Pu-241S	3.88E+15	1.94E+14	---	---	1.61E+15
Tc-99S	2.13E+01	---	---	---	2.01E+02
U-235S	1.55E+13	5.55E+10	---	---	1.05E+11

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-41. Preliminary Groundwater Protection and All-Pathways Inventory Limits for NR26E

Parent Radionuclide	Preliminary Inventory Limit (Ci) by GW Pathway						
	Beta-Gamma		Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-400	Years 400-1,171	Years 0-1,171			Years 171-400	Years 400-1,171
Am-241	1.90E+14	1.51E+07	7.56E+05	---	7.31E+15	7.90E+13	6.29E+06
C-14	3.67E+13	3.18E+06	---	---	---	2.28E+14	1.98E+07
Cl-36	3.72E+05	9.30E+00	---	---	---	2.58E+06	6.47E+01
H-3	9.81E+02	9.18E+12	---	---	---	2.34E+07	2.51E+14
I-129	9.00E-02	5.02E-03	---	---	---	9.61E+00	5.36E-01
Ni-59	---	2.48E+12	---	---	---	---	1.49E+15
Ni-63	---	1.56E+15	---	---	---	---	2.27E+18
Np-237	4.24E+09	3.91E+02	1.96E+01	---	1.86E+11	1.76E+09	1.63E+02
Pu-241	7.80E+15	5.90E+08	2.95E+07	---	2.87E+17	3.24E+15	2.45E+08
Sr-90	1.27E+17	1.05E+18	---	---	---	6.78E+18	5.61E+19
Tc-99	1.56E+00	2.12E+00	---	---	---	1.48E+01	2.01E+01
U-235	1.96E+13	1.64E+06	1.09E+04	---	---	2.59E+11	2.07E+04
Am-241S	---	4.96E+15	2.48E+14	---	---	---	2.06E+15
Be-10S	---	2.73E+19	---	---	---	---	---
C-14S	---	1.06E+15	---	---	---	---	6.58E+15
Cl-36S	---	1.56E+07	---	---	---	---	1.09E+08
I-129S	---	6.74E+00	---	---	---	---	7.20E+02
Ni-59S	---	---	---	---	---	---	---
Ni-63S	---	---	---	---	---	---	---
Np-237S	---	7.19E+11	3.59E+10	---	---	---	2.99E+11
Pu-241S	---	1.51E+17	7.56E+15	---	---	---	6.29E+16
Tc-99S	---	2.58E+02	---	---	---	---	2.44E+03
U-235S	---	6.56E+14	2.17E+12	---	---	---	4.11E+12

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

H.1.4 Final Inventory Limits

In this section, the DU-specific final inventory limits for the GW pathways are provided for every generic waste form and SWF parent radionuclide requiring an inventory limit. As stated in Section H.1.1, six of the 33 ELLWF DUs are deferred for deployment considerations beyond this PA. The list of future DUs being deferred is as follows:

ET06, ST17, ST19, ST20, ST21, and ST22

Final inventory limits for the GW pathways for all 27 DUs included in this PA are presented below. Table H-8 indicates how generic and special waste forms are addressed within the CWTS limits system based on waste-form type, future burial plans, and handling within the transport modeling process.

H.1.4.1. Slit and Engineered Trenches

The DU-specific final inventory limits for the GW pathways for STs and ETs are provided in Table H-42 through Table H-64. The inventory limits are time-window based and explicitly account for GW plume overlap from neighboring DUs.

Table H-42. Final Groundwater Protection and All-Pathways Inventory Limits for ST01

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	---	---	---	---	---	---	---
Am-241	---	1.48E+12	7.06E+07	3.53E+06	---	7.24E+16	6.16E+11	2.94E+07
Be-10	---	1.96E+15	9.86E+09	---	---	---	2.09E+16	1.05E+11
C-14	---	4.48E+08	1.08E+06	---	---	---	2.79E+09	6.72E+06
Cf-249	---	9.21E+15	2.36E+10	1.18E+09	---	2.75E+19	3.83E+15	9.79E+09
Cl-36	2.19E+13	1.15E+02	3.50E+00	---	---	---	7.99E+02	2.43E+01
Cm-245	---	5.93E+13	2.54E+08	1.27E+07	---	2.90E+17	2.46E+13	1.05E+08
Cs-135	---	---	---	---	---	---	---	---
Cs-137	---	---	---	---	---	---	---	---
H-3	4.97E+00	1.55E+06	---	---	---	---	4.22E+07	---
I-129	5.53E+05	1.34E-03	1.08E-03	---	---	---	1.44E-01	1.15E-01
K-40	---	6.89E+16	2.44E+11	---	---	---	4.48E+17	1.58E+12
Ni-59	---	---	1.72E+16	---	---	---	---	1.04E+19
Ni-63	---	---	1.00E+19	---	---	---	---	---
Np-237	---	3.03E+06	9.28E+02	4.64E+01	---	7.56E+11	1.26E+06	3.86E+02
Pa-231	---	6.58E+07	1.15E+04	5.80E+01	---	---	5.10E+05	1.10E+02
Pd-107	---	---	1.60E+18	---	---	---	---	1.30E+19
Pu-239	---	1.38E+19	5.29E+13	2.22E+11	---	---	8.42E+16	4.22E+11
Pu-241	---	1.34E+14	2.55E+09	1.28E+08	---	2.72E+18	5.55E+13	1.06E+09
Ra-226	---	---	---	---	---	---	---	---
Rb-87	---	---	---	---	---	---	---	---
Sr-90	---	---	---	---	---	---	---	---
Tc-99	1.98E+04	7.86E-01	2.26E+00	---	---	---	7.44E+00	2.14E+01
Th-230	---	---	---	---	---	---	---	---
Th-231	---	4.09E+14	1.03E+11	5.33E+08	---	---	3.30E+12	1.01E+09
U-234	---	---	---	---	---	---	---	---
C-14N	---	3.08E+10	6.11E+06	---	---	---	1.92E+11	3.81E+07
H-3F	4.97E+00	1.55E+06	---	---	---	---	4.22E+07	---
I-129F	1.00E+08	1.95E-01	9.06E-02	---	---	---	2.09E+01	9.68E+00
I-129J	8.83E+06	1.74E-02	8.19E-03	---	---	---	1.85E+00	8.75E-01

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-43. Final Groundwater Protection and All-Pathways Inventory Limits for ST02

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	5.44E+01	5.44E+01	---	---	---	4.54E+02	4.54E+02
Am-241	---	2.43E+04	2.69E+04	1.21E+03	---	6.99E+11	1.01E+04	1.12E+04
Be-10	---	1.06E+01	1.83E+01	---	---	---	1.13E+02	1.95E+02
C-14	---	3.31E+01	3.79E+01	---	---	---	2.06E+02	2.36E+02
Cf-249	---	1.51E+06	1.00E+06	5.00E+04	---	6.73E+13	6.27E+05	4.16E+05
Cl-36	9.95E+13	3.66E+00	4.21E-01	---	---	---	2.55E+01	2.93E+00
Cm-245	---	2.70E+04	2.07E+04	1.04E+03	---	1.06E+12	1.12E+04	8.61E+03
Cs-135	---	6.63E+01	3.60E+01	---	---	---	3.11E+02	1.69E+02
Cs-137	---	2.30E+09	1.09E+11	---	---	---	9.67E+09	4.58E+11
H-3	1.38E+01	8.06E+04	---	---	---	---	2.20E+06	---
I-129	2.17E+06	1.61E-04	9.88E-05	---	---	---	1.72E-02	1.06E-02
K-40	---	2.59E+00	2.94E+00	---	---	---	1.68E+01	1.91E+01
Ni-59	---	5.34E+00	5.32E+00	---	---	---	3.22E+03	3.20E+03
Ni-63	---	3.27E+02	8.44E+02	---	---	---	4.75E+05	1.23E+06
Np-237	---	1.92E+00	6.09E+00	9.59E-02	---	9.10E+07	7.98E-01	2.53E+00
Pa-231	---	8.85E+00	2.49E+01	9.56E-02	---	---	1.82E-01	5.88E-01
Pd-107	---	4.95E+02	4.93E+02	---	---	---	4.02E+03	4.00E+03
Pu-239	---	1.90E+09	1.35E+09	1.45E+07	---	---	3.89E+07	2.76E+07
Pu-241	---	7.35E+05	8.07E+05	3.68E+04	---	2.14E+13	3.06E+05	3.35E+05
Ra-226	---	1.39E+07	4.55E+05	1.37E+04	1.38E+04	---	2.34E+06	9.00E+04
Rb-87	---	2.21E+01	1.20E+01	---	---	---	3.55E+02	1.93E+02
Sr-90	---	3.29E+04	2.75E+09	---	---	---	1.76E+06	1.47E+11
Tc-99	2.75E+04	7.41E-02	1.43E-01	---	---	---	7.02E-01	1.35E+00
Th-230	---	1.44E+08	4.54E+06	1.36E+05	1.36E+05	---	2.41E+07	8.91E+05
Th-231	---	9.98E+07	2.80E+08	1.08E+06	---	---	2.06E+06	6.59E+06
U-234	---	1.40E+11	4.02E+09	1.19E+08	1.20E+08	---	2.33E+10	7.82E+08
C-14N	---	3.31E+01	3.80E+01	---	---	---	2.06E+02	2.37E+02
I-129D	4.15E+09	1.81E-01	8.29E-02	---	---	---	1.93E+01	8.86E+00
I-129G	3.08E+07	1.82E-03	6.98E-04	---	---	---	1.94E-01	7.46E-02
I-129H	2.32E+08	1.02E-02	4.69E-03	---	---	---	1.09E+00	5.01E-01
I-129I	6.10E+09	2.65E-01	1.22E-01	---	---	---	2.84E+01	1.30E+01
I-129J	3.49E+07	2.04E-03	7.88E-04	---	---	---	2.18E-01	8.42E-02
U-234G	---	3.02E+14	8.02E+12	2.36E+11	2.36E+11	---	4.98E+13	1.55E+12

Notes: Numerical values exceeding 1.0E20 indicated by "---". All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-44. Final Groundwater Protection and All-Pathways Inventory Limits for ST03

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	4.64E+01	3.31E+01	---	---	---	3.87E+02	2.76E+02
Am-241	---	9.98E+03	9.35E+03	4.68E+02	---	3.23E+11	4.15E+03	3.89E+03
Be-10	---	4.39E+00	5.00E+00	---	---	---	4.67E+01	5.32E+01
C-14	4.18E+15	1.25E+01	1.28E+01	---	---	---	7.80E+01	7.97E+01
Cf-249	---	6.99E+05	4.27E+05	2.14E+04	---	3.27E+13	2.90E+05	1.78E+05
Cl-36	4.82E+09	5.26E-01	1.49E-01	---	---	---	3.66E+00	1.03E+00
Cm-245	---	1.22E+04	8.47E+03	4.23E+02	---	5.04E+11	5.07E+03	3.52E+03
Cs-135	---	1.16E+02	3.42E+01	---	---	---	5.44E+02	1.61E+02
Cs-137	---	3.69E+10	1.93E+11	---	---	---	1.55E+11	8.08E+11
H-3	1.25E+01	4.19E+04	---	---	---	---	1.14E+06	---
I-129	4.65E+03	1.23E-04	1.24E-04	---	---	---	1.32E-02	1.33E-02
K-40	---	1.06E+00	1.05E+00	---	---	---	6.88E+00	6.84E+00
Ni-59	---	2.92E+00	2.23E+00	---	---	---	1.76E+03	1.34E+03
Ni-63	---	3.52E+02	4.59E+02	---	---	---	5.12E+05	6.67E+05
Np-237	8.71E+18	8.51E-01	1.16E+00	4.26E-02	---	4.16E+07	3.54E-01	4.81E-01
Pa-231	---	3.84E+00	7.92E+00	4.25E-02	---	---	8.10E-02	1.16E-01
Pd-107	---	2.70E+02	2.06E+02	---	---	---	2.19E+03	1.67E+03
Pu-239	---	8.73E+08	5.93E+08	6.08E+06	---	---	1.79E+07	1.16E+07
Pu-241	---	3.03E+05	2.84E+05	1.42E+04	---	9.92E+12	1.26E+05	1.18E+05
Ra-226	---	5.03E+09	4.38E+07	1.17E+06	1.17E+06	---	7.33E+08	7.67E+06
Rb-87	---	3.86E+01	1.14E+01	---	---	---	6.21E+02	1.83E+02
Sr-90	---	1.11E+05	7.27E+08	---	---	---	5.94E+06	3.88E+10
Tc-99	5.99E+02	9.36E-02	7.10E-01	---	---	---	8.87E-01	6.73E+00
Th-230	---	5.41E+10	4.71E+08	1.25E+07	1.26E+07	---	7.91E+09	8.23E+07
Th-231	---	4.34E+07	8.60E+07	4.79E+05	---	---	9.14E+05	1.26E+06
U-234	---	5.55E+13	4.50E+11	1.19E+10	1.19E+10	---	8.08E+12	7.81E+10
C-14N	---	1.25E+01	1.27E+01	---	---	---	7.78E+01	7.94E+01
I-129I	1.30E+07	1.87E-01	1.47E-01	---	---	---	2.00E+01	1.57E+01
I-129J	7.47E+04	1.32E-03	9.74E-04	---	---	---	1.41E-01	1.04E-01
H-3C	---	6.08E+04	---	---	---	---	1.66E+06	---
I-129C	---	1.44E-01	1.07E-01	---	---	---	1.53E+01	1.15E+01

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-45. Final Groundwater Protection and All-Pathways Inventory Limits for ST04

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	3.74E+01	3.55E+01	---	---	---	3.12E+02	2.96E+02
Am-241	---	1.32E+04	9.99E+03	4.99E+02	---	3.95E+11	5.50E+03	4.15E+03
Be-10	---	5.99E+00	7.26E+00	---	---	---	6.37E+01	7.72E+01
C-14	3.12E+15	1.64E+01	1.73E+01	---	---	---	1.02E+02	1.08E+02
Cf-249	---	8.20E+05	4.95E+05	2.47E+04	---	3.76E+13	3.41E+05	2.06E+05
Cl-36	3.76E+09	4.72E-01	1.35E-01	---	---	---	3.28E+00	9.38E-01
Cm-245	---	1.47E+04	9.74E+03	4.87E+02	---	5.93E+11	6.13E+03	4.05E+03
Cs-135	---	5.60E+01	2.46E+01	---	---	---	2.63E+02	1.16E+02
Cs-137	---	4.13E+09	9.00E+10	---	---	---	1.73E+10	3.78E+11
H-3	1.25E+01	5.09E+04	---	---	---	---	1.39E+06	---
I-129	3.83E+03	1.12E-04	1.13E-04	---	---	---	1.20E-02	1.21E-02
K-40	---	1.41E+00	1.41E+00	---	---	---	9.13E+00	9.19E+00
Ni-59	---	3.14E+00	2.90E+00	---	---	---	1.89E+03	1.75E+03
Ni-63	---	2.54E+02	4.91E+02	---	---	---	3.69E+05	7.14E+05
Np-237	5.96E+18	1.16E+00	1.09E+00	5.43E-02	---	5.11E+07	4.81E-01	4.51E-01
Pa-231	---	5.24E+00	7.63E+00	5.73E-02	---	---	1.10E-01	1.09E-01
Pd-107	---	2.91E+02	2.69E+02	---	---	---	2.36E+03	2.18E+03
Pu-239	---	1.04E+09	6.93E+08	6.98E+06	---	---	2.13E+07	1.33E+07
Pu-241	---	4.01E+05	3.05E+05	1.53E+04	---	1.21E+13	1.67E+05	1.27E+05
Ra-226	---	2.82E+07	7.08E+05	2.09E+04	2.09E+04	---	4.58E+06	1.37E+05
Rb-87	---	1.87E+01	8.21E+00	---	---	---	3.00E+02	1.32E+02
Sr-90	---	3.89E+04	1.05E+09	---	---	---	2.08E+06	5.62E+10
Tc-99	5.46E+02	8.52E-02	6.50E-01	---	---	---	8.07E-01	6.16E+00
Th-230	---	3.04E+08	7.33E+06	2.15E+05	2.15E+05	---	4.93E+07	1.41E+06
Th-231	---	5.91E+07	8.27E+07	6.22E+05	---	---	1.24E+06	1.18E+06
U-234	---	3.00E+11	6.57E+09	1.90E+08	1.91E+08	---	4.82E+10	1.25E+09
C-14N	---	1.63E+01	1.73E+01	---	---	---	1.02E+02	1.08E+02
I-129H	4.09E+05	6.64E-03	5.16E-03	---	---	---	7.09E-01	5.52E-01
I-129I	1.08E+07	1.74E-01	1.35E-01	---	---	---	1.86E+01	1.44E+01
I-129J	6.16E+04	1.21E-03	8.85E-04	---	---	---	1.30E-01	9.46E-02

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-46. Final Groundwater Protection and All-Pathways Inventory Limits for ST05

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.40E+02	1.71E+02	---	---	---	1.17E+03	1.43E+03
Am-241	5.07E+19	5.54E+04	2.96E+03	1.48E+02	---	8.10E+11	2.30E+04	1.23E+03
Be-10	---	3.69E+01	4.99E+01	---	---	---	3.92E+02	5.30E+02
C-14	6.18E+10	6.08E+01	1.22E+01	---	---	---	3.79E+02	7.59E+01
Cf-249	---	3.43E+06	3.96E+05	1.98E+04	---	9.67E+13	1.42E+06	1.65E+05
Cl-36	2.54E+06	2.41E-01	1.48E-01	---	---	---	1.68E+00	1.03E+00
Cm-245	---	6.19E+04	5.56E+03	2.78E+02	---	1.43E+12	2.57E+04	2.31E+03
Cs-135	---	9.85E+01	8.59E+01	---	---	---	4.63E+02	4.03E+02
Cs-137	---	7.64E+07	1.39E+11	---	---	---	3.21E+08	5.83E+11
H-3	4.21E+00	8.98E+04	---	---	---	---	2.45E+06	---
I-129	2.20E+01	1.26E-04	1.55E-04	---	---	---	1.35E-02	1.66E-02
K-40	---	9.19E+00	1.08E+01	---	---	---	5.97E+01	7.03E+01
Ni-59	---	1.82E+01	1.94E+01	---	---	---	1.09E+04	1.17E+04
Ni-63	---	3.31E+02	2.98E+03	---	---	---	4.81E+05	4.33E+06
Np-237	2.32E+13	6.13E+00	2.75E-01	1.38E-02	---	7.39E+07	2.55E+00	1.14E-01
Pa-231	8.17E+16	3.08E+01	1.81E+00	1.41E-02	---	---	6.16E-01	2.68E-02
Pd-107	---	1.68E+03	1.80E+03	---	---	---	1.37E+04	1.46E+04
Pu-239	---	4.51E+09	6.26E+08	4.61E+06	---	---	8.84E+07	8.78E+06
Pu-241	---	1.69E+06	9.19E+04	4.59E+03	---	2.51E+13	7.03E+05	3.82E+04
Ra-226	---	7.82E+03	1.91E+03	7.11E+01	7.13E+01	---	1.74E+03	4.63E+02
Rb-87	---	3.28E+01	2.86E+01	---	---	---	5.28E+02	4.60E+02
Sr-90	---	9.06E+03	7.71E+09	---	---	---	4.84E+05	4.12E+11
Tc-99	5.76E+01	9.45E-02	1.10E+00	---	---	---	8.95E-01	1.04E+01
Th-230	---	6.71E+04	1.38E+04	5.02E+02	5.04E+02	---	1.46E+04	3.27E+03
Th-231	---	3.47E+08	2.01E+07	1.57E+05	---	---	6.65E+06	2.99E+05
U-234	---	4.72E+07	7.80E+06	2.75E+05	2.76E+05	---	9.98E+06	1.79E+06
C-14N	---	7.88E+01	1.50E+01	---	---	---	4.91E+02	9.38E+01
I-129J	3.52E+02	1.22E-03	9.49E-04	---	---	---	1.31E-01	1.01E-01
I-129R	1.22E+06	1.52E-02	1.51E-02	---	---	---	1.63E+00	1.62E+00
Sr-90R	---	4.40E+06	6.76E+11	---	---	---	2.35E+08	3.61E+13
Tc-99R	1.73E+06	1.18E+01	2.31E+01	---	---	---	1.11E+02	2.19E+02

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-47. Final Groundwater Protection and All-Pathways Inventory Limits for ST06

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	2.92E+02	2.95E+02	---	---	---	2.44E+03	2.46E+03
Am-241	8.23E+13	1.21E+05	1.53E+04	7.66E+02	---	2.44E+12	5.02E+04	6.36E+03
Be-10	4.38E+16	6.02E+01	7.78E+01	---	---	---	6.40E+02	8.27E+02
C-14	8.53E+05	9.20E+01	3.66E+01	---	---	---	5.73E+02	2.28E+02
Cf-249	---	6.74E+06	1.76E+06	8.78E+04	---	2.60E+14	2.80E+06	7.30E+05
Cl-36	1.91E+03	9.84E-01	8.99E-01	---	---	---	6.84E+00	6.25E+00
Cm-245	1.89E+17	1.22E+05	2.69E+04	1.35E+03	---	4.01E+12	5.08E+04	1.12E+04
Cs-135	---	2.66E+02	1.72E+02	---	---	---	1.25E+03	8.07E+02
Cs-137	---	1.81E+09	3.77E+11	---	---	---	7.58E+09	1.58E+12
H-3	1.94E+00	3.33E+05	---	---	---	---	9.11E+06	---
I-129	1.01E-01	6.76E-04	2.07E-03	---	---	---	7.22E-02	2.21E-01
K-40	1.27E+17	1.41E+01	1.47E+01	---	---	---	9.14E+01	9.56E+01
Ni-59	---	2.92E+01	2.89E+01	---	---	---	1.76E+04	1.74E+04
Ni-63	---	1.26E+03	4.44E+03	---	---	---	1.83E+06	6.46E+06
Np-237	6.94E+07	6.68E+00	7.49E-01	3.74E-02	---	1.39E+08	2.78E+00	3.11E-01
Pa-231	2.89E+10	4.57E+01	4.34E+00	3.79E-02	---	---	6.83E-01	7.22E-02
Pd-107	---	2.71E+03	2.68E+03	---	---	---	2.20E+04	2.18E+04
Pu-239	---	8.72E+09	2.66E+09	2.15E+07	---	---	1.75E+08	4.09E+07
Pu-241	2.25E+16	3.74E+06	4.90E+05	2.45E+04	---	7.71E+13	1.56E+06	2.03E+05
Ra-226	---	4.55E+05	5.46E+04	1.87E+03	1.88E+03	---	9.08E+04	1.22E+04
Rb-87	---	8.87E+01	5.73E+01	---	---	---	1.43E+03	9.21E+02
Sr-90	1.83E+16	6.72E+04	1.02E+10	---	---	---	3.59E+06	5.44E+11
Tc-99	1.73E+00	6.22E-01	1.14E+01	---	---	---	5.89E+00	1.08E+02
Th-230	---	4.86E+06	5.06E+05	1.70E+04	1.71E+04	---	9.53E+05	1.11E+05
Th-231	7.33E+15	4.83E+08	4.87E+07	4.28E+05	---	---	7.25E+06	8.15E+05
U-234	---	4.05E+09	3.57E+08	1.18E+07	1.18E+07	---	7.81E+08	7.69E+07
C-14N	---	1.67E+02	7.39E+01	---	---	---	1.04E+03	4.60E+02
Ra-226T	---	4.55E+05	5.46E+04	1.87E+03	1.88E+03	---	9.08E+04	1.22E+04
Th-230T	---	4.86E+06	5.06E+05	1.70E+04	1.71E+04	---	9.53E+05	1.11E+05

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-48. Final Groundwater Protection and All-Pathways Inventory Limits for ST07

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.73E+02	1.67E+02	---	---	---	1.45E+03	1.40E+03
Am-241	9.22E+13	5.94E+04	1.03E+04	5.16E+02	---	1.42E+12	2.47E+04	4.29E+03
Be-10	8.82E+16	2.82E+01	3.37E+01	---	---	---	3.00E+02	3.59E+02
C-14	2.17E+05	5.31E+01	2.20E+01	---	---	---	3.31E+02	1.37E+02
Cf-249	---	3.43E+06	1.11E+06	5.53E+04	---	1.46E+14	1.42E+06	4.59E+05
Cl-36	7.47E+02	4.74E-01	4.12E-01	---	---	---	3.30E+00	2.86E+00
Cm-245	2.24E+17	6.07E+04	1.75E+04	8.75E+02	---	2.27E+12	2.52E+04	7.27E+03
Cs-135	---	2.08E+02	1.10E+02	---	---	---	9.77E+02	5.14E+02
Cs-137	---	3.54E+09	3.01E+11	---	---	---	1.48E+10	1.26E+12
H-3	9.70E-01	1.63E+05	---	---	---	---	4.46E+06	---
I-129	6.16E-02	3.15E-04	8.44E-04	---	---	---	3.37E-02	9.01E-02
K-40	1.73E+17	6.91E+00	6.93E+00	---	---	---	4.49E+01	4.50E+01
Ni-59	---	1.53E+01	1.40E+01	---	---	---	9.19E+03	8.42E+03
Ni-63	---	1.05E+03	2.34E+03	---	---	---	1.53E+06	3.40E+06
Np-237	7.55E+07	4.46E+00	4.41E-01	2.21E-02	---	8.58E+07	1.85E+00	1.83E-01
Pa-231	4.29E+10	2.39E+01	2.64E+00	2.25E-02	---	---	4.59E-01	4.28E-02
Pd-107	---	1.42E+03	1.30E+03	---	---	---	1.15E+04	1.05E+04
Pu-239	---	4.39E+09	1.65E+09	1.38E+07	---	---	8.82E+07	2.63E+07
Pu-241	2.59E+16	1.82E+06	3.32E+05	1.66E+04	---	4.46E+13	7.55E+05	1.38E+05
Ra-226	---	7.79E+04	3.77E+03	1.26E+02	1.26E+02	---	1.32E+04	8.21E+02
Rb-87	---	6.93E+01	3.65E+01	---	---	---	1.11E+03	5.87E+02
Sr-90	2.11E+16	8.93E+04	4.39E+09	---	---	---	4.77E+06	2.34E+11
Tc-99	7.64E-01	2.93E-01	5.28E+00	---	---	---	2.77E+00	5.00E+01
Th-230	---	6.82E+05	2.53E+04	8.25E+02	8.28E+02	---	1.10E+05	5.40E+03
Th-231	7.99E+15	2.69E+08	2.94E+07	2.52E+05	---	---	4.84E+06	4.80E+05
U-234	---	4.42E+08	1.29E+07	4.11E+05	4.12E+05	---	6.80E+07	2.69E+06
C-14N	---	8.48E+01	4.52E+01	---	---	---	5.29E+02	2.82E+02
H-3C	---	3.27E+05	---	---	---	---	8.92E+06	---
I-129C	1.69E+18	3.09E-01	2.38E-01	---	---	---	3.30E+01	2.54E+01
I-129J	9.69E-01	2.73E-03	2.16E-03	---	---	---	2.91E-01	2.31E-01

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-49. Final Groundwater Protection and All-Pathways Inventory Limits for ST08

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	3.99E+01	2.74E+02	---	---	---	3.33E+02	2.28E+03
Am-241	4.76E+19	5.06E+04	5.22E+04	2.53E+03	---	1.58E+12	2.10E+04	2.17E+04
Be-10	---	1.62E+01	5.26E+01	---	---	---	1.73E+02	5.59E+02
C-14	1.89E+13	3.64E+01	1.13E+02	---	---	---	2.27E+02	7.06E+02
Cf-249	---	3.03E+06	2.02E+06	1.01E+05	---	1.23E+14	1.26E+06	8.41E+05
Cl-36	7.49E+06	1.07E+00	3.11E-01	---	---	---	7.42E+00	2.16E+00
Cm-245	---	6.12E+04	4.41E+04	2.21E+03	---	2.11E+12	2.54E+04	1.83E+04
Cs-135	---	3.99E+01	6.58E+01	---	---	---	1.88E+02	3.09E+02
Cs-137	---	1.65E+06	9.61E+10	---	---	---	6.93E+06	4.03E+11
H-3	7.57E-01	3.57E+05	---	---	---	---	9.75E+06	---
I-129	5.37E+00	2.72E-04	3.68E-04	---	---	---	2.91E-02	3.93E-02
K-40	---	3.78E+00	1.16E+01	---	---	---	2.46E+01	7.56E+01
Ni-59	---	8.11E+00	2.77E+01	---	---	---	4.89E+03	1.67E+04
Ni-63	---	2.97E+01	5.31E+03	---	---	---	4.32E+04	7.72E+06
Np-237	3.63E+13	2.86E+00	2.32E+00	1.16E-01	---	1.81E+08	1.19E+00	9.62E-01
Pa-231	3.85E+17	1.43E+01	1.74E+01	1.26E-01	---	---	2.70E-01	2.40E-01
Pd-107	---	7.55E+02	2.56E+03	---	---	---	6.13E+03	2.08E+04
Pu-239	---	4.05E+09	2.82E+09	2.96E+07	---	---	8.27E+07	5.64E+07
Pu-241	---	1.64E+06	1.66E+06	8.20E+04	---	4.84E+13	6.82E+05	6.88E+05
Ra-226	---	4.78E+02	1.26E+02	4.83E+00	4.84E+00	---	1.05E+02	3.14E+01
Rb-87	---	1.33E+01	2.19E+01	---	---	---	2.14E+02	3.52E+02
Sr-90	---	3.87E+02	7.79E+09	---	---	---	2.07E+04	4.16E+11
Tc-99	1.91E+01	2.24E-01	3.50E+00	---	---	---	2.12E+00	3.32E+01
Th-230	---	4.92E+03	1.11E+03	4.12E+01	4.13E+01	---	1.06E+03	2.69E+02
Th-231	---	1.62E+08	1.83E+08	1.33E+06	---	---	3.06E+06	2.52E+06
U-234	---	4.18E+06	7.69E+05	2.78E+04	2.79E+04	---	8.82E+05	1.81E+05
C-14N	---	3.71E+01	1.47E+02	---	---	---	2.31E+02	9.18E+02
Am-241B	5.38E+16	6.45E+04	6.28E+03	3.14E+02	---	1.34E+12	2.68E+04	2.61E+03
C-14B	7.22E+11	7.51E+01	5.72E+01	---	---	---	4.68E+02	3.56E+02
Cs-137B	---	7.04E+12	8.06E+12	---	---	---	2.95E+13	3.38E+13
H-3B	1.81E+00	2.57E+05	---	---	---	---	7.02E+06	---
I-129B	5.26E-01	3.43E-04	1.15E-03	---	---	---	3.66E-02	1.23E-01
Ni-59B	---	1.87E+01	1.09E+01	---	---	---	1.13E+04	6.59E+03
Sr-90B	---	2.38E+06	5.00E+09	---	---	---	1.27E+08	2.67E+11
Tc-99B	8.78E+00	2.70E-01	3.53E+00	---	---	---	2.55E+00	3.34E+01

Notes: Numerical values exceeding 1.0E20 indicated by "---". Shaded entries are associated with SWFs where the highlighting color reflects how they are addressed (see Table H-8).

Table H-50. Final Groundwater Protection and All-Pathways Inventory Limits for ST09

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.38E+02	6.96E+02	---	---	---	1.15E+03	5.80E+03
Am-241	---	1.79E+05	1.75E+05	8.77E+03	---	5.03E+12	7.43E+04	7.29E+04
Be-10	---	5.70E+01	1.67E+02	---	---	---	6.07E+02	1.77E+03
C-14	6.31E+14	1.32E+02	3.72E+02	---	---	---	8.21E+02	2.32E+03
Cf-249	---	9.67E+06	6.50E+06	3.25E+05	---	3.95E+14	4.02E+06	2.70E+06
Cl-36	2.12E+08	4.17E+00	1.07E+00	---	---	---	2.90E+01	7.45E+00
Cm-245	---	1.93E+05	1.42E+05	7.09E+03	---	6.77E+12	8.03E+04	5.89E+04
Cs-135	---	1.40E+02	2.01E+02	---	---	---	6.57E+02	9.45E+02
Cs-137	---	5.73E+06	2.69E+11	---	---	---	2.40E+07	1.13E+12
H-3	2.39E+00	3.82E+05	---	---	---	---	1.04E+07	---
I-129	1.05E+02	8.40E-04	1.01E-03	---	---	---	8.98E-02	1.08E-01
K-40	---	1.33E+01	3.75E+01	---	---	---	8.65E+01	2.43E+02
Ni-59	---	2.83E+01	8.82E+01	---	---	---	1.71E+04	5.31E+04
Ni-63	---	1.05E+02	1.34E+04	---	---	---	1.53E+05	1.94E+07
Np-237	2.16E+15	1.02E+01	9.12E+00	4.56E-01	---	6.03E+08	4.25E+00	3.79E+00
Pa-231	6.45E+19	5.07E+01	6.80E+01	4.98E-01	---	---	9.62E-01	9.46E-01
Pd-107	---	2.64E+03	8.17E+03	---	---	---	2.14E+04	6.63E+04
Pu-239	---	1.28E+10	9.01E+09	9.51E+07	---	---	2.63E+08	1.81E+08
Pu-241	---	5.78E+06	5.49E+06	2.75E+05	---	1.54E+14	2.40E+06	2.28E+06
Ra-226	---	1.75E+03	4.77E+02	1.83E+01	1.84E+01	---	3.87E+02	1.19E+02
Rb-87	---	4.66E+01	6.70E+01	---	---	---	7.49E+02	1.08E+03
Sr-90	---	1.29E+03	2.24E+10	---	---	---	6.87E+04	1.20E+12
Tc-99	1.50E+02	6.45E-01	8.20E+00	---	---	---	6.11E+00	7.77E+01
Th-230	---	1.85E+04	4.25E+03	1.59E+02	1.59E+02	---	4.01E+03	1.04E+03
Th-231	---	5.76E+08	7.12E+08	5.22E+06	---	---	1.09E+07	9.93E+06
U-234	---	1.58E+07	2.96E+06	1.07E+05	1.08E+05	---	3.35E+06	7.00E+05
C-14N	---	1.33E+02	4.53E+02	---	---	---	8.29E+02	2.82E+03
Am-241B	2.65E+18	1.89E+05	2.54E+04	1.27E+03	---	4.67E+12	7.87E+04	1.06E+04
C-14B	2.28E+13	2.60E+02	2.04E+02	---	---	---	1.62E+03	1.27E+03
Cs-137B	---	3.15E+13	3.54E+13	---	---	---	1.32E+14	1.49E+14
H-3B	5.64E+00	3.39E+05	---	---	---	---	9.27E+06	---
I-129B	8.24E+00	1.01E-03	2.19E-03	---	---	---	1.08E-01	2.34E-01
Ni-59B	---	8.14E+01	4.13E+01	---	---	---	4.90E+04	2.48E+04
Np-237B	2.05E+12	1.75E+01	1.45E+00	7.25E-02	---	3.31E+08	7.29E+00	6.02E-01
Pu-239B	---	1.70E+10	4.96E+09	3.75E+07	---	---	3.39E+08	7.14E+07

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Pu-241B	---	5.77E+06	8.04E+05	4.02E+04	---	1.46E+14	2.40E+06	3.34E+05
Sr-90B	---	1.14E+07	1.19E+10	---	---	---	6.08E+08	6.35E+11
Tc-99B	7.68E+01	7.65E-01	8.82E+00	---	---	---	7.24E+00	8.35E+01
U-234B	---	---	8.02E+17	1.69E+16	1.69E+16	---	---	1.11E+17
C-14X	4.77E+00	2.71E+00	2.81E+00	---	---	---	1.69E+01	1.75E+01
H-3X	2.72E+02	5.22E+04	5.61E+04	---	---	---	1.43E+06	1.53E+06

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-51. Final Groundwater Protection and All-Pathways Inventory Limits for ST10

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	6.05E+01	2.16E+02	---	---	---	5.04E+02	1.80E+03
Am-241	---	8.32E+04	7.35E+04	3.67E+03	---	2.04E+12	3.46E+04	3.05E+04
Be-10	---	2.64E+01	6.67E+01	---	---	---	2.81E+02	7.09E+02
C-14	3.95E+16	6.21E+01	1.63E+02	---	---	---	3.87E+02	1.02E+03
Cf-249	---	4.02E+06	2.69E+06	1.34E+05	---	1.67E+14	1.67E+06	1.12E+06
Cl-36	1.30E+10	3.08E+00	4.74E-01	---	---	---	2.14E+01	3.29E+00
Cm-245	---	7.86E+04	5.79E+04	2.89E+03	---	2.81E+12	3.27E+04	2.41E+04
Cs-135	---	6.53E+01	8.23E+01	---	---	---	3.07E+02	3.86E+02
Cs-137	---	2.00E+06	8.74E+10	---	---	---	8.38E+06	3.67E+11
H-3	9.75E-01	9.25E+04	---	---	---	---	2.52E+06	---
I-129	4.52E+03	3.46E-04	3.48E-04	---	---	---	3.69E-02	3.71E-02
K-40	---	6.20E+00	1.51E+01	---	---	---	4.03E+01	9.81E+01
Ni-59	---	1.31E+01	2.82E+01	---	---	---	7.91E+03	1.70E+04
Ni-63	---	4.40E+01	3.89E+03	---	---	---	6.40E+04	5.65E+06
Np-237	8.23E+17	4.85E+00	6.36E+00	2.43E-01	---	2.60E+08	2.02E+00	2.65E+00
Pa-231	---	2.36E+01	4.42E+01	2.39E-01	---	---	4.55E-01	6.58E-01
Pd-107	---	1.22E+03	2.61E+03	---	---	---	9.92E+03	2.12E+04
Pu-239	---	5.29E+09	3.71E+09	3.92E+07	---	---	1.08E+08	7.48E+07
Pu-241	---	2.60E+06	2.25E+06	1.12E+05	---	6.26E+13	1.08E+06	9.34E+05
Ra-226	---	7.35E+02	2.08E+02	8.04E+00	8.07E+00	---	1.63E+02	5.24E+01
Rb-87	---	2.18E+01	2.74E+01	---	---	---	3.50E+02	4.41E+02

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Sr-90	---	4.54E+02	6.97E+09	---	---	---	2.43E+04	3.72E+11
Tc-99	8.25E+02	2.44E-01	2.24E+00	---	---	---	2.31E+00	2.12E+01
Th-230	---	7.96E+03	1.89E+03	7.11E+01	7.14E+01	---	1.73E+03	4.63E+02
Th-231	---	2.68E+08	4.69E+08	2.73E+06	---	---	5.19E+06	6.93E+06
U-234	---	7.09E+06	1.35E+06	4.89E+04	4.90E+04	---	1.50E+06	3.19E+05
C-14N	---	6.22E+01	1.77E+02	---	---	---	3.88E+02	1.10E+03
Am-241B	---	7.53E+04	1.67E+04	8.35E+02	---	2.37E+12	3.13E+04	6.94E+03
C-14B	3.55E+15	1.19E+02	1.05E+02	---	---	---	7.42E+02	6.51E+02
Cs-137B	---	2.71E+13	2.89E+13	---	---	---	1.14E+14	1.21E+14
H-3B	2.35E+00	1.17E+05	---	---	---	---	3.20E+06	---
I-129B	3.97E+02	4.13E-04	5.64E-04	---	---	---	4.41E-02	6.02E-02
Ni-59B	---	6.30E+01	2.42E+01	---	---	---	3.79E+04	1.46E+04
Np-237B	1.44E+15	7.71E+00	1.20E+00	6.02E-02	---	2.25E+08	3.20E+00	5.00E-01
Pu-239B	---	7.95E+09	2.87E+09	2.29E+07	---	---	1.58E+08	4.37E+07
Pu-241B	---	2.30E+06	5.20E+05	2.60E+04	---	7.33E+13	9.58E+05	2.16E+05
Sr-90B	---	9.75E+06	3.57E+09	---	---	---	5.21E+08	1.91E+11
Tc-99B	4.02E+02	3.27E-01	3.01E+00	---	---	---	3.10E+00	2.85E+01
U-234B	---	---	1.22E+18	2.54E+16	2.54E+16	---	---	1.67E+17

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-52. Final Groundwater Protection and All-Pathways Inventory Limits for ST11

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.88E+02	1.96E+02	---	---	---	1.57E+03	1.64E+03
Am-241	---	9.97E+04	1.18E+05	4.99E+03	---	3.04E+12	4.14E+04	4.91E+04
Be-10	---	4.85E+01	8.74E+01	---	---	---	5.16E+02	9.29E+02
C-14	---	1.32E+02	1.81E+02	---	---	---	8.24E+02	1.13E+03
Cf-249	---	6.52E+06	4.31E+06	2.15E+05	---	2.85E+14	2.71E+06	1.79E+06
Cl-36	4.15E+13	1.69E+01	1.30E+00	---	---	---	1.17E+02	9.02E+00
Cm-245	---	1.19E+05	9.00E+04	4.50E+03	---	4.56E+12	4.94E+04	3.74E+04
Cs-135	---	1.63E+02	1.18E+02	---	---	---	7.66E+02	5.54E+02
Cs-137	---	1.83E+07	1.68E+11	---	---	---	7.66E+07	7.05E+11
H-3	5.26E+01	1.02E+05	---	---	---	---	2.79E+06	---
I-129	1.30E+07	6.25E-04	4.43E-04	---	---	---	6.68E-02	4.73E-02
K-40	---	1.06E+01	1.45E+01	---	---	---	6.86E+01	9.44E+01
Ni-59	---	2.16E+01	2.26E+01	---	---	---	1.30E+04	1.36E+04
Ni-63	---	4.89E+02	3.10E+03	---	---	---	7.10E+05	4.50E+06
Np-237	---	9.06E+00	2.43E+01	4.53E-01	---	3.95E+08	3.77E+00	1.01E+01
Pa-231	---	4.11E+01	1.22E+02	4.52E-01	---	---	8.62E-01	2.40E+00
Pd-107	---	2.01E+03	2.10E+03	---	---	---	1.63E+04	1.70E+04
Pu-239	---	8.26E+09	5.84E+09	6.25E+07	---	---	1.70E+08	1.19E+08
Pu-241	---	3.02E+06	3.54E+06	1.51E+05	---	9.32E+13	1.26E+06	1.47E+06
Ra-226	---	7.07E+03	2.21E+03	8.66E+01	8.69E+01	---	1.59E+03	5.63E+02
Rb-87	---	5.44E+01	3.93E+01	---	---	---	8.74E+02	6.32E+02
Sr-90	---	4.58E+03	8.36E+09	---	---	---	2.45E+05	4.46E+11
Tc-99	3.67E+05	3.32E-01	7.46E-01	---	---	---	3.15E+00	7.06E+00
Th-230	---	7.44E+04	1.95E+04	7.41E+02	7.44E+02	---	1.64E+04	4.83E+03
Th-231	---	4.64E+08	1.36E+09	5.09E+06	---	---	9.71E+06	2.64E+07
U-234	---	6.52E+07	1.36E+07	4.98E+05	5.00E+05	---	1.41E+07	3.25E+06
C-14N	---	1.32E+02	1.81E+02	---	---	---	8.24E+02	1.13E+03

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-53. Final Groundwater Protection and All-Pathways Inventory Limits for ST14

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.37E+02	1.48E+02	---	---	---	1.14E+03	1.23E+03
Am-241	---	7.74E+04	4.14E+04	2.07E+03	---	1.66E+12	3.22E+04	1.72E+04
Be-10	---	5.39E+01	5.43E+01	---	---	---	5.73E+02	5.77E+02
C-14	---	1.80E+02	1.77E+02	---	---	---	1.12E+03	1.10E+03
Cf-249	---	3.53E+06	2.13E+06	1.06E+05	---	9.76E+13	1.47E+06	8.84E+05
Cl-36	2.30E+11	4.53E+00	5.45E-01	---	---	---	3.15E+01	3.79E+00
Cm-245	---	6.76E+04	4.25E+04	2.13E+03	---	1.77E+12	2.81E+04	1.77E+04
Cs-135	---	6.46E+01	6.22E+01	---	---	---	3.03E+02	2.92E+02
Cs-137	---	6.81E+08	8.40E+10	---	---	---	2.86E+09	3.52E+11
H-3	3.89E-01	1.83E+05	---	---	---	---	4.99E+06	---
I-129	2.77E+03	3.23E-04	3.23E-04	---	---	---	3.45E-02	3.45E-02
K-40	---	1.24E+01	1.29E+01	---	---	---	8.04E+01	8.37E+01
Ni-59	---	1.83E+01	1.99E+01	---	---	---	1.10E+04	1.20E+04
Ni-63	---	4.99E+02	2.94E+03	---	---	---	7.25E+05	4.28E+06
Np-237	1.86E+16	9.85E+00	2.91E+00	1.45E-01	---	2.88E+08	4.09E+00	1.21E+00
Pa-231	---	4.38E+01	2.07E+01	1.54E-01	---	---	9.42E-01	2.94E-01
Pd-107	---	1.69E+03	1.85E+03	---	---	---	1.38E+04	1.50E+04
Pu-239	---	4.66E+09	3.01E+09	3.00E+07	---	---	9.44E+07	5.71E+07
Pu-241	---	2.32E+06	1.28E+06	6.42E+04	---	5.02E+13	9.63E+05	5.33E+05
Ra-226	---	1.68E+05	5.64E+03	1.77E+02	1.78E+02	---	2.71E+04	1.16E+03
Rb-87	---	2.15E+01	2.07E+01	---	---	---	3.46E+02	3.33E+02
Sr-90	---	8.21E+04	6.55E+09	---	---	---	4.39E+06	3.50E+11
Tc-99	1.52E+03	2.44E-01	8.35E-01	---	---	---	2.32E+00	7.91E+00
Th-230	---	1.85E+06	5.80E+04	1.80E+03	1.81E+03	---	2.98E+05	1.18E+04
Th-231	---	4.93E+08	2.23E+08	1.66E+06	---	---	1.06E+07	3.16E+06
U-234	---	1.81E+09	5.03E+07	1.54E+06	1.55E+06	---	2.88E+08	1.01E+07
C-14N	---	1.78E+02	1.79E+02	---	---	---	1.11E+03	1.12E+03
Ag-108mH	---	---	---	---	---	---	---	---
C-14H	---	---	3.10E+14	---	---	---	---	1.93E+15
Ni-59H	---	---	---	---	---	---	---	---
Ni-63H	---	---	---	---	---	---	---	---
Tc-99H	2.33E+05	1.21E+00	2.10E+00	---	---	---	1.15E+01	1.99E+01

Notes: Numerical values exceeding 1.0E20 indicated by "---". All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-54. Final Groundwater Protection and All-Pathways Inventory Limits for ST18

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	2.85E+02	2.34E+02	---	---	---	2.38E+03	1.95E+03
Am-241	---	8.96E+04	2.45E+04	1.22E+03	---	2.10E+12	3.73E+04	1.02E+04
Be-10	---	5.21E+01	5.23E+01	---	---	---	5.54E+02	5.56E+02
C-14	6.34E+15	1.60E+02	1.82E+02	---	---	---	1.00E+03	1.13E+03
Cf-249	---	5.61E+06	2.36E+06	1.18E+05	---	1.57E+14	2.33E+06	9.82E+05
Cl-36	3.81E+09	2.00E+00	5.81E-01	---	---	---	1.39E+01	4.04E+00
Cm-245	---	9.94E+04	3.86E+04	1.93E+03	---	2.64E+12	4.13E+04	1.60E+04
Cs-135	---	1.54E+02	8.29E+01	---	---	---	7.25E+02	3.89E+02
Cs-137	---	1.36E+10	1.58E+11	---	---	---	5.71E+10	6.64E+11
H-3	1.17E+00	1.09E+05	---	---	---	---	2.97E+06	---
I-129	1.52E+03	5.15E-04	5.26E-04	---	---	---	5.50E-02	5.62E-02
K-40	---	1.17E+01	1.18E+01	---	---	---	7.58E+01	7.69E+01
Ni-59	---	2.01E+01	1.92E+01	---	---	---	1.21E+04	1.15E+04
Ni-63	---	1.49E+03	2.76E+03	---	---	---	2.16E+06	4.01E+06
Np-237	2.26E+14	1.37E+01	1.90E+00	9.50E-02	---	2.71E+08	5.71E+00	7.90E-01
Pa-231	1.69E+19	6.16E+01	1.27E+01	9.81E-02	---	---	1.32E+00	1.87E-01
Pd-107	---	1.86E+03	1.78E+03	---	---	---	1.51E+04	1.44E+04
Pu-239	---	7.00E+09	3.46E+09	3.01E+07	---	---	1.44E+08	5.73E+07
Pu-241	---	2.69E+06	7.61E+05	3.80E+04	---	6.40E+13	1.12E+06	3.16E+05
Ra-226	---	7.34E+06	9.18E+04	2.58E+03	2.59E+03	---	1.09E+06	1.70E+04
Rb-87	---	5.15E+01	2.76E+01	---	---	---	8.27E+02	4.44E+02
Sr-90	---	6.66E+05	4.83E+09	---	---	---	3.56E+07	2.58E+11
Tc-99	1.64E+03	3.76E-01	1.88E+00	---	---	---	3.57E+00	1.78E+01
Th-230	---	8.80E+07	9.82E+05	2.76E+04	2.77E+04	---	1.30E+07	1.81E+05
Th-231	---	6.93E+08	1.40E+08	1.09E+06	---	---	1.48E+07	2.07E+06
U-234	---	9.13E+10	8.51E+08	2.36E+07	2.36E+07	---	1.31E+10	1.55E+08
C-14N	---	1.59E+02	2.16E+02	---	---	---	9.91E+02	1.34E+03

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-55. Final Groundwater Protection and All-Pathways Inventory Limits for ST23

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	4.42E+02	4.53E+02	---	---	---	3.69E+03	3.78E+03
Am-241	---	2.32E+05	1.28E+05	6.38E+03	---	6.24E+12	9.63E+04	5.30E+04
Be-10	---	1.02E+02	1.48E+02	---	---	---	1.08E+03	1.58E+03
C-14	4.50E+17	2.81E+02	2.71E+02	---	---	---	1.75E+03	1.69E+03
Cf-249	---	1.30E+07	7.53E+06	3.76E+05	---	5.83E+14	5.41E+06	3.13E+06
Cl-36	4.22E+11	4.36E+00	1.23E+00	---	---	---	3.03E+01	8.57E+00
Cm-245	---	2.37E+05	1.43E+05	7.16E+03	---	9.30E+12	9.87E+04	5.95E+04
Cs-135	---	4.18E+02	2.69E+02	---	---	---	1.96E+03	1.26E+03
Cs-137	---	2.92E+09	4.25E+11	---	---	---	1.22E+10	1.78E+12
H-3	3.76E+01	2.52E+05	---	---	---	---	6.89E+06	---
I-129	2.96E+05	1.02E-03	1.03E-03	---	---	---	1.09E-01	1.10E-01
K-40	---	2.40E+01	2.70E+01	---	---	---	1.56E+02	1.76E+02
Ni-59	---	4.90E+01	4.92E+01	---	---	---	2.95E+04	2.96E+04
Ni-63	---	1.83E+03	6.75E+03	---	---	---	2.67E+06	9.81E+06
Np-237	---	1.91E+01	1.13E+01	5.66E-01	---	7.80E+08	7.92E+00	4.70E+00
Pa-231	---	8.61E+01	8.29E+01	6.01E-01	---	---	1.81E+00	1.14E+00
Pd-107	---	4.55E+03	4.56E+03	---	---	---	3.69E+04	3.70E+04
Pu-239	---	1.66E+10	1.06E+10	1.04E+08	---	---	3.40E+08	1.98E+08
Pu-241	---	6.99E+06	3.93E+06	1.96E+05	---	1.91E+14	2.91E+06	1.63E+06
Ra-226	---	1.57E+06	1.45E+05	4.81E+03	4.83E+03	---	3.02E+05	3.15E+04
Rb-87	---	1.39E+02	8.95E+01	---	---	---	2.24E+03	1.44E+03
Sr-90	---	8.79E+04	1.39E+10	---	---	---	4.69E+06	7.41E+11
Tc-99	1.62E+04	7.76E-01	6.19E+00	---	---	---	7.35E+00	5.87E+01
Th-230	---	1.73E+07	1.41E+06	4.64E+04	4.65E+04	---	3.29E+06	3.03E+05
Th-231	---	9.70E+08	8.91E+08	6.48E+06	---	---	2.04E+07	1.23E+07
U-234	---	1.62E+10	1.11E+09	3.57E+07	3.58E+07	---	3.02E+09	2.34E+08
C-14K	---	1.74E+01	7.21E+00	---	---	---	1.09E+02	4.49E+01
I-129K	6.18E+06	2.55E-02	3.01E-02	---	---	---	2.73E+00	3.22E+00
Tc-99K	1.68E+05	4.99E+00	6.11E+00	---	---	---	4.73E+01	5.79E+01
Am-241A	---	3.82E+05	3.16E+05	1.58E+04	---	2.01E+13	1.59E+05	1.31E+05
C-14A	---	1.41E+02	1.13E+02	---	---	---	8.76E+02	7.01E+02
Cf-249A	---	1.37E+07	6.75E+06	3.37E+05	---	7.21E+14	5.68E+06	2.80E+06
Cm-245A	---	2.34E+05	1.35E+05	6.76E+03	---	1.25E+13	9.73E+04	5.62E+04
Cs-135A	---	4.42E+00	3.35E+00	---	---	---	2.07E+01	1.57E+01
Cs-137A	---	4.77E+07	6.58E+09	---	---	---	2.00E+08	2.76E+10

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
H-3A	1.28E+04	1.32E+05	---	---	---	---	3.60E+06	---
I-129A	1.63E+04	2.67E-04	1.29E-03	---	---	---	2.85E-02	1.37E-01
K-40A	---	3.52E-01	3.95E-01	---	---	---	2.28E+00	2.57E+00
Ni-59A	---	9.50E+00	2.04E+00	---	---	---	5.72E+03	1.23E+03
Ni-63A	---	1.53E+03	1.02E+03	---	---	---	2.22E+06	1.48E+06
Np-237A	---	6.07E+05	6.15E+04	3.08E+03	---	1.61E+13	2.52E+05	2.56E+04
Pd-107A	---	4.98E+04	6.92E+03	---	---	---	4.04E+05	5.61E+04
Pu-239A	---	4.48E+12	5.81E+11	5.12E+09	---	---	6.67E+10	9.74E+09
Pu-241A	---	2.22E+07	1.83E+07	9.17E+05	---	1.16E+15	9.21E+06	7.63E+06
Ra-226A	---	---	1.04E+18	1.78E+16	1.79E+16	---	---	1.18E+17
Rb-87A	---	1.47E+00	1.12E+00	---	---	---	2.37E+01	1.79E+01
Sr-90A	---	5.28E+05	2.52E+08	---	---	---	2.82E+07	1.35E+10
Tc-99A	2.77E+02	1.56E-01	2.29E+00	---	---	---	1.48E+00	2.17E+01
Th-231A	---	8.66E+13	7.99E+12	6.72E+10	---	---	1.24E+12	1.28E+11
U-234A	---	---	---	---	---	---	---	---

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-56. Final Groundwater Protection and All-Pathways Inventory Limits for ST24

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	4.51E+02	4.76E+02	---	---	---	3.76E+03	3.97E+03
Am-241	3.47E+19	2.45E+05	2.39E+04	1.19E+03	---	4.27E+12	1.02E+05	9.91E+03
Be-10	---	1.06E+02	1.62E+02	---	---	---	1.13E+03	1.73E+03
C-14	3.12E+11	2.49E+02	8.96E+01	---	---	---	1.55E+03	5.58E+02
Cf-249	---	1.29E+07	2.85E+06	1.42E+05	---	4.63E+14	5.35E+06	1.18E+06
Cl-36	1.20E+07	2.08E+00	1.46E+00	---	---	---	1.45E+01	1.01E+01
Cm-245	---	2.36E+05	4.21E+04	2.10E+03	---	7.05E+12	9.80E+04	1.75E+04
Cs-135	---	3.88E+02	2.72E+02	---	---	---	1.82E+03	1.28E+03
Cs-137	---	1.40E+09	3.88E+11	---	---	---	5.88E+09	1.63E+12
H-3	4.73E+00	3.40E+05	---	---	---	---	9.28E+06	---
I-129	9.78E+01	1.28E-03	1.75E-03	---	---	---	1.37E-01	1.87E-01
K-40	---	2.49E+01	2.81E+01	---	---	---	1.62E+02	1.82E+02
Ni-59	---	5.14E+01	5.16E+01	---	---	---	3.10E+04	3.11E+04
Ni-63	---	1.58E+03	7.07E+03	---	---	---	2.30E+06	1.03E+07
Np-237	1.77E+13	1.96E+01	2.05E+00	1.02E-01	---	4.03E+08	8.16E+00	8.52E-01
Pa-231	1.07E+17	8.88E+01	1.29E+01	1.05E-01	---	---	1.87E+00	1.99E-01
Pd-107	---	4.77E+03	4.79E+03	---	---	---	3.87E+04	3.88E+04
Pu-239	---	1.67E+10	4.32E+09	3.42E+07	---	---	3.36E+08	6.50E+07
Pu-241	---	7.41E+06	7.40E+05	3.70E+04	---	1.32E+14	3.08E+06	3.08E+05
Ra-226	---	3.84E+05	5.56E+04	1.94E+03	1.94E+03	---	7.93E+04	1.26E+04
Rb-87	---	1.29E+02	9.06E+01	---	---	---	2.08E+03	1.46E+03
Sr-90	---	6.09E+04	1.50E+10	---	---	---	3.25E+06	7.99E+11
Tc-99	3.15E+02	9.51E-01	1.29E+01	---	---	---	9.01E+00	1.22E+02
Th-230	---	4.08E+06	5.15E+05	1.76E+04	1.77E+04	---	8.29E+05	1.15E+05
Th-231	---	1.00E+09	1.45E+08	1.17E+06	---	---	2.10E+07	2.23E+06
U-234	---	3.49E+09	3.68E+08	1.23E+07	1.23E+07	---	6.94E+08	8.02E+07

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-57. Final Groundwater Protection and All-Pathways Inventory Limits for ET01

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	7.71E+02	8.95E+02	---	---	---	6.43E+03	7.47E+03
Am-241	1.02E+18	2.54E+05	1.16E+05	5.81E+03	---	6.44E+12	1.06E+05	4.83E+04
Be-10	---	1.82E+02	1.71E+02	---	---	---	1.93E+03	1.82E+03
C-14	8.87E+16	6.26E+02	5.81E+02	---	---	---	3.90E+03	3.62E+03
Cf-249	---	1.51E+07	8.03E+06	4.01E+05	---	4.15E+14	6.27E+06	3.34E+06
Cl-36	2.58E+08	4.07E+00	1.18E+00	---	---	---	2.83E+01	8.22E+00
Cm-245	---	2.77E+05	1.52E+05	7.59E+03	---	7.38E+12	1.15E+05	6.31E+04
Cs-135	---	3.66E+02	3.66E+02	---	---	---	1.72E+03	1.72E+03
Cs-137	---	2.91E+09	5.92E+11	---	---	---	1.22E+10	2.48E+12
H-3	2.22E+00	7.87E+05	---	---	---	---	2.15E+07	---
I-129	4.82E+00	1.00E-03	1.40E-03	---	---	---	1.07E-01	1.50E-01
K-40	---	5.38E+01	4.70E+01	---	---	---	3.50E+02	3.05E+02
Ni-59	---	1.12E+02	1.06E+02	---	---	---	6.74E+04	6.37E+04
Ni-63	---	3.59E+03	1.88E+04	---	---	---	5.21E+06	2.74E+07
Np-237	8.24E+11	2.86E+01	3.28E+00	1.64E-01	---	5.31E+08	1.19E+01	1.36E+00
Pa-231	1.28E+15	1.27E+02	2.26E+01	1.72E-01	---	---	2.75E+00	3.27E-01
Pd-107	---	1.04E+04	9.80E+03	---	---	---	8.43E+04	7.95E+04
Pu-239	---	1.98E+10	1.14E+10	1.10E+08	---	---	3.94E+08	2.10E+08
Pu-241	---	7.69E+06	3.88E+06	1.94E+05	---	1.98E+14	3.20E+06	1.61E+06
Ra-226	---	3.89E+05	1.23E+04	3.88E+02	3.89E+02	---	6.22E+04	2.54E+03
Rb-87	---	1.22E+02	1.22E+02	---	---	---	1.96E+03	1.96E+03
Sr-90	---	7.73E+05	2.81E+10	---	---	---	4.13E+07	1.50E+12
Tc-99	5.55E+00	1.02E+00	1.01E+01	---	---	---	9.64E+00	9.60E+01
Th-230	---	4.13E+06	1.23E+05	3.82E+03	3.83E+03	---	6.55E+05	2.50E+04
Th-231	5.59E+19	1.43E+09	2.45E+08	1.88E+06	---	---	3.09E+07	3.57E+06
U-234	---	3.77E+09	1.03E+08	3.16E+06	3.17E+06	---	5.91E+08	2.07E+07
I-129D	5.58E+03	3.22E-01	2.35E-01	---	---	---	3.44E+01	2.51E+01
I-129E	1.28E+04	7.39E-01	5.38E-01	---	---	---	7.90E+01	5.74E+01
I-129G	4.34E+01	3.21E-03	2.60E-03	---	---	---	3.43E-01	2.78E-01
I-129H	3.14E+02	2.07E-02	1.48E-02	---	---	---	2.21E+00	1.58E+00
I-129I	8.21E+03	4.74E-01	3.45E-01	---	---	---	5.06E+01	3.68E+01
I-129J	4.89E+01	3.59E-03	2.81E-03	---	---	---	3.83E-01	3.00E-01

Notes: Numerical values exceeding 1.0E20 indicated by "---". All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-58. Final Groundwater Protection and All-Pathways Inventory Limits for ET02

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	8.00E+02	7.05E+02	---	---	---	6.67E+03	5.88E+03
Am-241	5.57E+12	1.52E+05	1.01E+04	5.06E+02	---	1.73E+12	6.30E+04	4.20E+03
Be-10	5.40E+14	7.69E+01	6.71E+01	---	---	---	8.18E+02	7.14E+02
C-14	5.41E+06	1.53E+02	4.03E+01	---	---	---	9.55E+02	2.51E+02
Cf-249	5.66E+19	1.16E+07	1.15E+06	5.74E+04	---	2.11E+14	4.81E+06	4.77E+05
Cl-36	6.46E+02	1.13E+00	1.01E+00	---	---	---	7.87E+00	7.04E+00
Cm-245	1.16E+16	1.95E+05	1.71E+04	8.54E+02	---	3.12E+12	8.09E+04	7.10E+03
Cs-135	---	9.75E+02	5.29E+02	---	---	---	4.58E+03	2.48E+03
Cs-137	---	3.00E+10	1.55E+12	---	---	---	1.26E+11	6.48E+12
H-3	1.28E+00	4.23E+05	---	---	---	---	1.16E+07	---
I-129	9.38E-03	8.17E-04	6.74E-03	---	---	---	8.73E-02	7.20E-01
K-40	1.26E+15	2.12E+01	1.98E+01	---	---	---	1.38E+02	1.29E+02
Ni-59	1.23E+19	6.27E+01	4.60E+01	---	---	---	3.77E+04	2.77E+04
Ni-63	6.26E+18	5.53E+03	9.80E+03	---	---	---	8.04E+06	1.42E+07
Np-237	4.98E+06	3.42E+00	8.66E-01	4.33E-02	---	9.14E+07	1.42E+00	3.60E-01
Pa-231	1.27E+09	2.25E+01	5.12E+00	4.38E-02	---	---	3.34E-01	8.35E-02
Pd-107	---	5.81E+03	4.26E+03	---	---	---	4.72E+04	3.46E+04
Pu-239	---	1.46E+10	1.71E+09	1.40E+07	---	---	2.89E+08	2.66E+07
Pu-241	1.45E+15	4.65E+06	3.12E+05	1.56E+04	---	5.52E+13	1.93E+06	1.30E+05
Ra-226	---	3.47E+03	5.58E+02	2.15E+01	2.15E+01	---	6.57E+02	1.40E+02
Rb-87	---	3.25E+02	1.76E+02	---	---	---	5.22E+03	2.83E+03
Sr-90	6.82E+13	5.60E+05	1.07E+10	---	---	---	2.99E+07	5.73E+11
Tc-99	2.07E-01	9.83E-01	1.18E+01	---	---	---	9.31E+00	1.12E+02
Th-230	---	2.78E+04	3.42E+03	1.27E+02	1.27E+02	---	5.10E+03	8.26E+02
Th-231	3.84E+14	2.47E+08	5.74E+07	4.95E+05	---	---	3.71E+06	9.42E+05
U-234	---	1.80E+07	1.70E+06	6.08E+04	6.10E+04	---	3.20E+06	3.97E+05

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-59. Final Groundwater Protection and All-Pathways Inventory Limits for ET03

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.74E+17	8.12E+11	---	---	---	1.46E+18	6.78E+12
Am-241	6.33E+17	4.42E+06	1.18E+04	5.92E+02	---	6.45E+12	1.84E+06	4.92E+03
Be-10	---	5.05E+06	1.54E+03	---	---	---	5.36E+07	1.64E+04
C-14	9.15E+07	4.02E+01	7.26E+00	---	---	---	2.51E+02	4.53E+01
Cf-249	---	4.56E+09	2.16E+06	1.08E+05	---	1.39E+15	1.89E+09	8.96E+05
Cl-36	2.28E+04	7.52E-01	8.53E-01	---	---	---	5.23E+00	5.93E+00
Cm-245	---	4.19E+07	2.70E+04	1.35E+03	---	1.67E+13	1.74E+07	1.12E+04
Cs-135	---	1.41E+18	4.27E+12	---	---	---	6.64E+18	2.01E+13
Cs-137	---	---	---	---	---	---	---	---
H-3	3.54E+00	2.37E+05	---	---	---	---	6.48E+06	---
I-129	9.33E-01	7.83E-04	4.98E-03	---	---	---	8.36E-02	5.32E-01
K-40	---	7.26E+06	1.63E+03	---	---	---	4.72E+07	1.06E+04
Ni-59	---	1.97E+11	4.80E+06	---	---	---	1.18E+14	2.89E+09
Ni-63	---	3.03E+13	2.39E+09	---	---	---	4.40E+16	3.47E+12
Np-237	4.86E+11	2.14E+01	5.69E-01	2.84E-02	---	1.93E+08	8.89E+00	2.36E-01
Pa-231	1.36E+15	2.28E+02	3.64E+00	2.88E-02	---	---	2.41E+00	5.49E-02
Pd-107	---	1.82E+13	4.45E+08	---	---	---	1.48E+14	3.61E+09
Pu-239	---	9.21E+12	3.83E+09	2.32E+07	---	---	6.79E+10	4.41E+07
Pu-241	---	2.43E+08	3.80E+05	1.90E+04	---	2.15E+14	1.01E+08	1.58E+05
Ra-226	---	---	---	---	---	---	---	---
Rb-87	---	4.71E+17	1.42E+12	---	---	---	7.57E+18	2.29E+13
Sr-90	---	7.29E+14	1.31E+13	---	---	---	3.89E+16	6.98E+14
Tc-99	1.27E+01	6.73E-01	6.66E+00	---	---	---	6.37E+00	6.30E+01
Th-230	---	---	---	---	---	---	---	---
Th-231	9.80E+19	2.15E+09	4.06E+07	3.25E+05	---	---	2.33E+07	6.19E+05
U-234	---	---	---	---	---	---	---	---

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-60. Final Groundwater Protection and All-Pathways Inventory Limits for ET04

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	2.57E+02	4.21E+02	---	---	---	2.15E+03	3.51E+03
Am-241	---	1.51E+05	1.23E+05	6.14E+03	---	4.19E+12	6.26E+04	5.11E+04
Be-10	---	7.38E+01	1.09E+02	---	---	---	7.85E+02	1.16E+03
C-14	9.95E+16	1.53E+02	2.43E+02	---	---	---	9.51E+02	1.52E+03
Cf-249	---	9.06E+06	5.48E+06	2.74E+05	---	4.01E+14	3.76E+06	2.28E+06
Cl-36	3.65E+10	5.70E+00	5.74E-01	---	---	---	3.96E+01	3.99E+00
Cm-245	---	1.61E+05	1.10E+05	5.48E+03	---	6.40E+12	6.69E+04	4.56E+04
Cs-135	---	1.78E+02	1.82E+02	---	---	---	8.37E+02	8.55E+02
Cs-137	---	8.90E+07	1.87E+11	---	---	---	3.73E+08	7.83E+11
H-3	4.02E+00	6.49E+04	---	---	---	---	1.77E+06	---
I-129	1.80E+04	4.87E-04	4.83E-04	---	---	---	5.20E-02	5.16E-02
K-40	---	1.73E+01	2.41E+01	---	---	---	1.12E+02	1.57E+02
Ni-59	---	3.72E+01	5.26E+01	---	---	---	2.24E+04	3.17E+04
Ni-63	---	2.63E+02	7.26E+03	---	---	---	3.83E+05	1.06E+07
Np-237	---	1.32E+01	1.88E+01	6.62E-01	---	5.06E+08	5.51E+00	7.82E+00
Pa-231	---	6.24E+01	9.78E+01	6.54E-01	---	---	1.25E+00	1.87E+00
Pd-107	---	3.46E+03	4.88E+03	---	---	---	2.81E+04	3.96E+04
Pu-239	---	1.16E+10	7.41E+09	7.81E+07	---	---	2.33E+08	1.49E+08
Pu-241	---	4.54E+06	3.72E+06	1.86E+05	---	1.29E+14	1.89E+06	1.55E+06
Ra-226	---	4.62E+05	1.00E+04	2.99E+02	3.00E+02	---	7.18E+04	1.96E+03
Rb-87	---	5.94E+01	6.07E+01	---	---	---	9.54E+02	9.76E+02
Sr-90	---	7.50E+03	1.14E+10	---	---	---	4.00E+05	6.07E+11
Tc-99	2.10E+03	3.79E-01	1.85E+00	---	---	---	3.59E+00	1.75E+01
Th-230	---	5.35E+06	1.13E+05	3.35E+03	3.36E+03	---	8.35E+05	2.19E+04
Th-231	---	7.05E+08	1.08E+09	7.43E+06	---	---	1.42E+07	2.05E+07
U-234	---	6.11E+09	1.14E+08	3.31E+06	3.32E+06	---	9.44E+08	2.17E+07

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-61. Final Groundwater Protection and All-Pathways Inventory Limits for ET05

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.28E+02	1.57E+02	---	---	---	1.07E+03	1.31E+03
Am-241	1.21E+12	2.43E+04	1.66E+03	8.28E+01	---	2.81E+11	1.01E+04	6.88E+02
Be-10	7.65E+13	3.61E+01	1.30E+01	---	---	---	3.83E+02	1.38E+02
C-14	1.27E+09	7.71E+01	2.09E+01	---	---	---	4.80E+02	1.30E+02
Cf-249	7.28E+18	2.06E+06	2.21E+05	1.10E+04	---	3.43E+13	8.56E+05	9.17E+04
Cl-36	3.08E+03	2.40E-01	2.40E-01	---	---	---	1.67E+00	1.67E+00
Cm-245	1.78E+15	3.69E+04	3.14E+03	1.57E+02	---	5.22E+11	1.53E+04	1.30E+03
Cs-135	---	6.97E+01	7.05E+01	---	---	---	3.27E+02	3.31E+02
Cs-137	---	3.18E+07	6.94E+10	---	---	---	1.33E+08	2.91E+11
H-3	4.80E-01	7.64E+04	---	---	---	---	2.09E+06	---
I-129	6.03E-03	3.17E-04	1.54E-03	---	---	---	3.39E-02	1.64E-01
K-40	6.95E+14	7.82E+00	6.71E+00	---	---	---	5.08E+01	4.36E+01
Ni-59	1.20E+19	1.54E+01	1.43E+01	---	---	---	9.25E+03	8.64E+03
Ni-63	5.86E+18	1.97E+02	2.12E+03	---	---	---	2.86E+05	3.08E+06
Np-237	1.30E+06	4.52E-01	1.09E-01	5.46E-03	---	1.02E+07	1.88E-01	4.54E-02
Pa-231	1.61E+08	2.98E+00	5.42E-01	5.43E-03	---	---	4.44E-02	1.03E-02
Pd-107	---	1.42E+03	1.33E+03	---	---	---	1.16E+04	1.08E+04
Pu-239	5.09E+19	2.78E+09	3.39E+08	2.59E+06	---	---	5.26E+07	4.93E+06
Pu-241	2.67E+14	8.66E+05	5.26E+04	2.63E+03	---	9.29E+12	3.60E+05	2.18E+04
Ra-226	---	7.56E+02	1.09E+02	4.01E+00	4.03E+00	---	1.46E+02	2.62E+01
Rb-87	---	2.32E+01	2.35E+01	---	---	---	3.73E+02	3.77E+02
Sr-90	2.15E+13	7.01E+03	3.65E+09	---	---	---	3.74E+05	1.95E+11
Tc-99	1.21E-01	4.66E-01	6.50E+00	---	---	---	4.41E+00	6.16E+01
Th-230	---	8.17E+03	9.50E+02	3.40E+01	3.41E+01	---	1.54E+03	2.22E+02
Th-231	1.27E+14	3.26E+07	6.20E+06	6.22E+04	---	---	4.90E+05	1.19E+05
U-234	---	7.10E+06	6.50E+05	2.25E+04	2.26E+04	---	1.31E+06	1.47E+05

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-62. Final Groundwater Protection and All-Pathways Inventory Limits for ET07

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	1.92E+02	9.89E+02	---	---	---	1.60E+03	8.25E+03
Am-241	7.34E+15	2.64E+05	1.48E+04	7.42E+02	---	3.87E+12	1.10E+05	6.17E+03
Be-10	---	8.72E+01	1.66E+02	---	---	---	9.27E+02	1.76E+03
C-14	4.10E+07	5.57E+01	1.40E+01	---	---	---	3.47E+02	8.71E+01
Cf-249	---	1.40E+07	2.19E+06	1.09E+05	---	4.45E+14	5.83E+06	9.08E+05
Cl-36	9.25E+03	1.31E+00	1.86E+00	---	---	---	9.07E+00	1.29E+01
Cm-245	1.40E+19	2.72E+05	3.08E+04	1.54E+03	---	6.95E+12	1.13E+05	1.28E+04
Cs-135	---	1.99E+02	4.05E+02	---	---	---	9.35E+02	1.90E+03
Cs-137	---	5.77E+05	5.73E+11	---	---	---	2.42E+06	2.40E+12
H-3	4.58E+00	4.19E+05	---	---	---	---	1.14E+07	---
I-129	3.95E-01	1.46E-03	1.25E-02	---	---	---	1.56E-01	1.34E+00
K-40	---	1.95E+01	4.70E+01	---	---	---	1.27E+02	3.05E+02
Ni-59	---	4.35E+01	9.74E+01	---	---	---	2.62E+04	5.87E+04
Ni-63	---	8.24E+01	1.35E+04	---	---	---	1.20E+05	1.96E+07
Np-237	6.78E+09	8.11E+00	6.39E-01	3.20E-02	---	1.45E+08	3.37E+00	2.66E-01
Pa-231	9.02E+12	6.57E+01	3.53E+00	3.16E-02	---	---	8.65E-01	6.03E-02
Pd-107	---	4.05E+03	9.03E+03	---	---	---	3.29E+04	7.33E+04
Pu-239	---	1.88E+10	3.54E+09	2.53E+07	---	---	3.75E+08	4.82E+07
Pu-241	1.84E+18	8.53E+06	4.84E+05	2.42E+04	---	1.27E+14	3.55E+06	2.01E+05
Ra-226	---	1.31E+02	1.28E+02	5.64E+00	5.67E+00	---	3.67E+01	3.66E+01
Rb-87	---	6.64E+01	1.35E+02	---	---	---	1.07E+03	2.17E+03
Sr-90	6.64E+19	5.05E+02	2.86E+10	---	---	---	2.70E+04	1.52E+12
Tc-99	1.17E+00	1.56E+00	2.10E+01	---	---	---	1.48E+01	1.99E+02
Th-230	---	9.93E+02	6.81E+02	2.91E+01	2.92E+01	---	2.60E+02	1.89E+02
Th-231	8.37E+17	6.62E+08	4.04E+07	3.65E+05	---	---	8.80E+06	6.95E+05
U-234	---	6.06E+05	2.84E+05	1.14E+04	1.15E+04	---	1.49E+05	7.44E+04

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-63. Final Groundwater Protection and All-Pathways Inventory Limits for ET08

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	2.41E+02	1.31E+03	---	---	---	2.01E+03	1.10E+04
Am-241	6.21E+15	3.48E+05	1.77E+04	8.84E+02	---	4.79E+12	1.45E+05	7.35E+03
Be-10	---	1.19E+02	2.00E+02	---	---	---	1.27E+03	2.12E+03
C-14	4.83E+07	7.48E+01	1.91E+01	---	---	---	4.66E+02	1.19E+02
Cf-249	---	1.90E+07	2.57E+06	1.29E+05	---	5.65E+14	7.89E+06	1.07E+06
Cl-36	1.12E+04	1.82E+00	2.67E+00	---	---	---	1.26E+01	1.85E+01
Cm-245	1.15E+19	3.70E+05	3.61E+04	1.81E+03	---	8.74E+12	1.54E+05	1.50E+04
Cs-135	---	2.74E+02	5.46E+02	---	---	---	1.29E+03	2.56E+03
Cs-137	---	3.70E+05	7.69E+11	---	---	---	1.55E+06	3.22E+12
H-3	6.26E+00	3.89E+05	---	---	---	---	1.06E+07	---
I-129	5.03E-01	2.03E-03	1.70E-02	---	---	---	2.17E-01	1.81E+00
K-40	---	2.67E+01	6.20E+01	---	---	---	1.73E+02	4.03E+02
Ni-59	---	5.98E+01	1.37E+02	---	---	---	3.60E+04	8.27E+04
Ni-63	---	9.03E+01	1.90E+04	---	---	---	1.31E+05	2.76E+07
Np-237	5.83E+09	9.39E+00	8.47E-01	4.23E-02	---	1.84E+08	3.90E+00	3.52E-01
Pa-231	6.20E+12	7.62E+01	4.55E+00	4.18E-02	---	---	9.94E-01	7.97E-02
Pd-107	---	5.57E+03	1.27E+04	---	---	---	4.52E+04	1.03E+05
Pu-239	---	2.55E+10	4.17E+09	2.98E+07	---	---	5.08E+08	5.67E+07
Pu-241	1.54E+18	1.14E+07	5.72E+05	2.86E+04	---	1.57E+14	4.76E+06	2.38E+05
Ra-226	---	1.71E+02	1.72E+02	7.55E+00	7.58E+00	---	4.90E+01	5.04E+01
Rb-87	---	9.12E+01	1.82E+02	---	---	---	1.47E+03	2.92E+03
Sr-90	3.15E+19	4.28E+02	3.96E+10	---	---	---	2.28E+04	2.12E+12
Tc-99	1.40E+00	2.16E+00	2.10E+01	---	---	---	2.04E+01	1.99E+02
Th-230	---	1.10E+03	8.38E+02	3.60E+01	3.62E+01	---	2.98E+02	2.34E+02
Th-231	7.31E+17	7.72E+08	5.22E+07	4.83E+05	---	---	1.02E+07	9.21E+05
U-234	---	5.78E+05	3.08E+05	1.26E+04	1.26E+04	---	1.47E+05	8.18E+04

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

Table H-64. Final Groundwater Protection and All-Pathways Inventory Limits for ET09

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway							
	Beta-Gamma			Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171
Ag-108m	---	2.46E+02	1.43E+03	---	---	---	2.05E+03	1.19E+04
Am-241	1.05E+15	3.78E+05	1.87E+04	9.37E+02	---	5.12E+12	1.57E+05	7.79E+03
Be-10	4.77E+18	1.28E+02	2.13E+02	---	---	---	1.36E+03	2.26E+03
C-14	1.27E+07	8.16E+01	2.07E+01	---	---	---	5.09E+02	1.29E+02
Cf-249	---	2.07E+07	2.73E+06	1.37E+05	---	6.07E+14	8.61E+06	1.14E+06
Cl-36	3.33E+03	2.03E+00	3.03E+00	---	---	---	1.41E+01	2.11E+01
Cm-245	1.73E+18	4.04E+05	3.83E+04	1.91E+03	---	9.37E+12	1.68E+05	1.59E+04
Cs-135	---	2.86E+02	5.95E+02	---	---	---	1.34E+03	2.79E+03
Cs-137	---	3.48E+05	8.38E+11	---	---	---	1.46E+06	3.51E+12
H-3	6.97E+00	3.36E+05	---	---	---	---	9.17E+06	---
I-129	1.70E-01	2.30E-03	1.86E-02	---	---	---	2.46E-01	1.99E+00
K-40	1.03E+19	2.82E+01	6.73E+01	---	---	---	1.83E+02	4.37E+02
Ni-59	---	6.26E+01	1.52E+02	---	---	---	3.77E+04	9.13E+04
Ni-63	---	9.13E+01	2.10E+04	---	---	---	1.33E+05	3.05E+07
Np-237	1.06E+09	9.87E+00	9.24E-01	4.62E-02	---	1.97E+08	4.10E+00	3.84E-01
Pa-231	5.79E+11	8.06E+01	4.91E+00	4.56E-02	---	---	1.05E+00	8.69E-02
Pd-107	---	5.83E+03	1.41E+04	---	---	---	4.73E+04	1.14E+05
Pu-239	---	2.79E+10	4.43E+09	3.16E+07	---	---	5.55E+08	6.01E+07
Pu-241	2.46E+17	1.25E+07	6.07E+05	3.04E+04	---	1.68E+14	5.18E+06	2.52E+05
Ra-226	---	1.82E+02	1.73E+02	8.00E+00	8.03E+00	---	5.19E+01	5.51E+01
Rb-87	---	9.54E+01	1.98E+02	---	---	---	1.53E+03	3.19E+03
Sr-90	1.29E+18	4.19E+02	4.35E+10	---	---	---	2.24E+04	2.32E+12
Tc-99	1.48E+00	2.47E+00	2.34E+01	---	---	---	2.34E+01	2.22E+02
Th-230	---	1.15E+03	8.98E+02	3.87E+01	3.88E+01	---	3.14E+02	2.51E+02
Th-231	1.51E+17	8.17E+08	5.64E+07	5.27E+05	---	---	1.07E+07	1.00E+06
U-234	---	5.86E+05	3.21E+05	1.32E+04	1.32E+04	---	1.50E+05	8.56E+04

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

H.1.4.2. Low-Activity Waste and Intermediate-Level Vaults

The DU-specific final inventory limits for the GW pathways for the LAWV and ILV are provided in Table H-65 and Table H-66, respectively. The inventory limits are time-window based and explicitly account for GW plume overlap from neighboring DUs.

Table H-65. Final Groundwater Protection and All-Pathways Inventory Limits for LAWV

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway						
	Beta-Gamma		Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-700	Years 700-1,171	Years 0-1,171			Years 171-700	Years 700-1,171
Ag-108m	---	---	---	---	---	---	---
Am-241	---	---	---	---	---	---	---
C-14	---	---	---	---	---	---	---
Ca-41	---	---	---	---	---	---	---
Cl-36	1.56E+13	1.41E+03	---	---	---	1.08E+14	9.82E+03
Cm-245	---	---	---	---	---	---	---
Cs-137	---	---	---	---	---	---	---
H-3	1.67E+09	1.18E+18	---	---	---	3.00E+11	3.21E+19
I-129	4.60E+04	5.77E-04	---	---	---	4.91E+06	6.16E-02
K-40	---	---	---	---	---	---	---
Ni-59	---	---	---	---	---	---	---
Ni-63	---	---	---	---	---	---	---
Np-237	---	---	3.53E+19	---	---	---	---
Pu-239	---	---	---	---	---	---	---
Pu-241	---	---	---	---	---	---	---
Ra-226	---	---	---	---	---	---	---
Sr-90	---	---	---	---	---	---	---
Tc-99	---	8.84E+02	---	---	---	---	8.37E+03
U-235	---	---	---	---	---	---	---
U-235D	---	---	---	---	---	---	---

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-66. Final Groundwater Protection and All-Pathways Inventory Limits for ILV

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway						
	Beta-Gamma		Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-400	Years 400-1,171	Years 0-1,171			Years 171-400	Years 400-1,171
Ag-108m	---	---	---	---	---	---	---
Am-241	---	---	---	---	---	---	---
Ar-39	---	---	---	---	---	3.62E+08	1.12E+06
C-14	---	---	---	---	---	---	---
Cf-249	---	---	---	---	---	---	---
Cl-36	1.11E+08	3.29E+02	---	---	---	7.74E+08	2.29E+03
Cm-245	---	---	---	---	---	---	---
Cs-137	---	---	---	---	---	---	---
H-3	4.22E+07	1.39E+15	---	---	---	5.85E+09	3.80E+16
I-129	2.94E+03	4.06E-03	---	---	---	3.14E+05	4.34E-01
K-40	---	---	---	---	---	---	---
Ni-59	---	---	---	---	---	---	---
Ni-63	---	---	---	---	---	---	---
Np-237	---	---	---	---	---	---	---
Pu-239	---	---	---	---	---	---	---
Pu-241	---	---	---	---	---	---	---
Ra-226	---	---	---	---	---	---	---
Sr-90	---	---	---	---	---	---	---
Tc-99	---	1.96E+07	---	---	---	---	1.85E+08
U-235	---	---	---	---	---	---	---
U-235D	---	---	---	---	---	---	---
I-129C	1.85E+05	1.77E-01	---	---	---	1.98E+07	1.89E+01
C-14K	---	---	---	---	---	---	---
I-129K	1.14E+06	1.07E+00	---	---	---	1.22E+08	1.14E+02
Tc-99K	---	6.10E+08	---	---	---	---	5.77E+09
H-3R	4.22E+07	1.39E+15	---	---	---	5.85E+09	3.80E+16
Ar-39T	---	---	---	---	---	3.62E+08	1.12E+06
H-3T	2.87E+08	2.61E+15	---	---	---	1.30E+10	7.12E+16

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

H.1.4.3. Naval Reactor Component Disposal Areas

The DU-specific final inventory limits for the GW pathways for NR07E and NR26E are provided in Table H-67 and Table H-68, respectively. The inventory limits are time-window based and explicitly account for GW plume overlap from neighboring DUs.

Table H-67. Final Groundwater Protection and All-Pathways Inventory Limits for NR07E

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway				
	Beta-Gamma	Gross-Alpha	Radium	Uranium	All-Pathways
	Years 0-1,171				Years 171-1,171
Am-241S	6.36E+12	3.18E+11	---	---	2.64E+12
Be-10S	1.08E+16	---	---	---	1.15E+17
C-14S	1.54E+13	---	---	---	9.57E+13
Cl-36S	1.54E+05	---	---	---	1.07E+06
I-129S	3.26E-02	---	---	---	3.48E+00
Ni-59S	---	---	---	---	---
Ni-63S	---	---	---	---	---
Np-237S	9.24E+08	4.62E+07	---	1.33E+18	3.84E+08
Pu-241S	1.94E+14	9.70E+12	---	---	8.07E+13
Tc-99S	1.06E+00	---	---	---	1.01E+01
U-235S	7.75E+11	2.77E+09	---	---	5.26E+09

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-68. Final Groundwater Protection and All-Pathways Inventory Limits for NR26E

Parent Radionuclide	Final Inventory Limit (Ci) by GW Pathway						
	Beta-Gamma		Gross-Alpha	Radium	Uranium	All-Pathways	
	Years 0-400	Years 400-1,171	Years 0-1,171			Years 171-400	Years 400-1,171
Am-241	3.17E+13	2.52E+06	1.26E+05	---	1.22E+15	1.32E+13	1.05E+06
C-14	6.11E+12	5.30E+05	---	---	---	3.81E+13	3.31E+06
Cl-36	6.20E+04	1.55E+00	---	---	---	4.31E+05	1.08E+01
H-3	1.63E+02	1.53E+12	---	---	---	3.90E+06	4.18E+13
I-129	1.50E-02	8.36E-04	---	---	---	1.60E+00	8.94E-02
Ni-59	---	4.13E+11	---	---	---	---	2.49E+14
Ni-63	---	2.60E+14	---	---	---	---	3.78E+17
Np-237	7.07E+08	6.52E+01	3.26E+00	---	3.09E+10	2.94E+08	2.71E+01
Pu-241	1.30E+15	9.83E+07	4.92E+06	---	4.78E+16	5.40E+14	4.09E+07
Sr-90	2.12E+16	1.75E+17	---	---	---	1.13E+18	9.35E+18
Tc-99	2.60E-01	3.54E-01	---	---	---	2.46E+00	3.35E+00
U-235	3.27E+12	2.73E+05	1.81E+03	---	---	4.32E+10	3.45E+03
Am-241S	---	8.26E+14	4.13E+13	---	---	---	3.43E+14
Be-10S	---	4.55E+18	---	---	---	---	4.84E+19
C-14S	---	1.76E+14	---	---	---	---	1.10E+15
Cl-36S	---	2.61E+06	---	---	---	---	1.81E+07
I-129S	---	1.12E+00	---	---	---	---	1.20E+02
Ni-59S	---	---	---	---	---	---	---
Ni-63S	---	---	---	---	---	---	---
Np-237S	---	1.20E+11	5.99E+09	---	---	---	4.98E+10
Pu-241S	---	2.52E+16	1.26E+15	---	---	---	1.05E+16
Tc-99S	---	4.29E+01	---	---	---	---	4.07E+02
U-235S	---	1.09E+14	3.61E+11	---	---	---	6.86E+11

Notes:

Numerical values exceeding 1.0E20 indicated by "---".

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

H.1.5 Dose History Time Profiles

Dose history time profiles for every DU and significant GW pathway are provided in this section. All parent radionuclides requiring inventory limits for the GW pathways are presented, along with their algebraic sum over the entire compliance period (i.e., Year 0 to Year 1,171). Both linear and semi-log plots are provided to assist in visually inspecting the radionuclides that contribute the most to total dose.

The composition vectors are based on historical DU-specific compositions (see Section H.7 and Chapter 8, Section 8.7 for details). Projected future inventories are scaled up to yield a total SOF equal to 1.0 based on the time-windowing scheme discussed in Section H.1.2, except for four closed DUs (i.e., ST02, ST03, ST04, ST05) that are limited to an administrative total SOF of 0.95.

The projected inventories employed represent upper-bound estimates of the CWTS projected closure inventories (i.e., unbiased inventories supplied by waste generators to CWTS). Bias impacts are not included in these dose history time profiles but are instead addressed in Chapter 9 during the deterministic and stochastic closure analyses.

H.1.5.1. Slit and Engineered Trenches

Dose history time profiles based on an upper-bound, unbiased CWTS closure inventory are shown for all 15 STs and eight ETs in Figure H-98 through Figure H-120. All five GW pathways are shown for ET01 only (Figure H-113). For the remaining 22 STs and ETs, only the gross-alpha, beta-gamma, and all-pathways profiles are displayed because the radium and uranium pathways are significantly lower. In addition, beta-gamma peak dose always exceeds all-pathways dose by a factor of greater than 2.5 and approximately 48 on average.

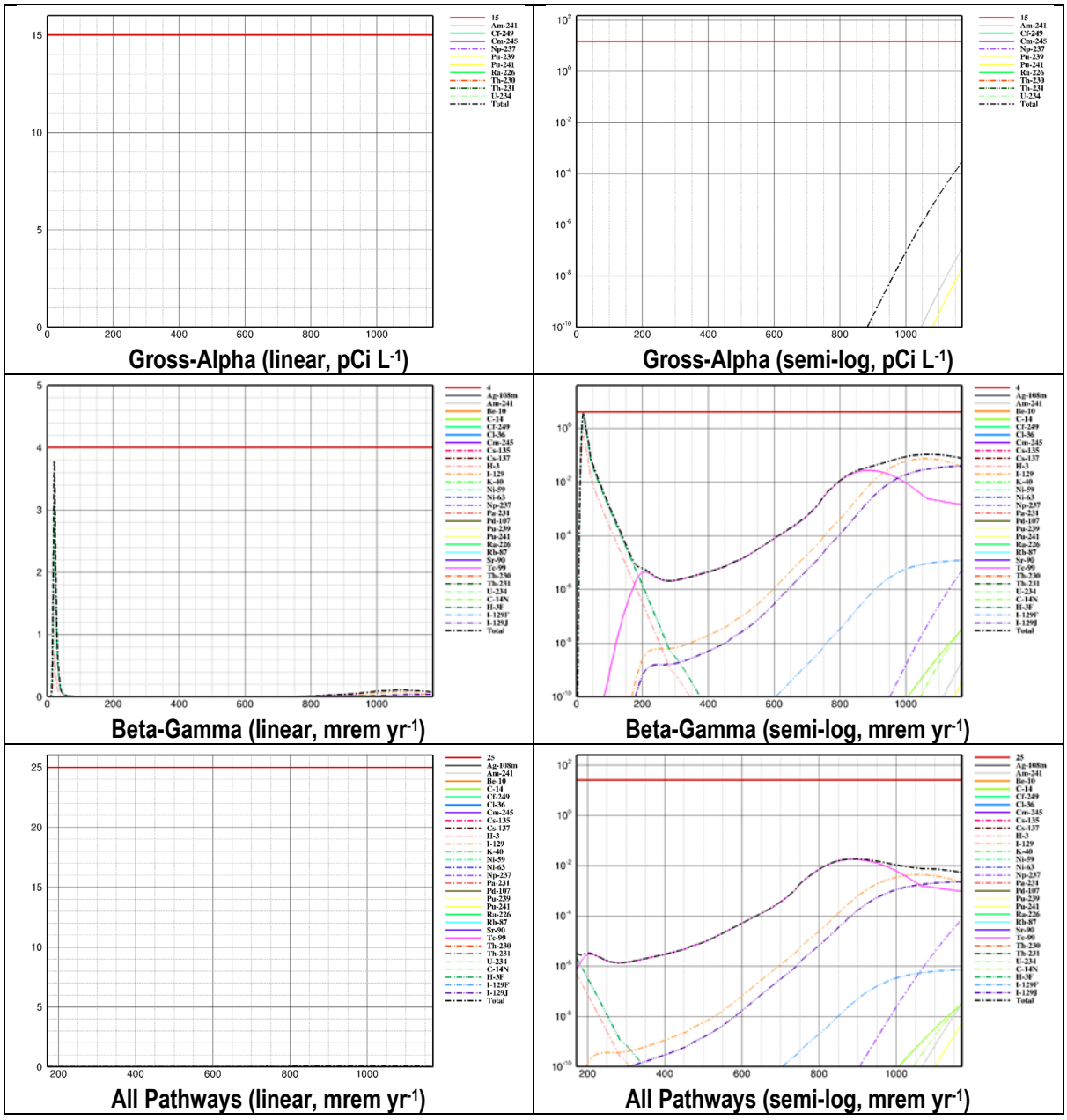


Figure H-98. Dose History Time Profiles for ST01 Based on Unbiased CWTS Closure Inventory

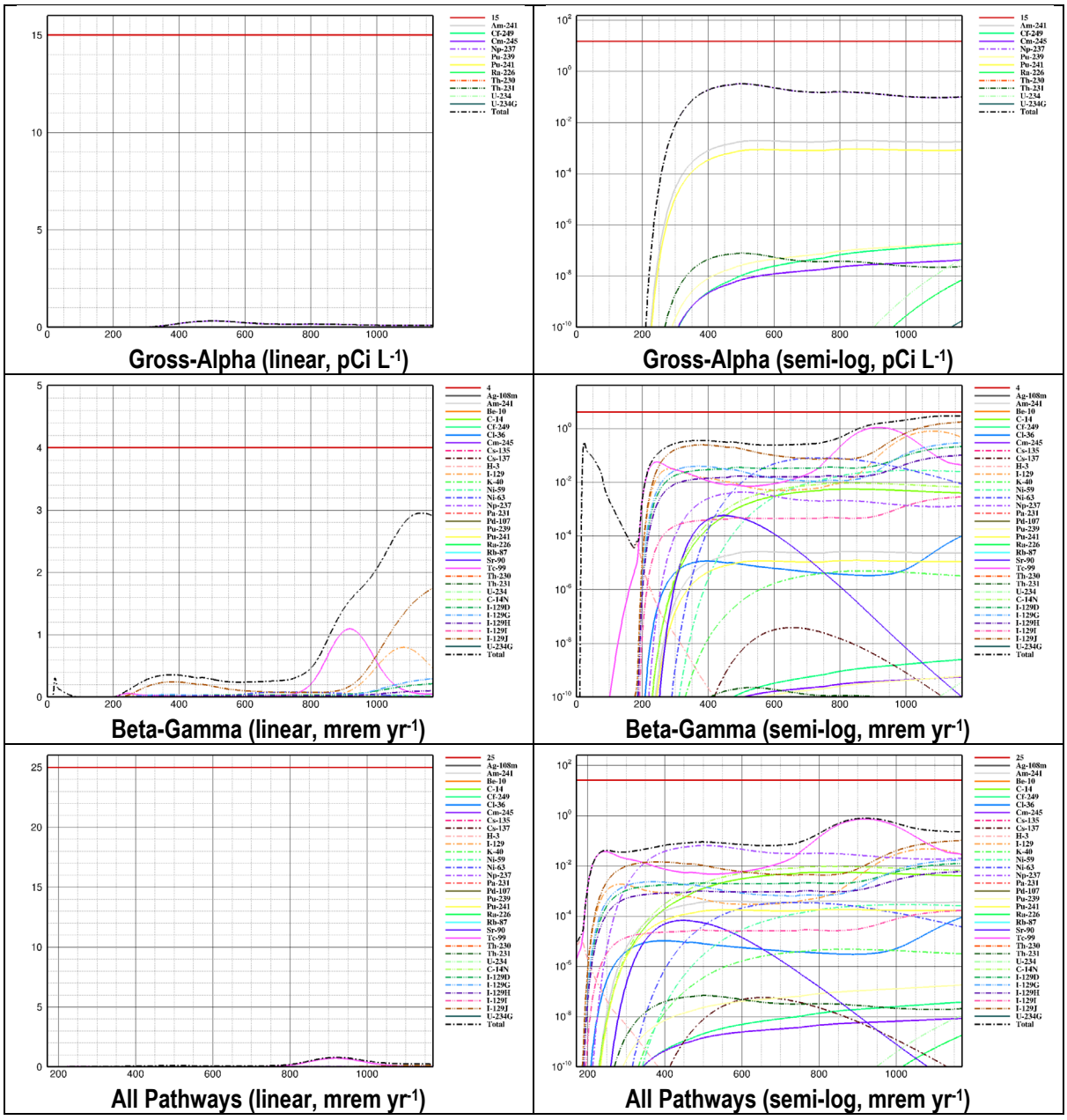


Figure H-99. Dose History Time Profiles for ST02 Based on Unbiased CWTS Closure Inventory

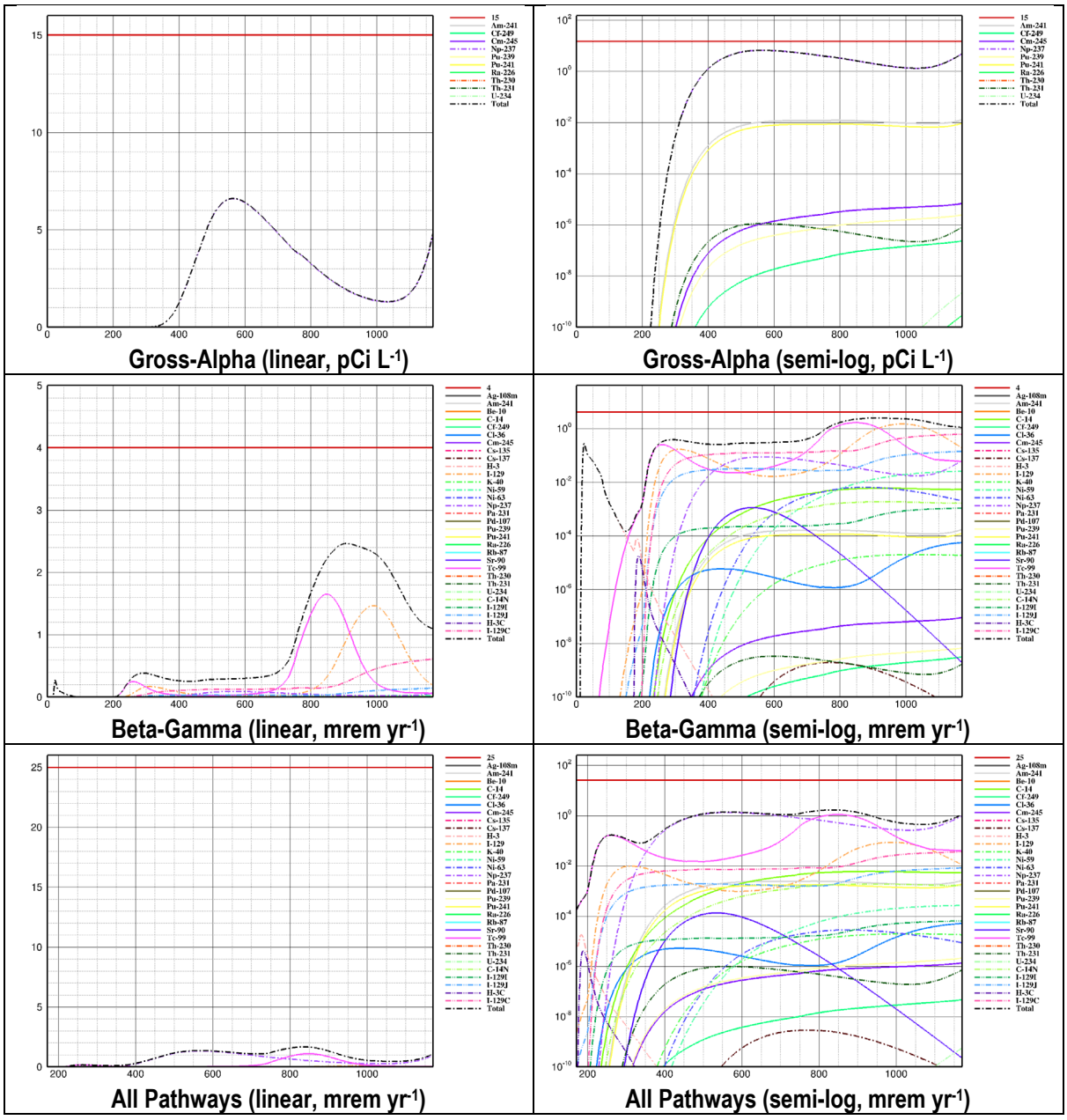


Figure H-100. Dose History Time Profiles for ST03 Based on Unbiased CWTS Closure Inventory

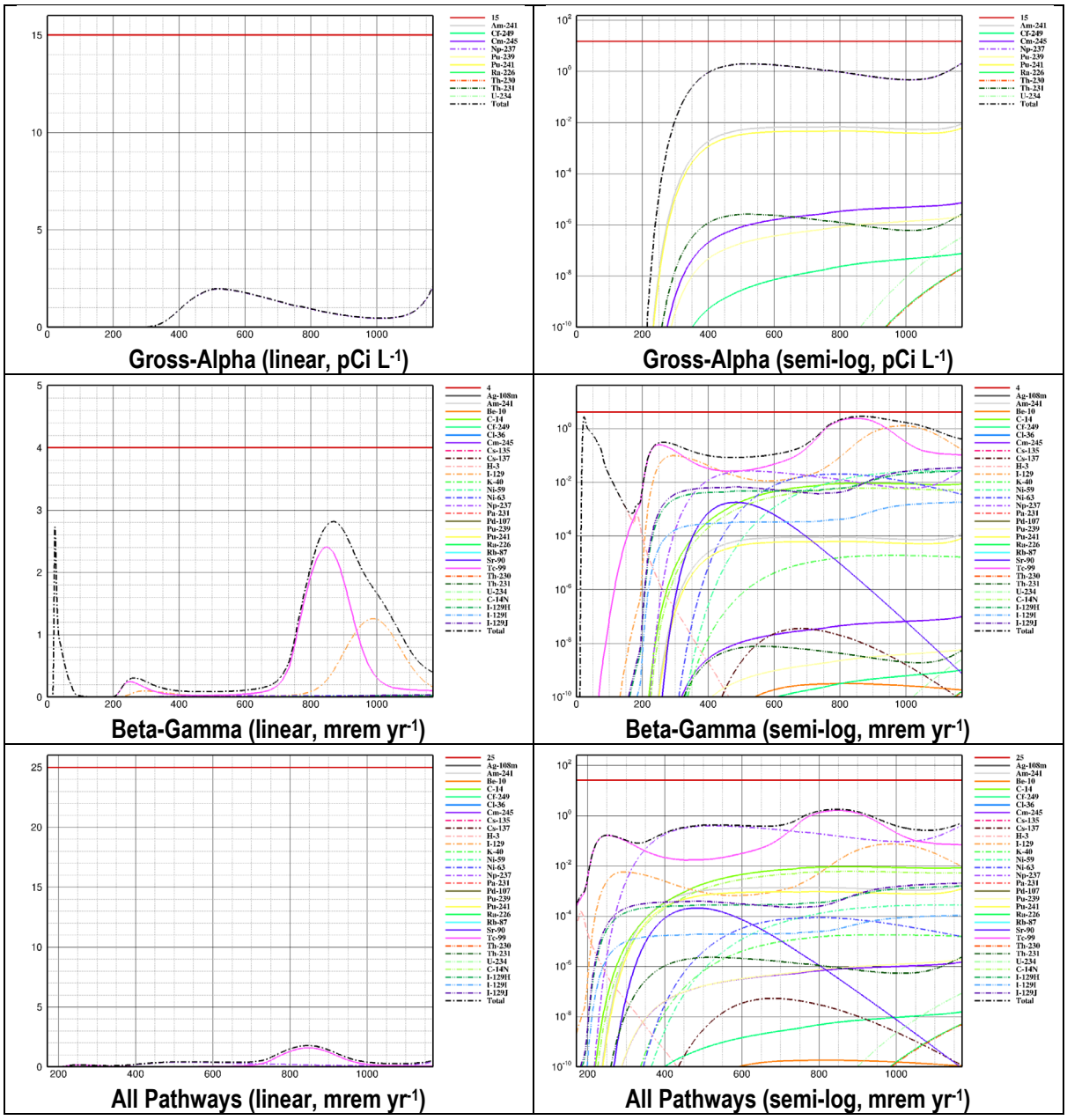


Figure H-101. Dose History Time Profiles for ST04 Based on Unbiased CWTS Closure Inventory

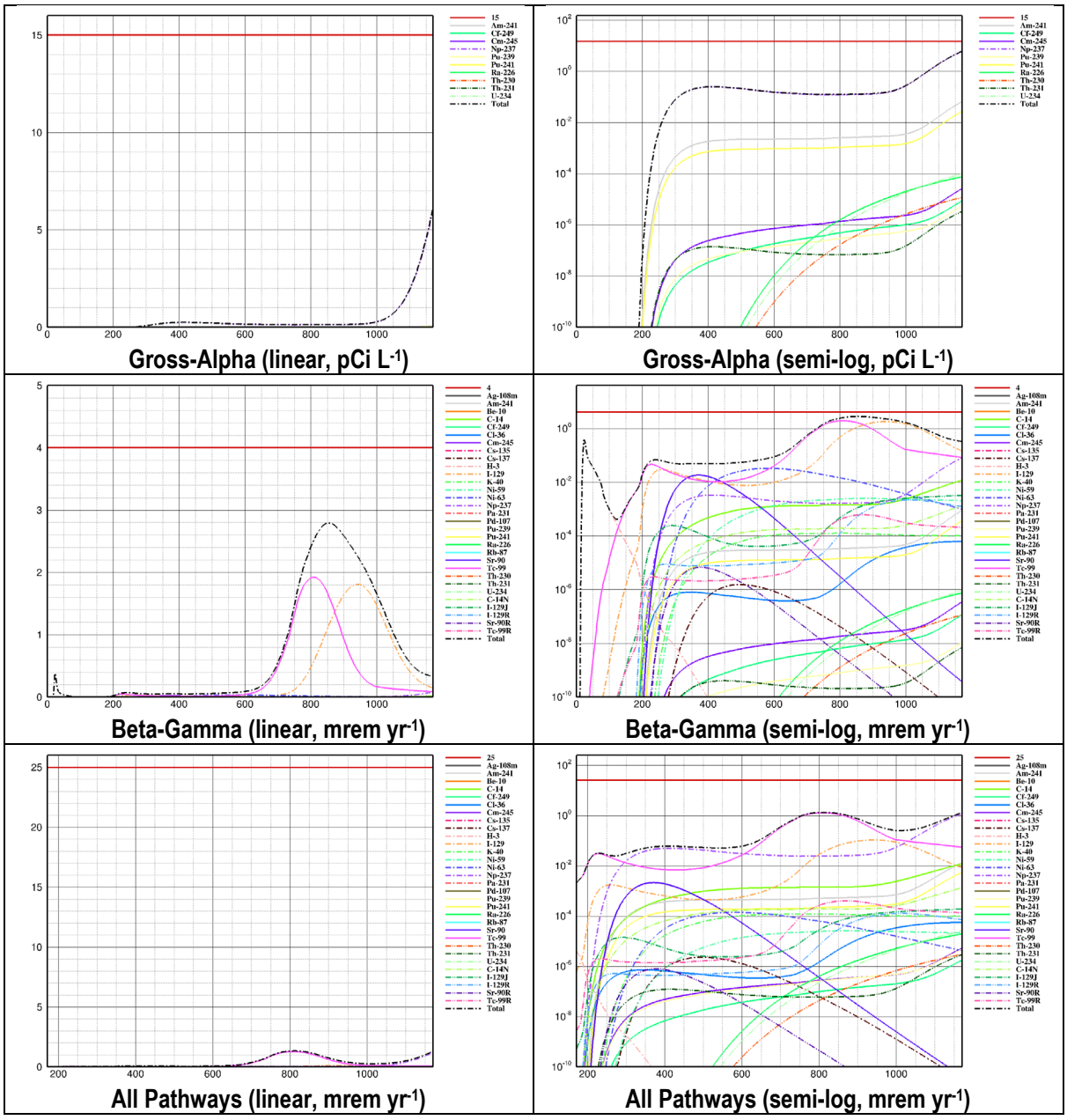


Figure H-102. Dose History Time Profiles for ST05 Based on Unbiased CWTS Closure Inventory

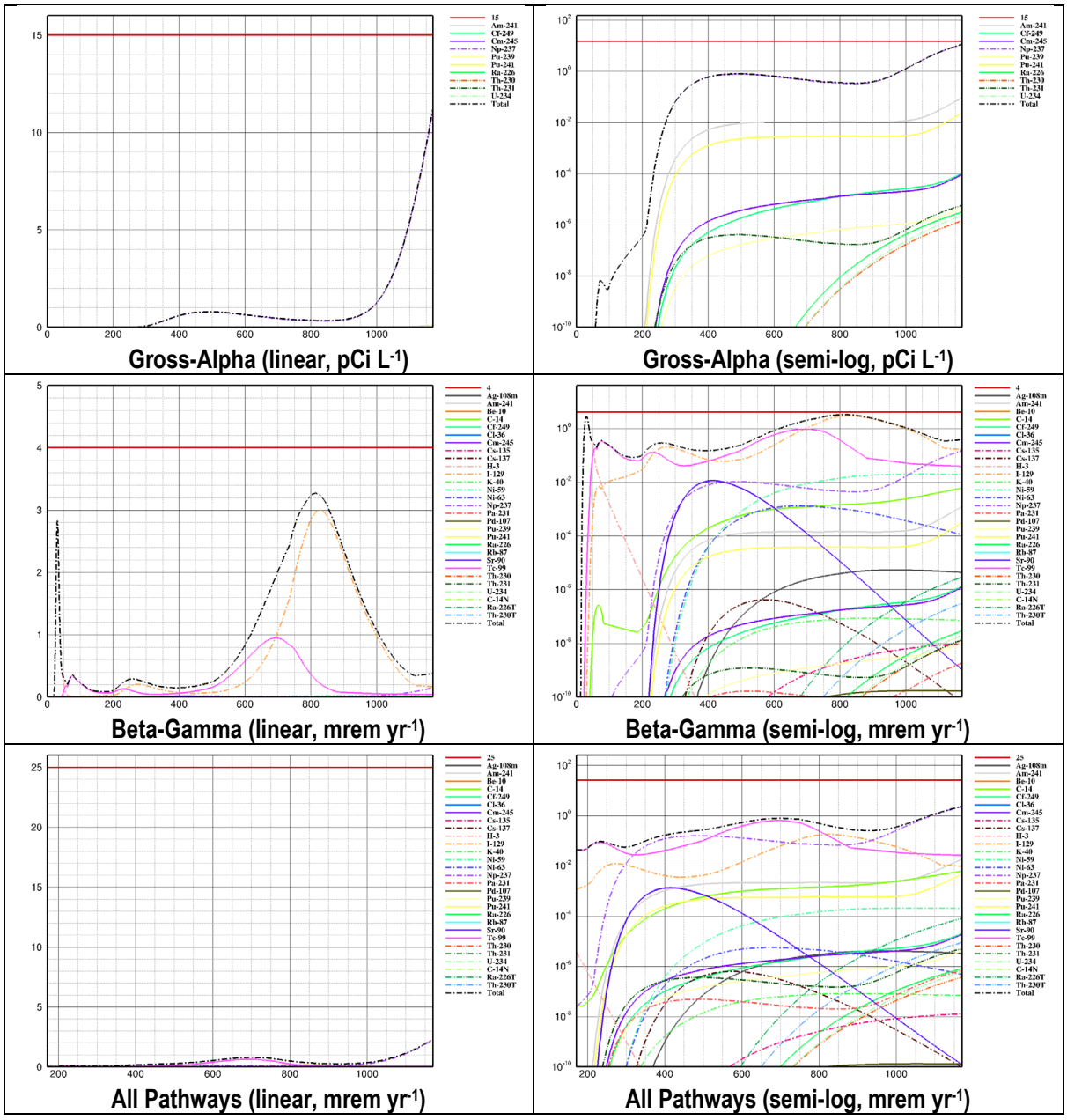


Figure H-103. Dose History Time Profiles for ST06 Based on Unbiased CWTS Closure Inventory

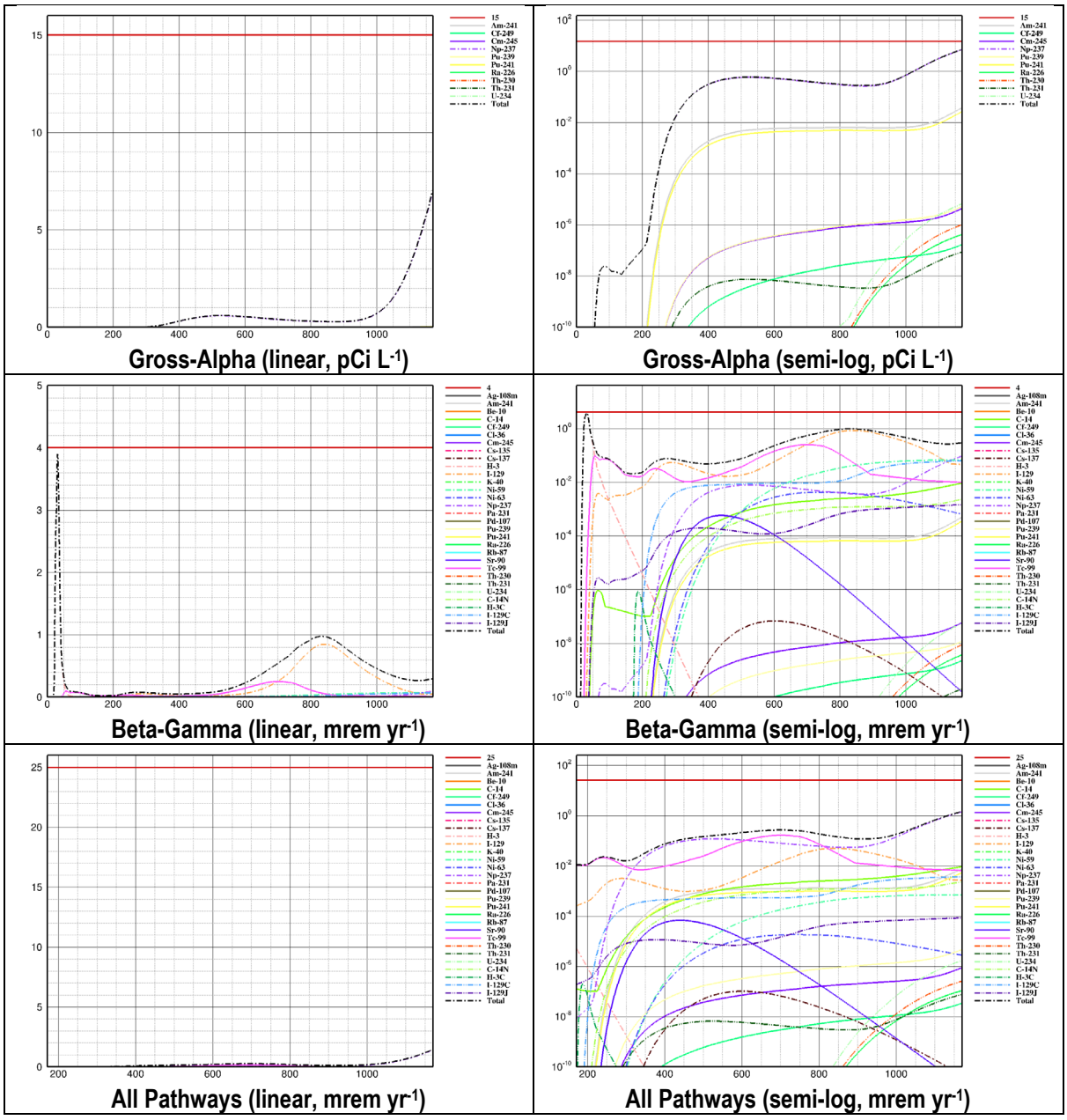


Figure H-104. Dose History Time Profiles for ST07 Based on Unbiased CWTS Closure Inventory

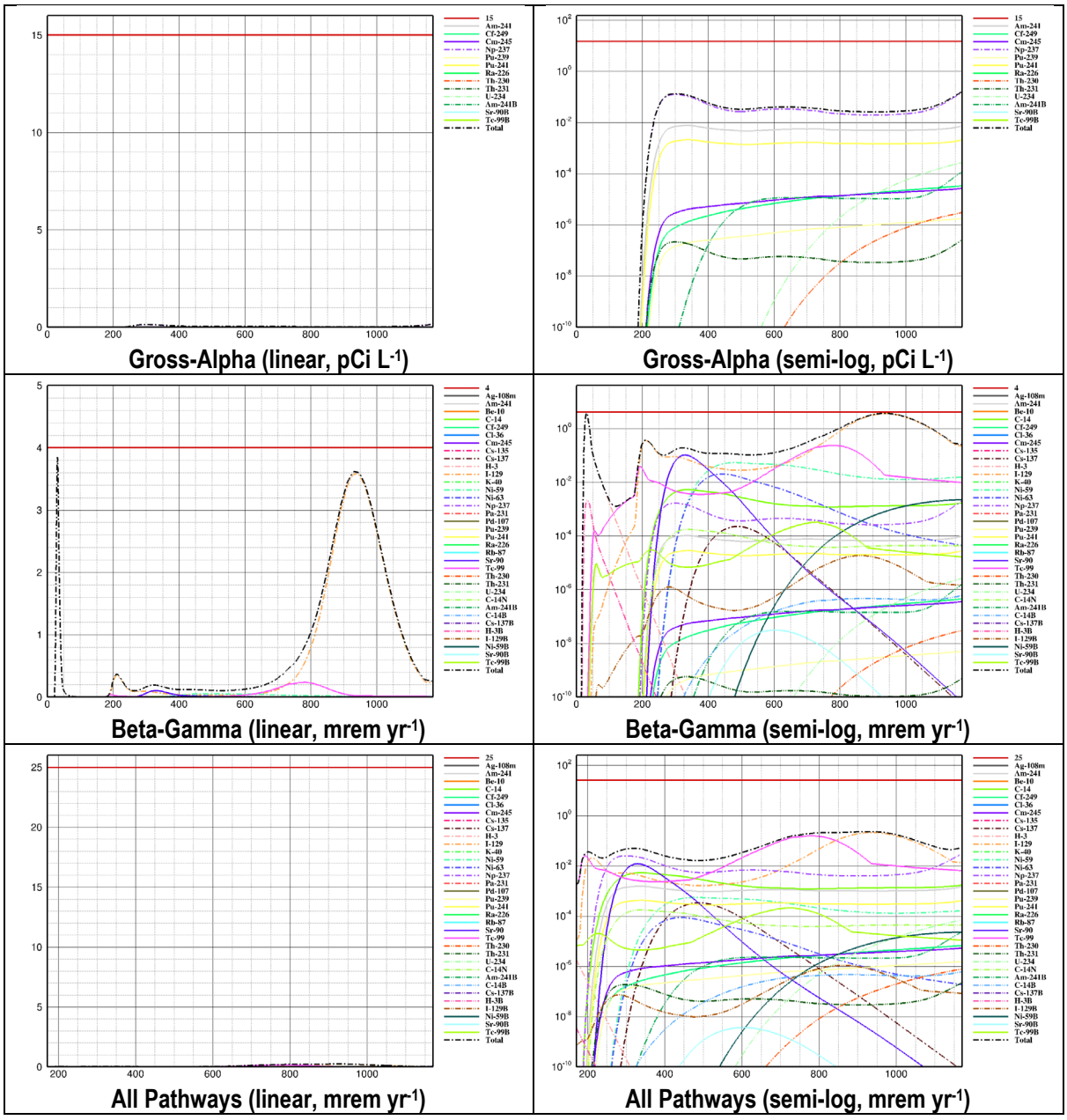


Figure H-105. Dose History Time Profiles for ST08 Based on Unbiased CWTS Closure Inventory

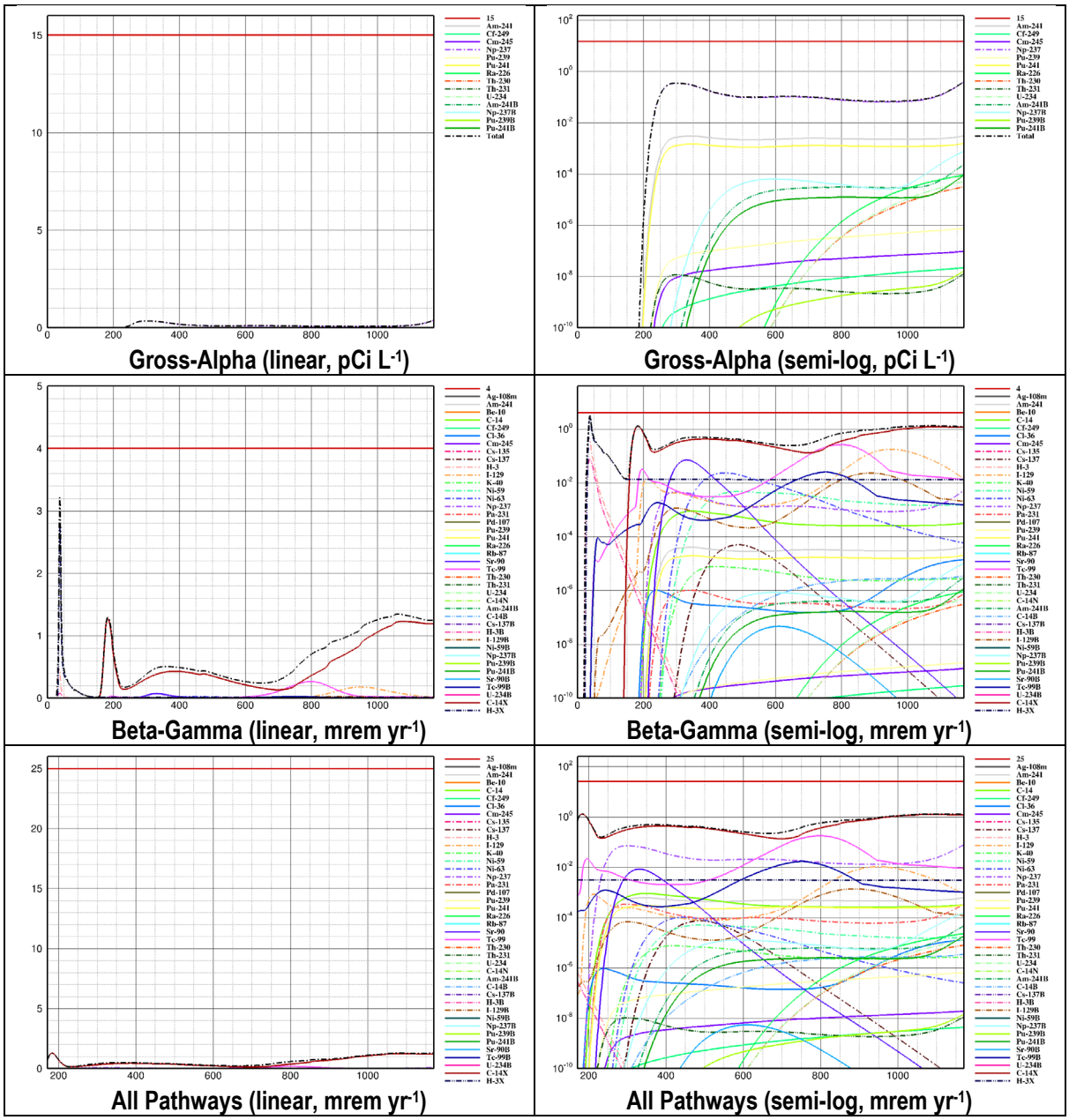


Figure H-106. Dose History Time Profiles for ST09 Based on Unbiased CWTS Closure Inventory

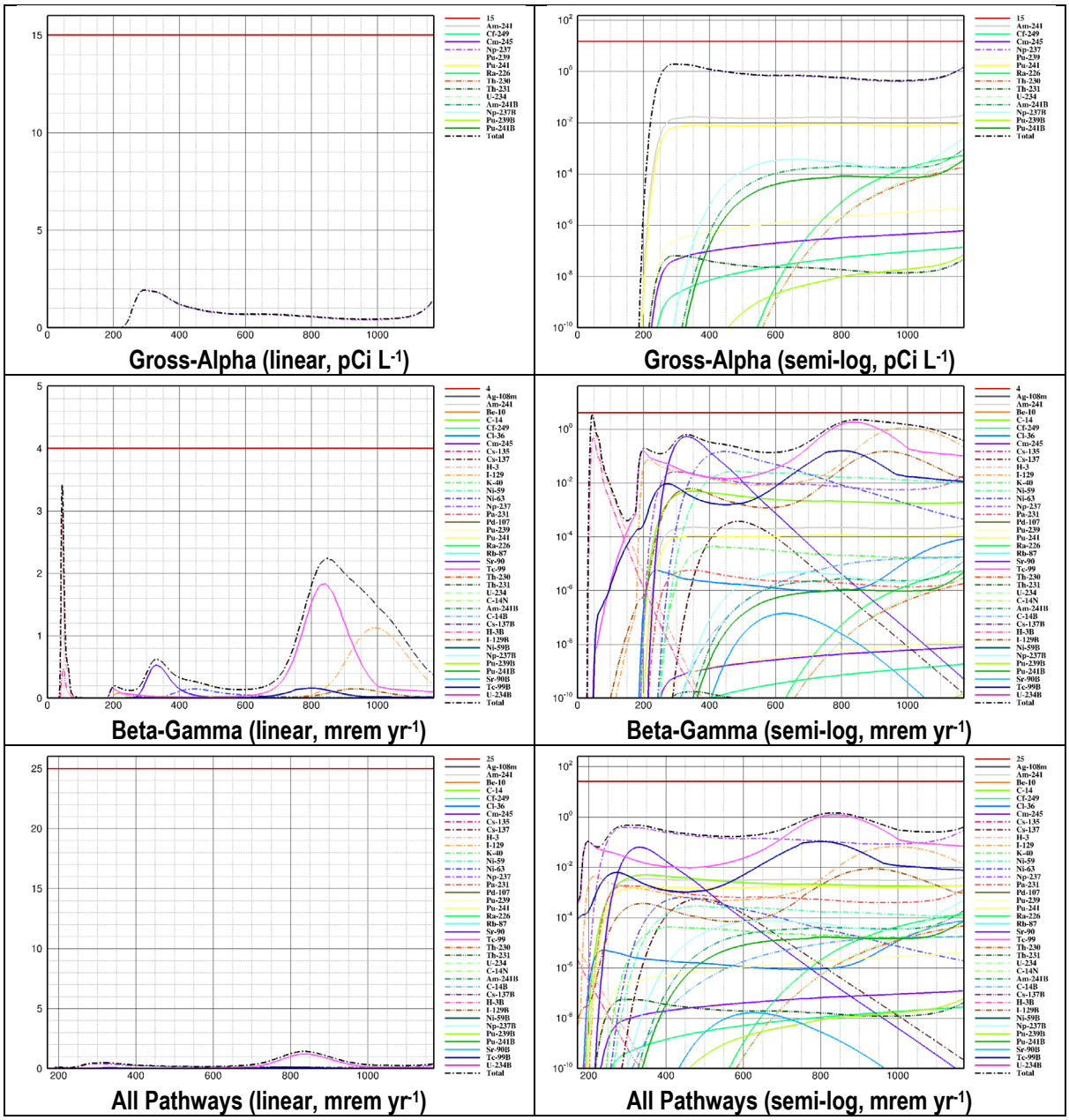


Figure H-107. Dose History Time Profiles for ST10 Based on Unbiased CWTS Closure Inventory

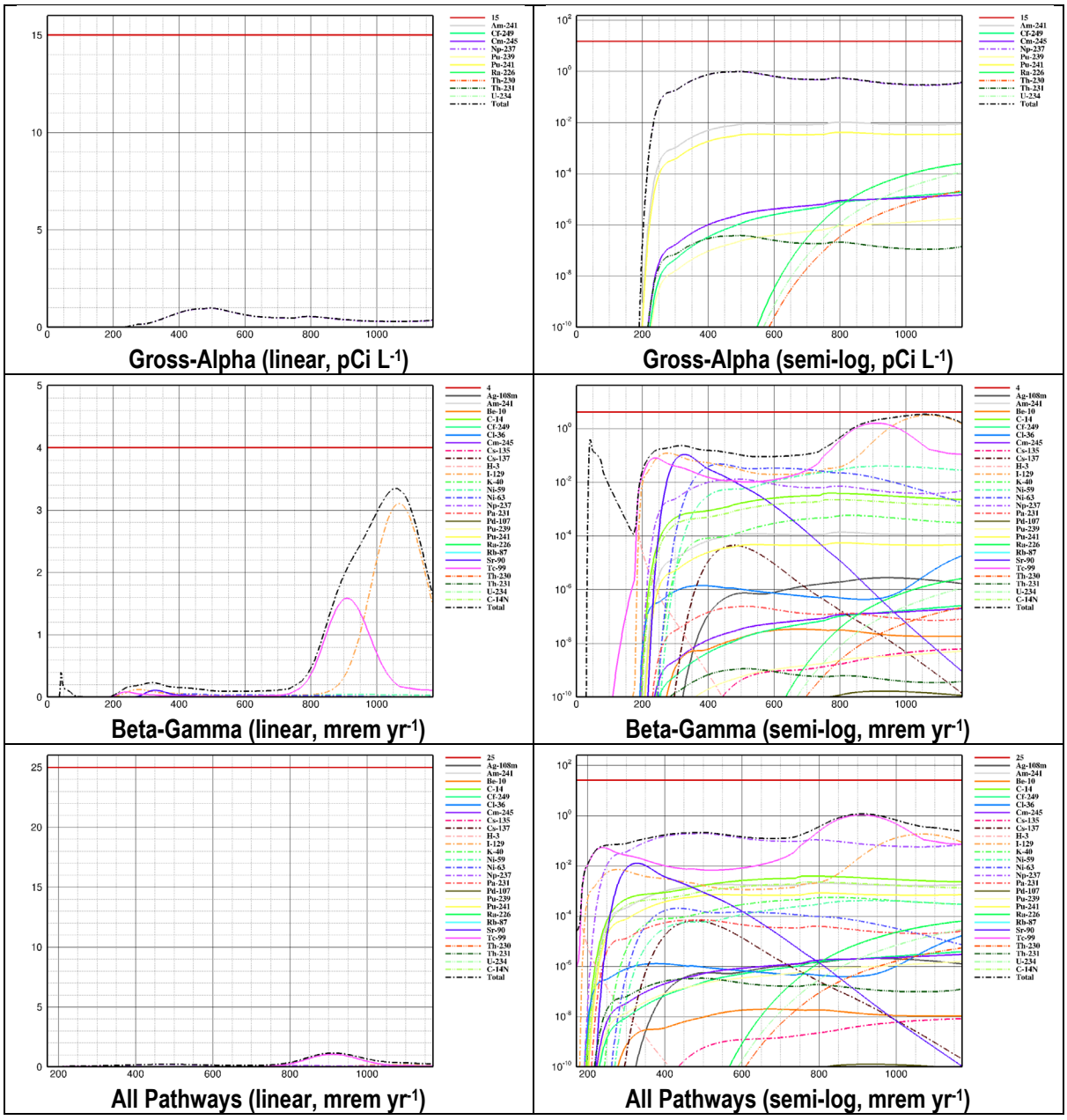


Figure H-108. Dose History Time Profiles for ST11 Based on Unbiased CWTS Closure Inventory

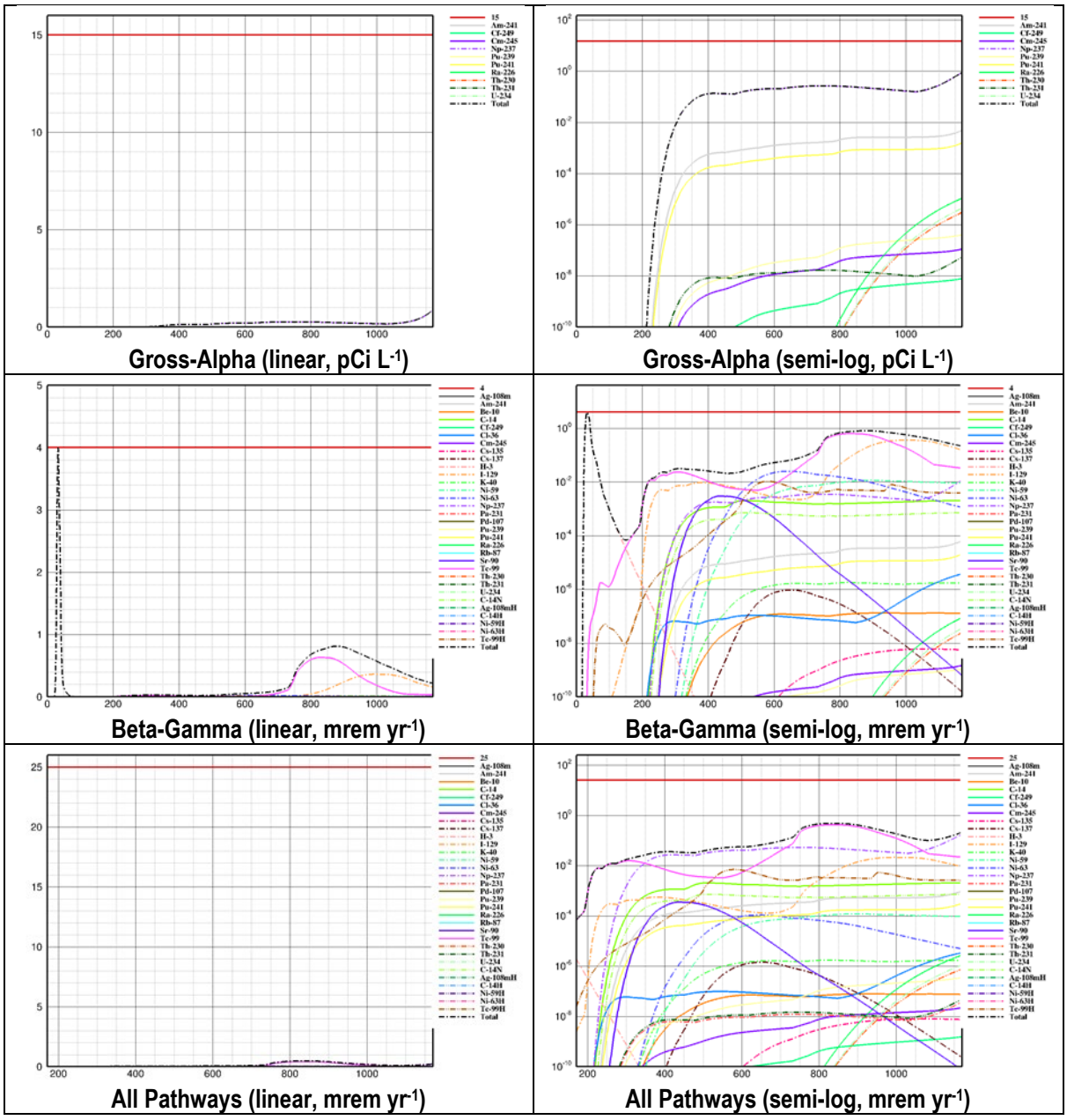


Figure H-109. Dose History Time Profiles for ST14 Based on Unbiased CWTS Closure Inventory

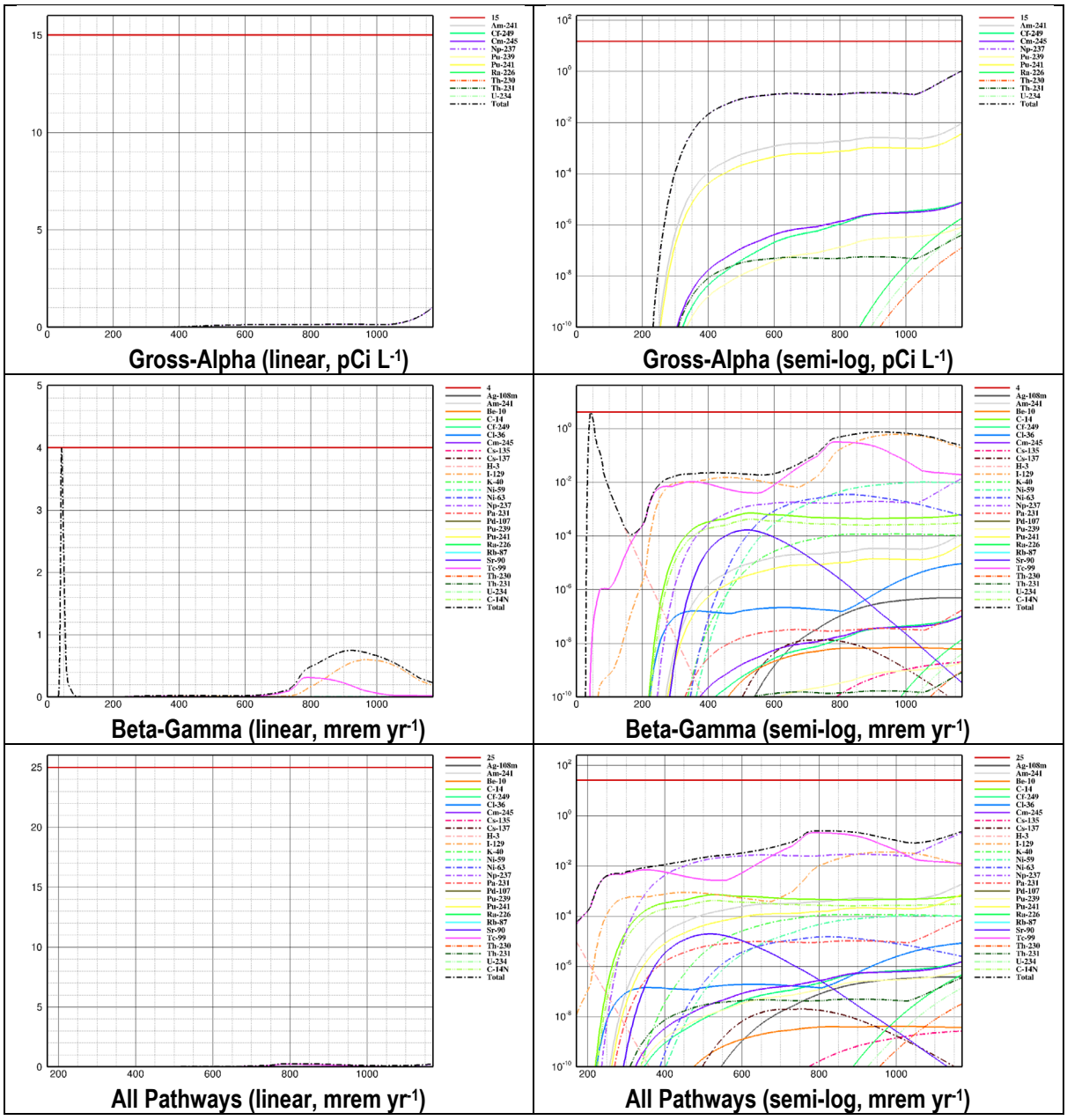


Figure H-110. Dose History Time Profiles for ST18 Based on Unbiased CWTS Closure Inventory

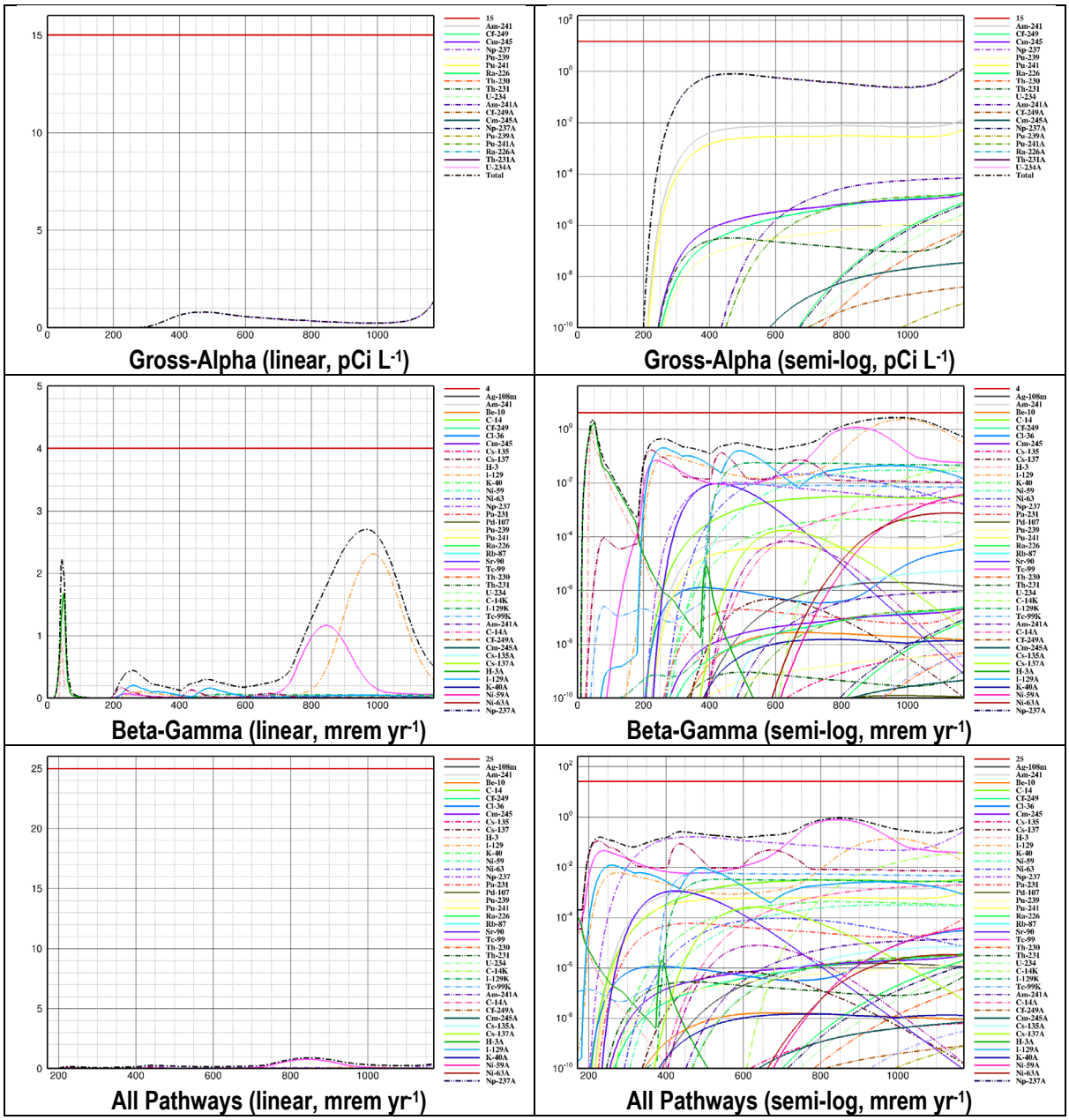


Figure H-111. Dose History Time Profiles for ST23 Based on Unbiased CWTS Closure Inventory

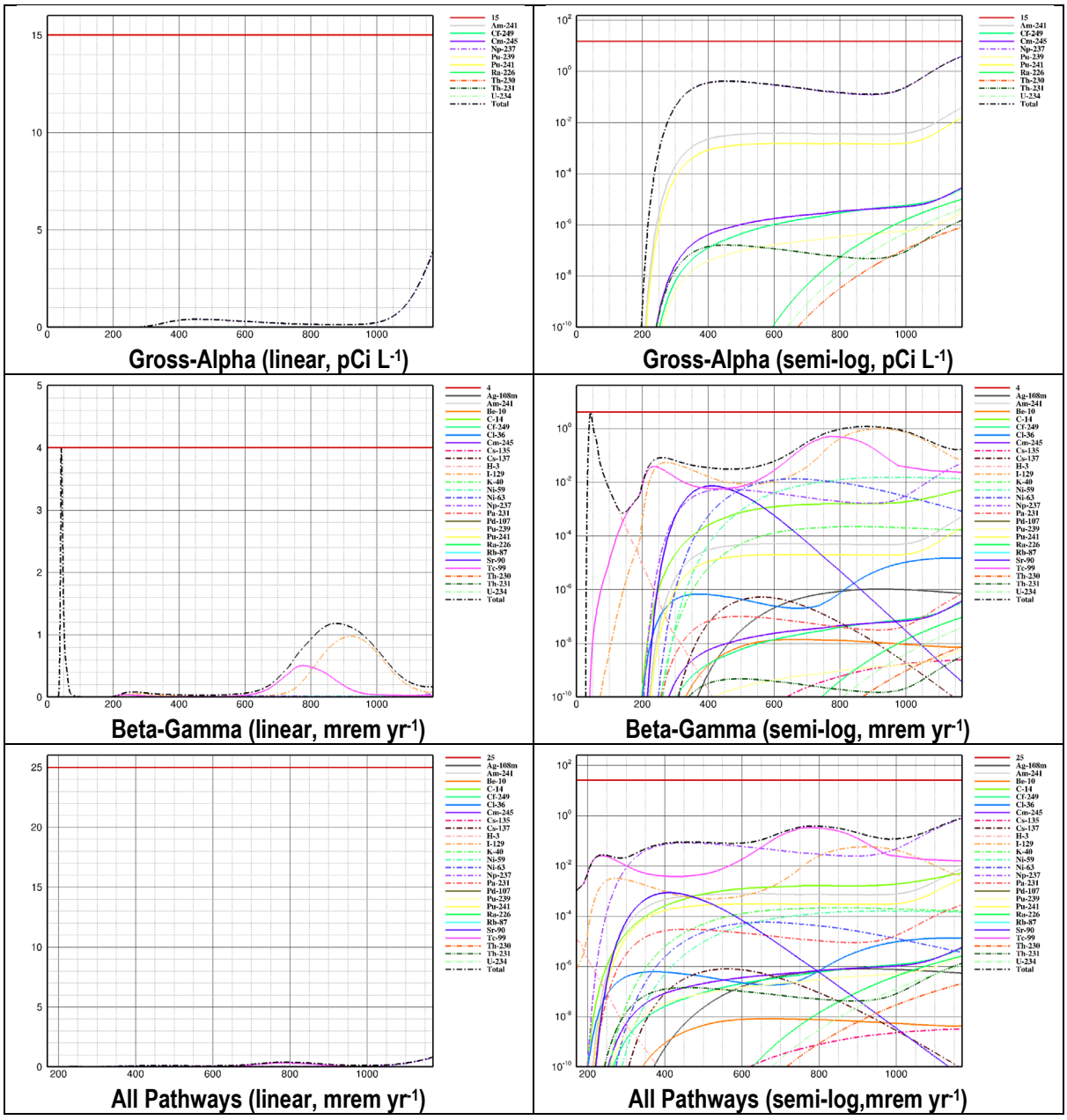


Figure H-112. Dose History Time Profiles for ST24 Based on Unbiased CWTS Closure Inventory

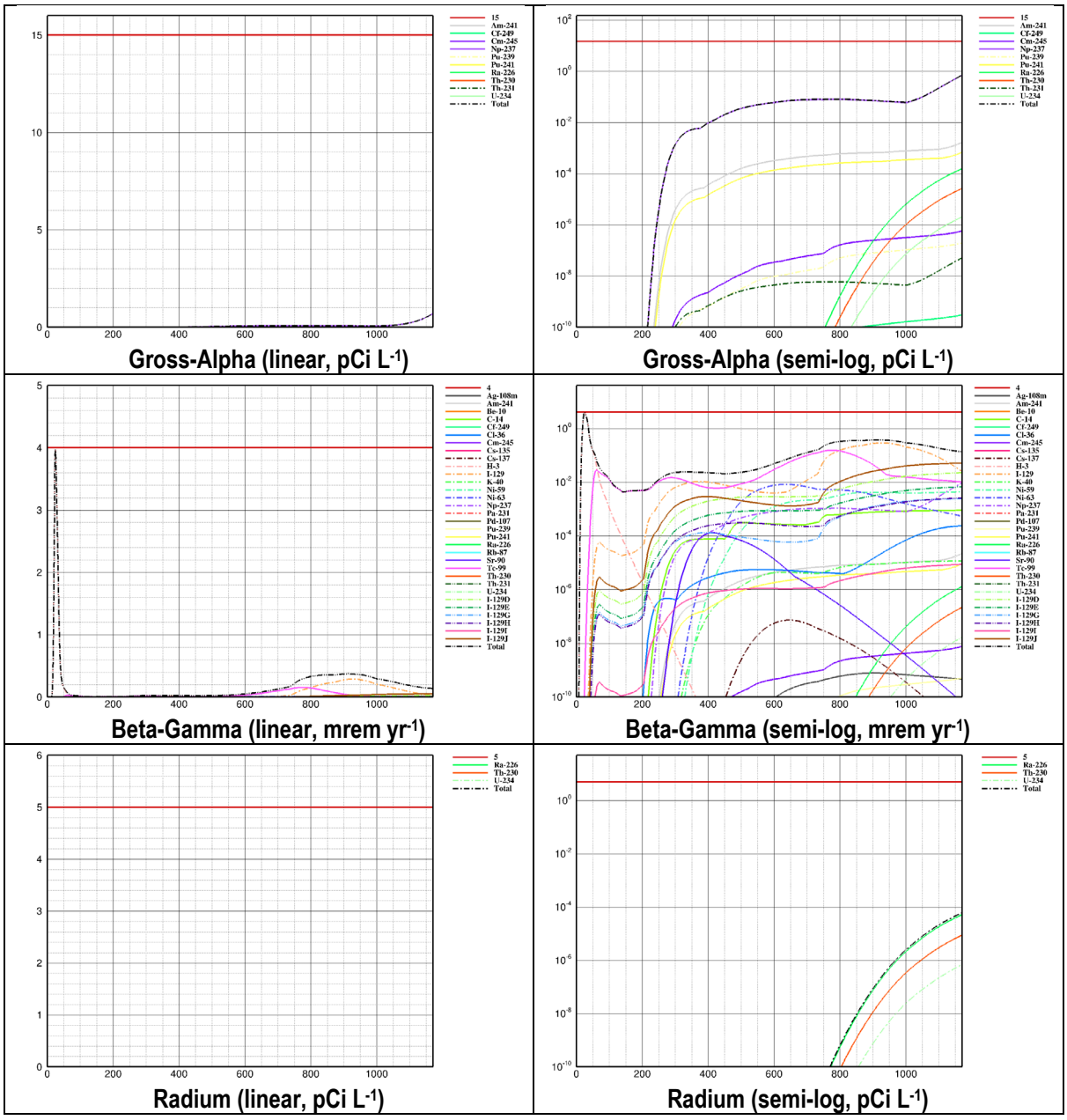


Figure H-113. Dose History Time Profiles for ET01 Based on Unbiased CWTS Closure Inventory

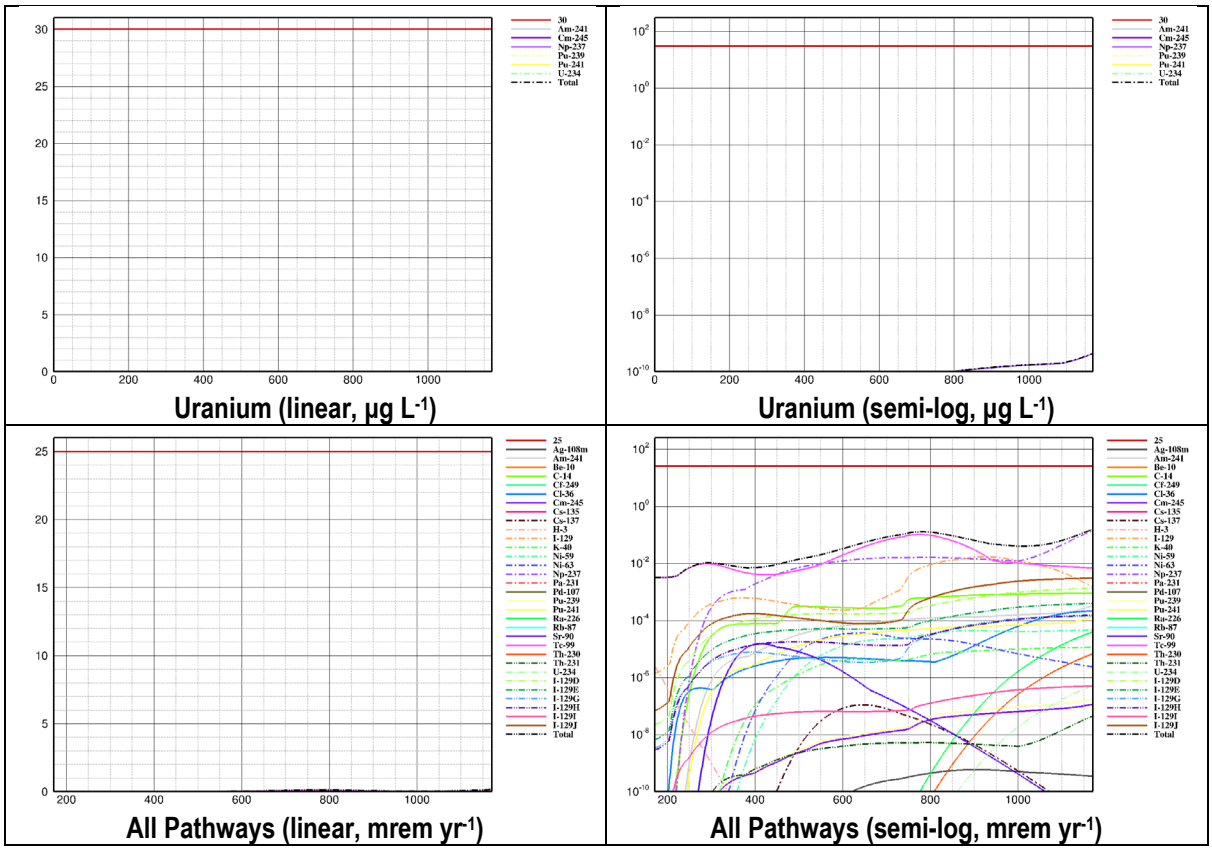


Figure H-113 (cont'd). Dose History Time Profiles for ET01 Based on Unbiased CWTS Closure Inventory

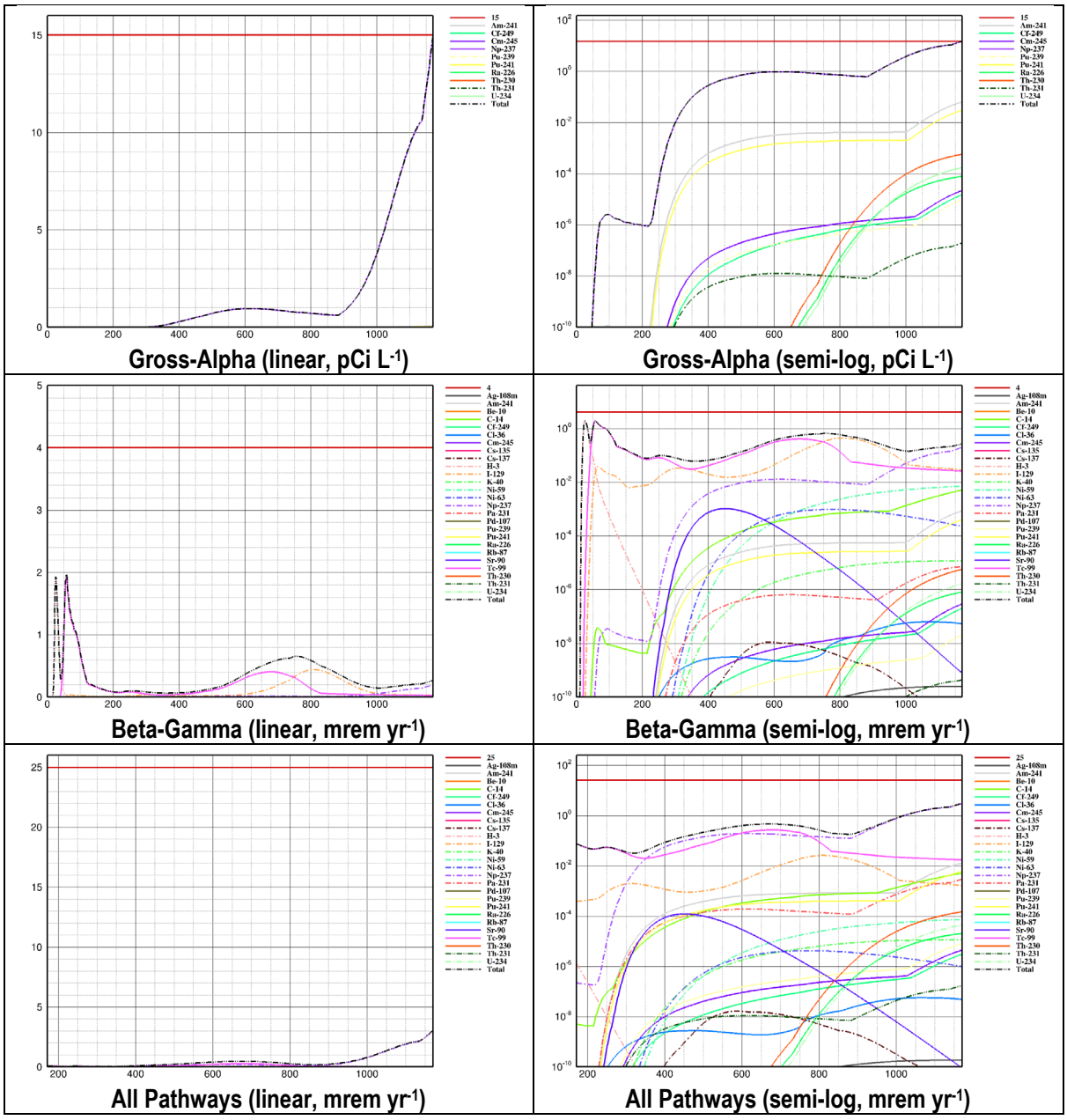


Figure H-114. Dose History Time Profiles for ET02 Based on Unbiased CWTS Closure Inventory

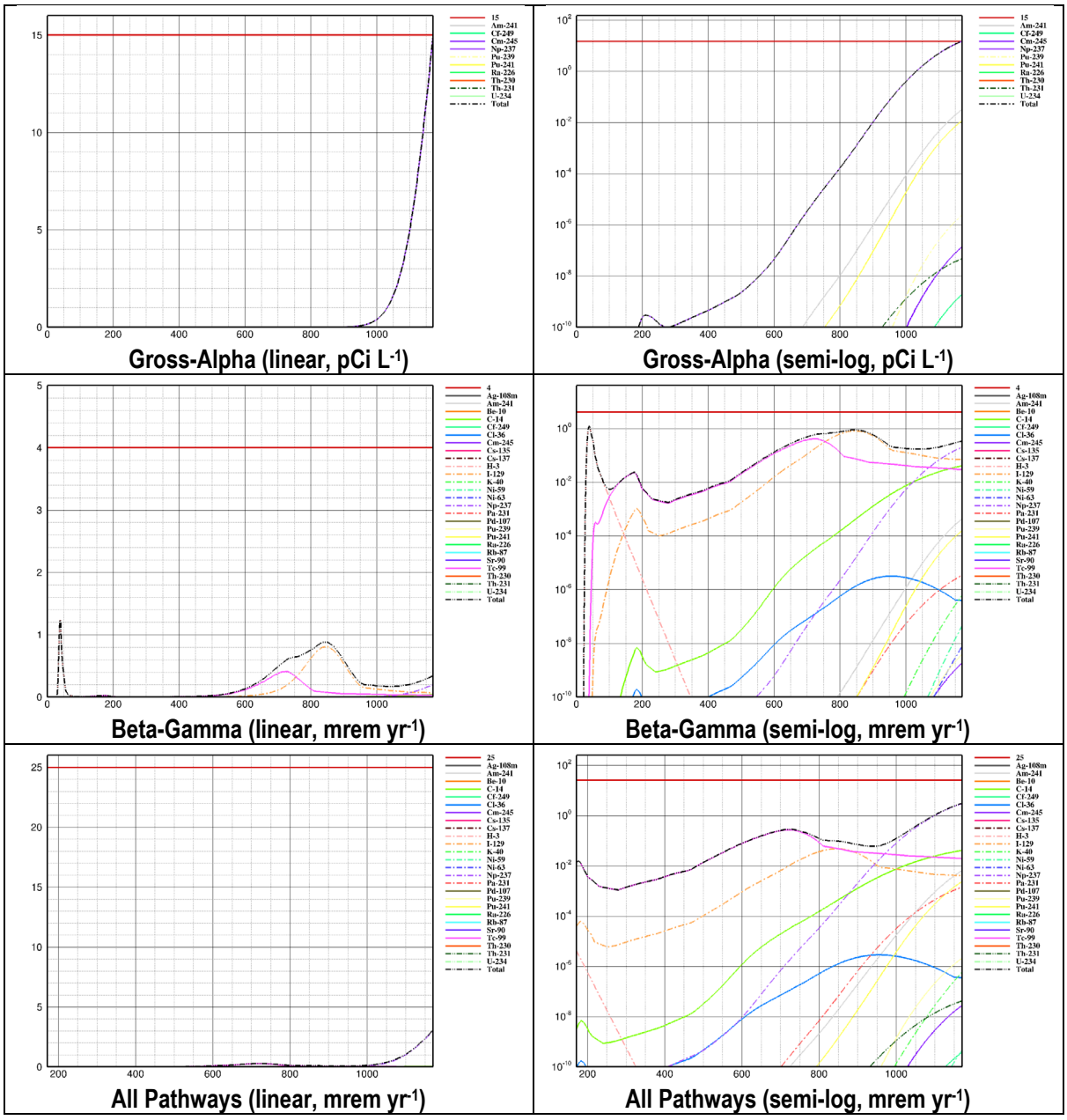


Figure H-115. Dose History Time Profiles for ET03 Based on Unbiased CWTS Closure Inventory

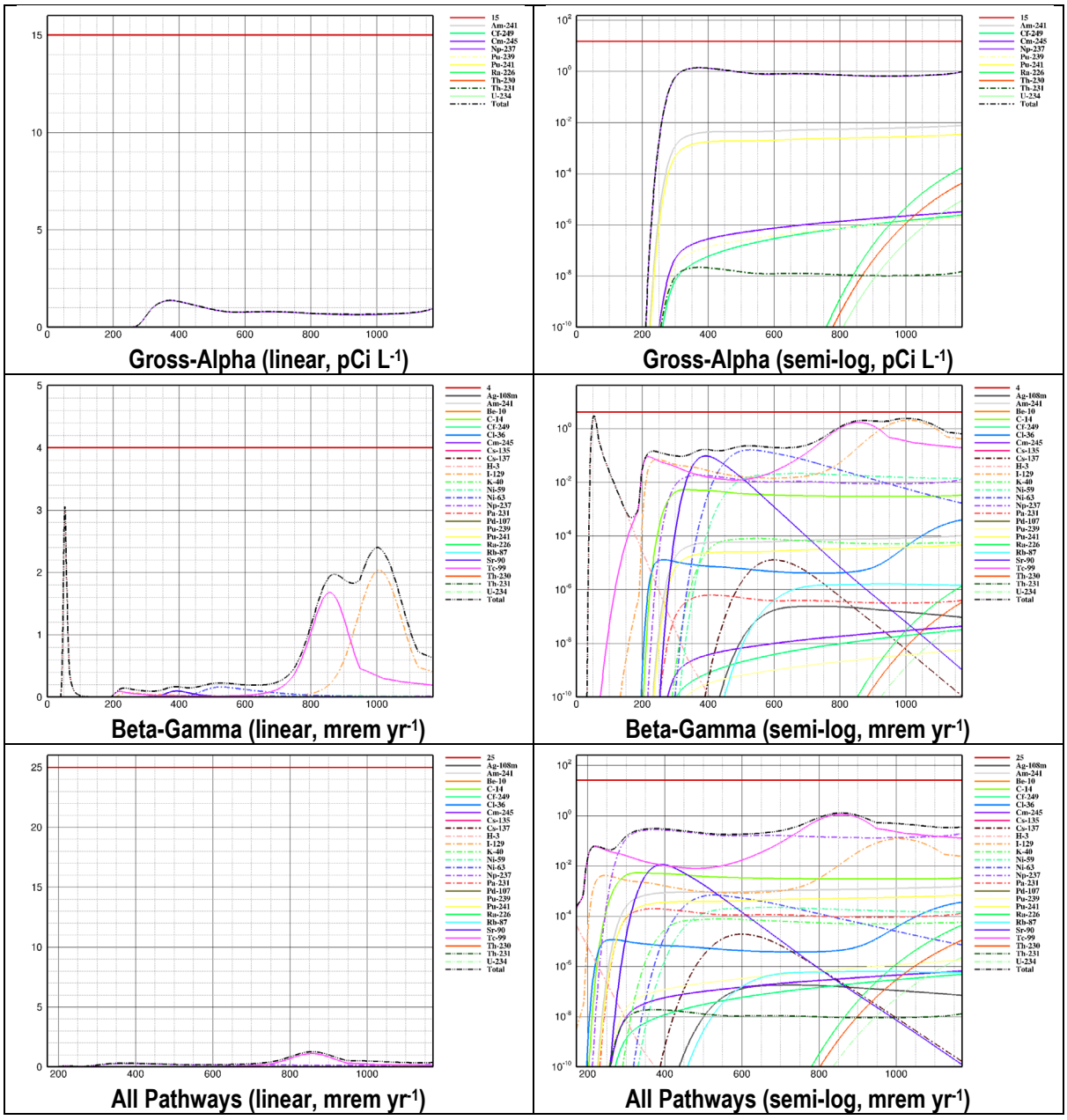


Figure H-116. Dose History Time Profiles for ET04 Based on Unbiased CWTS Closure Inventory

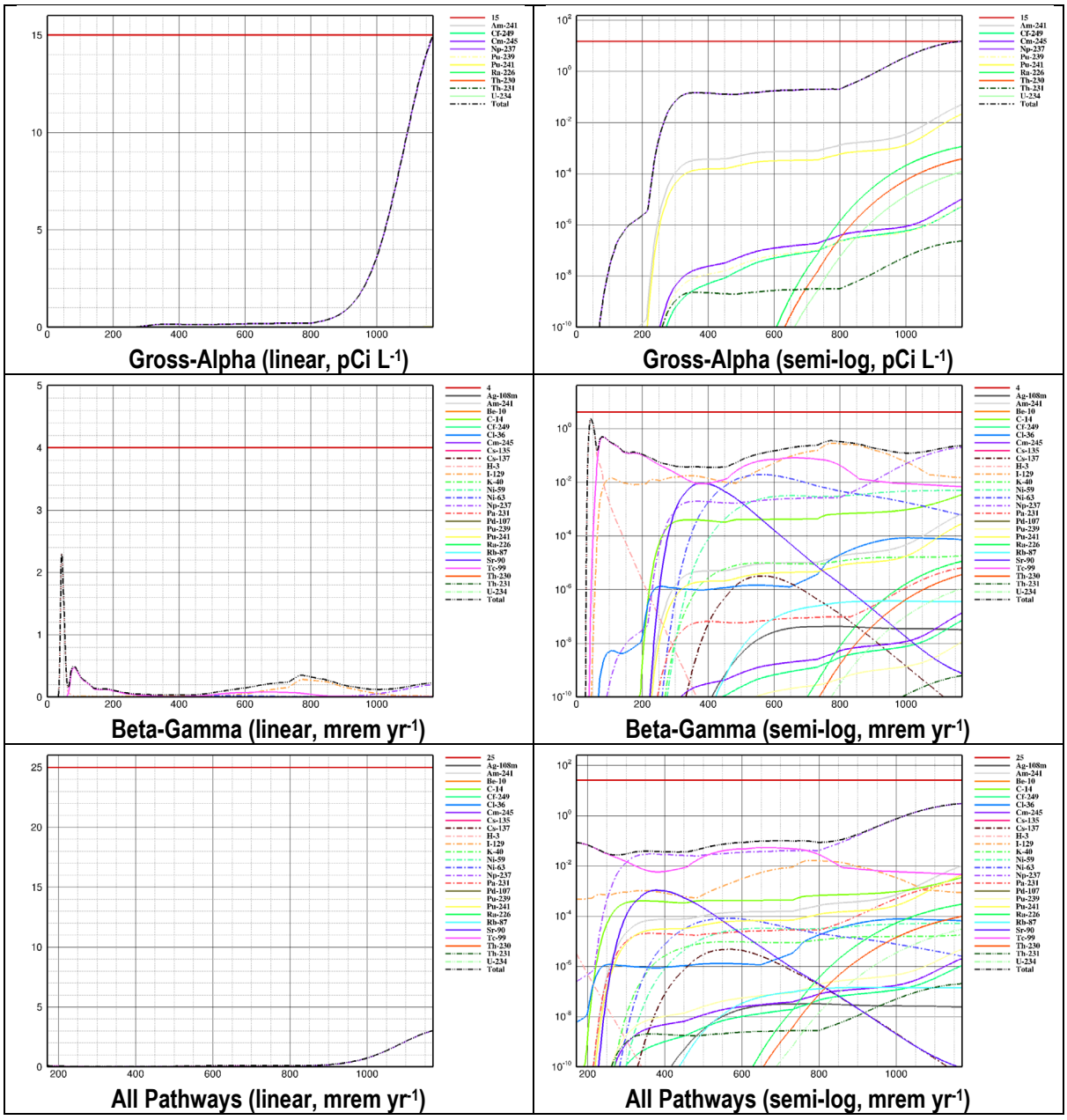


Figure H-117. Dose History Time Profiles for ET05 Based on Unbiased CWTS Closure Inventory

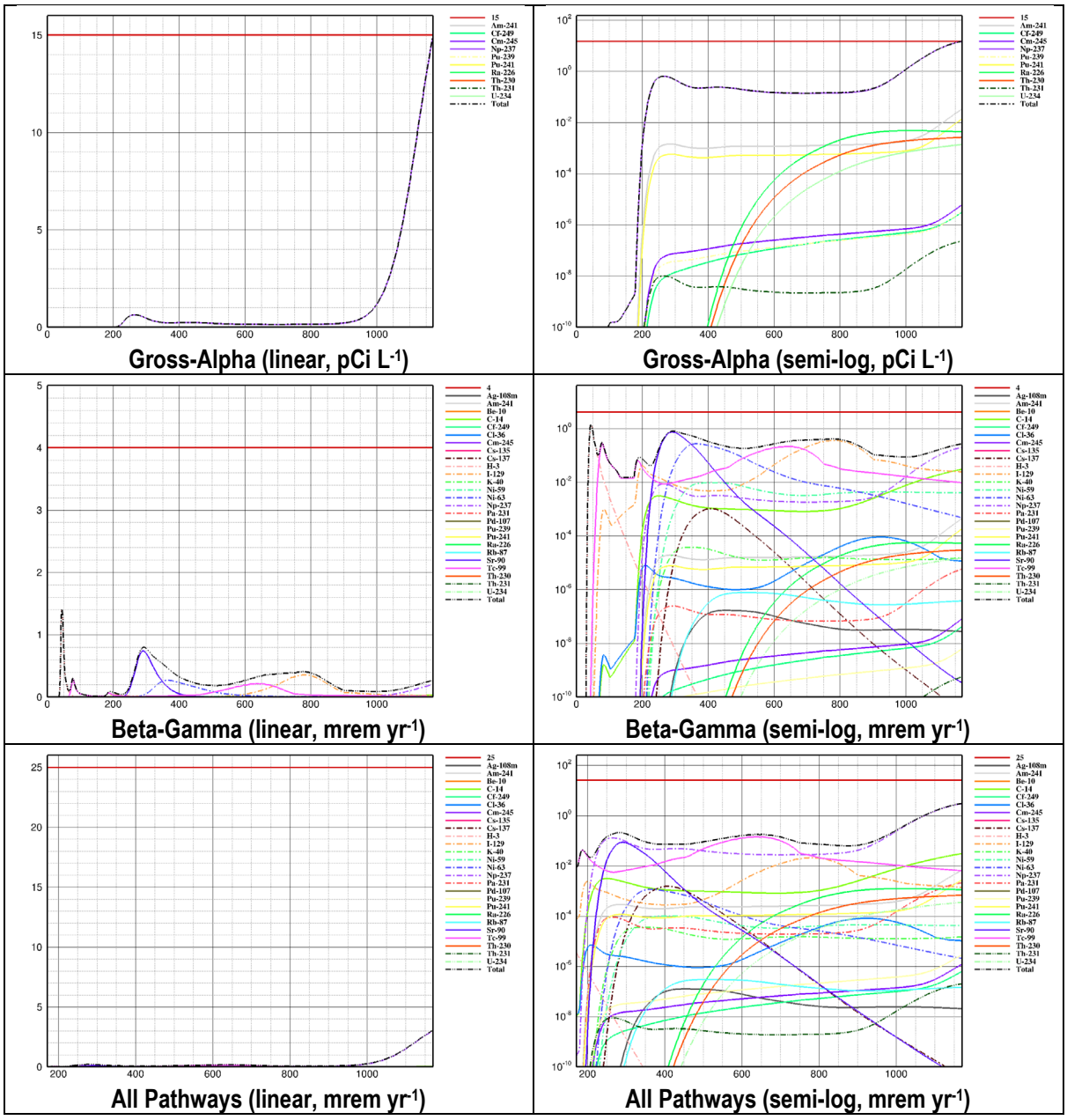


Figure H-118. Dose History Time Profiles for ET07 Based on Unbiased CWTS Closure Inventory

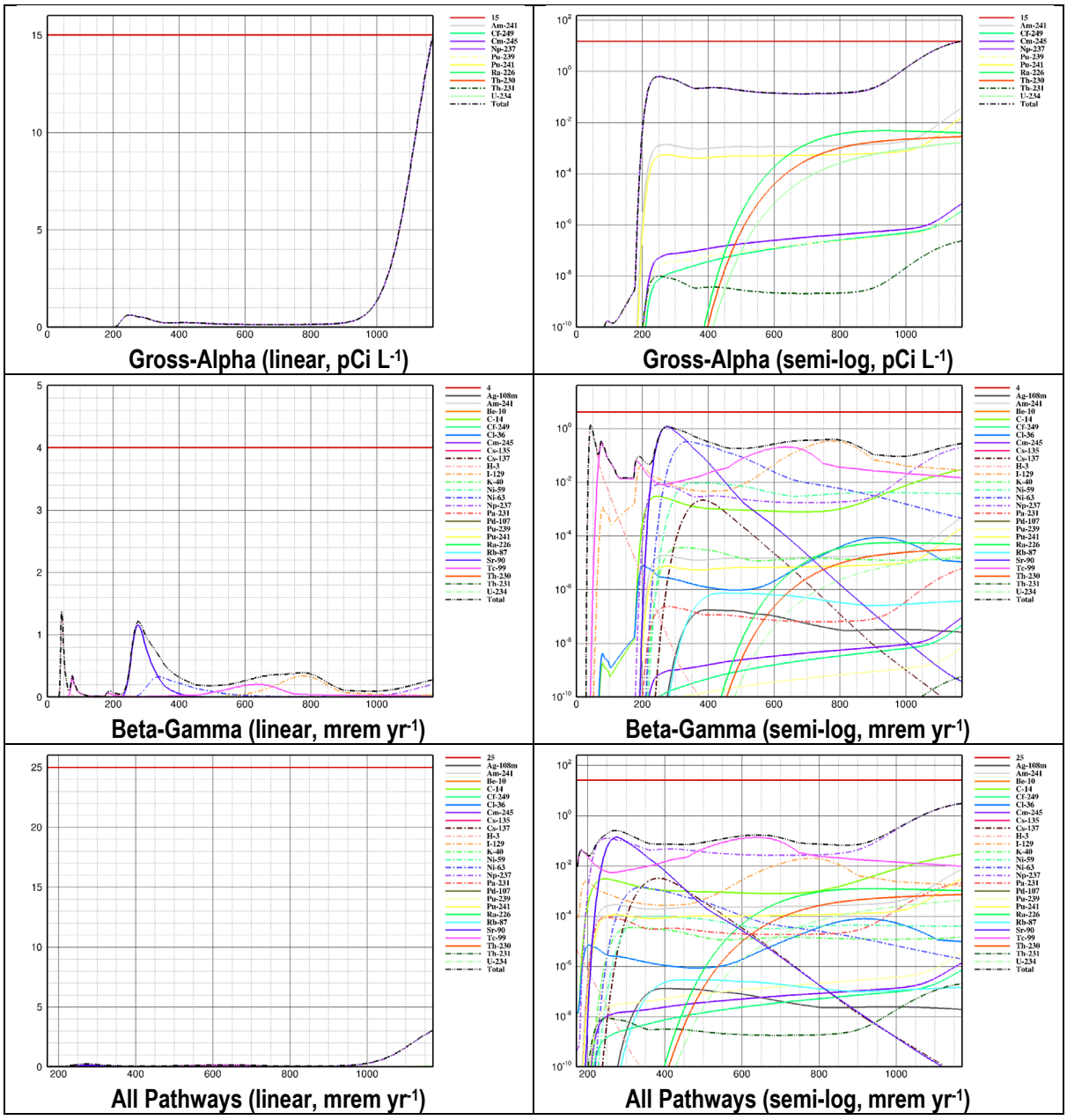


Figure H-119. Dose History Time Profiles for ET08 Based on Unbiased CWTS Closure Inventory

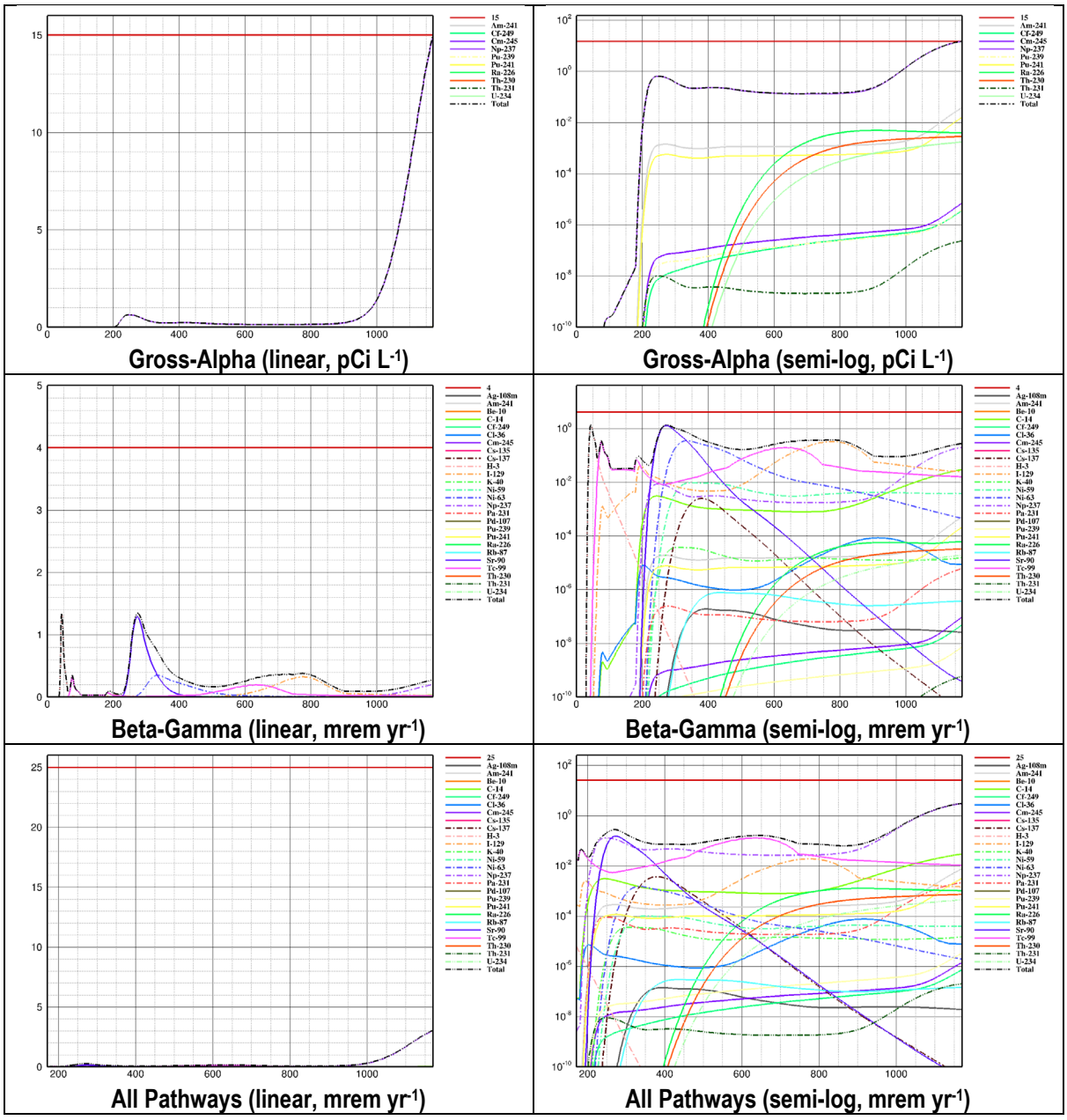


Figure H-120. Dose History Time Profiles for ET09 Based on Unbiased CWTS Closure Inventory

H.1.5.2. Low-Activity Waste and Intermediate-Level Vaults

Dose history time profiles (based on an upper-bound, unbiased CWTS closure inventory) for all five GW pathways are shown for the LAWV and ILV in Figure H-121 and Figure H-122, respectively.

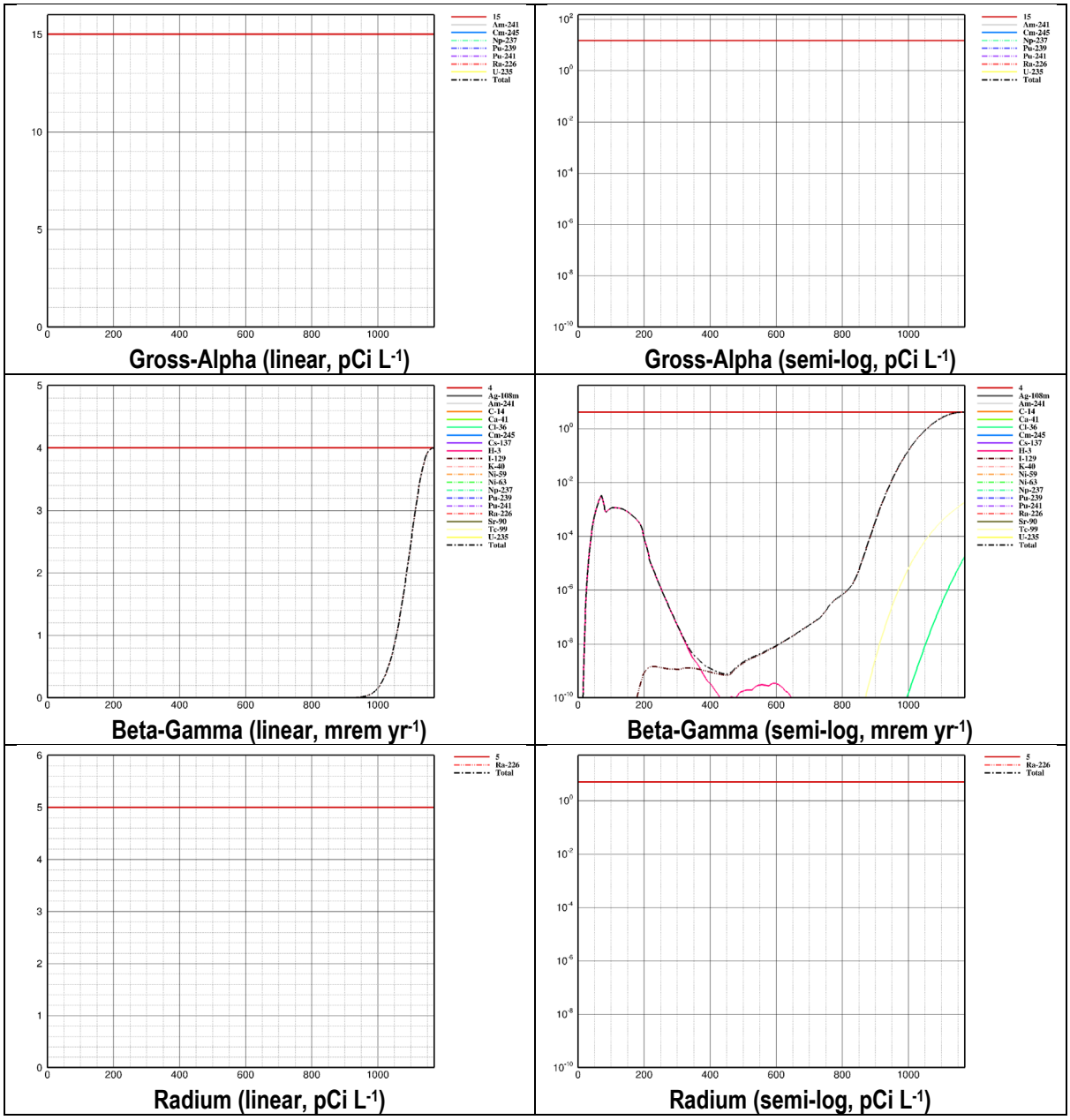


Figure H-121. Dose History Time Profiles for LAWV Based on Unbiased CWTS Closure Inventory

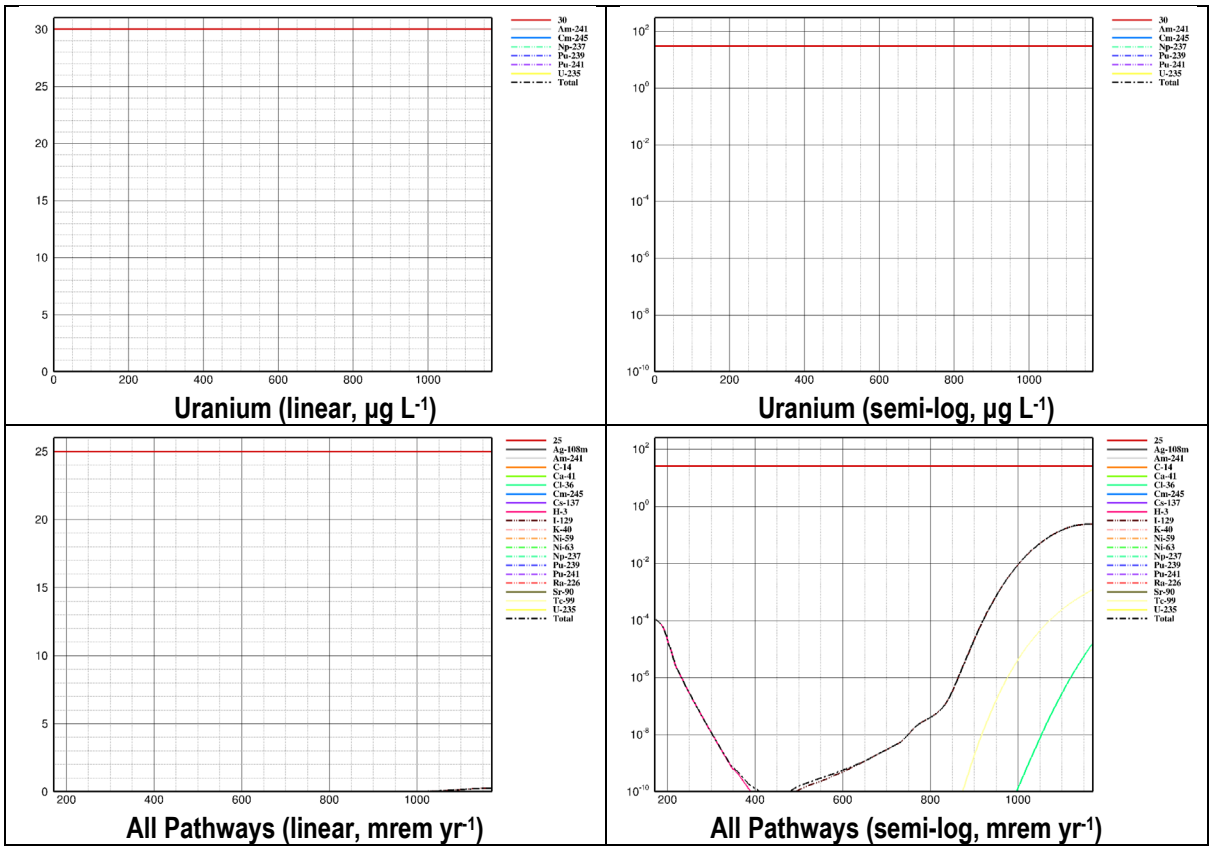


Figure H-121 (cont'd). Dose History Time Profiles for LAWV Based on Unbiased CWTS Closure Inventory

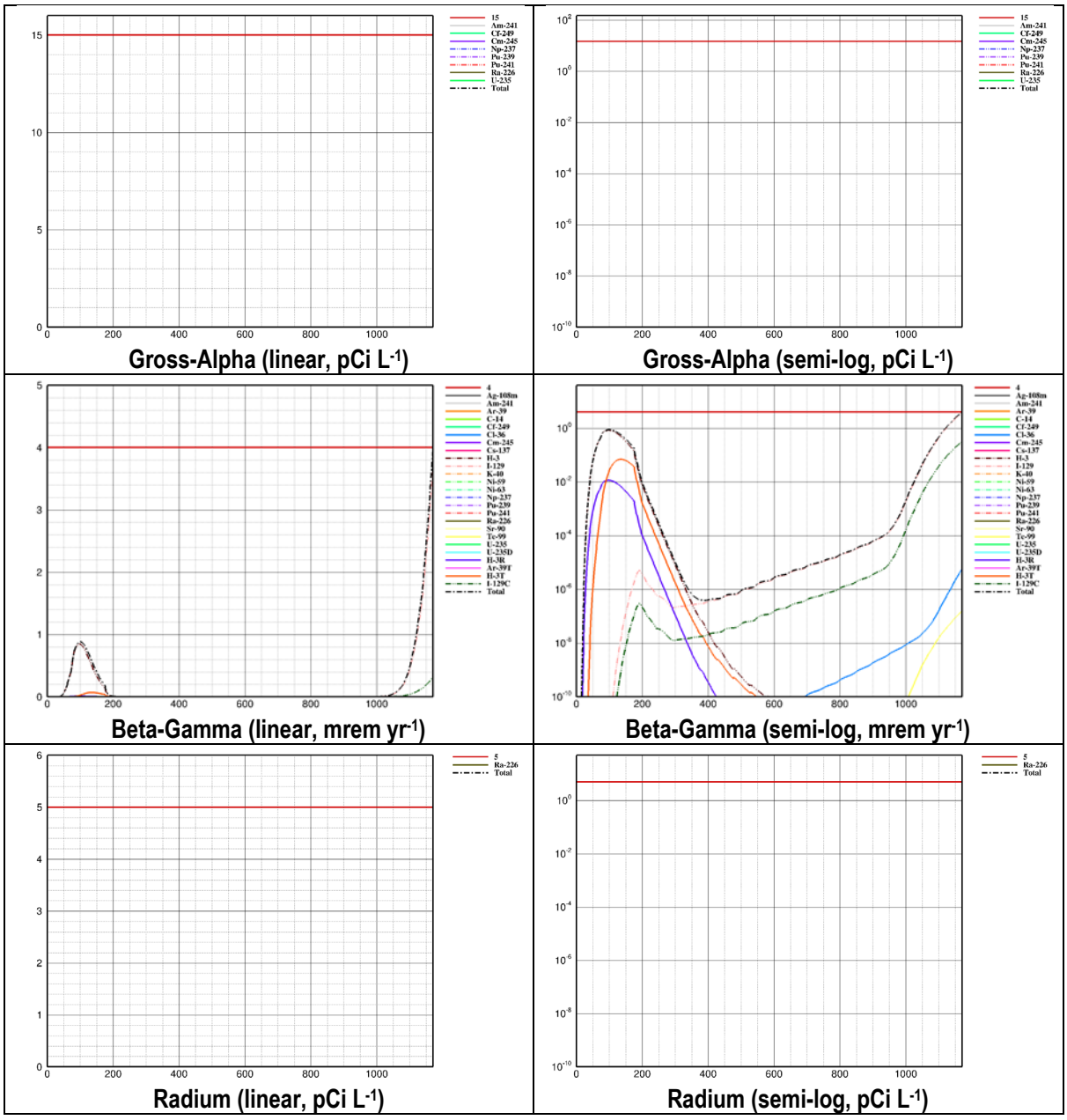


Figure H-122. Dose History Time Profiles for ILV Based on Unbiased CWTS Closure Inventory

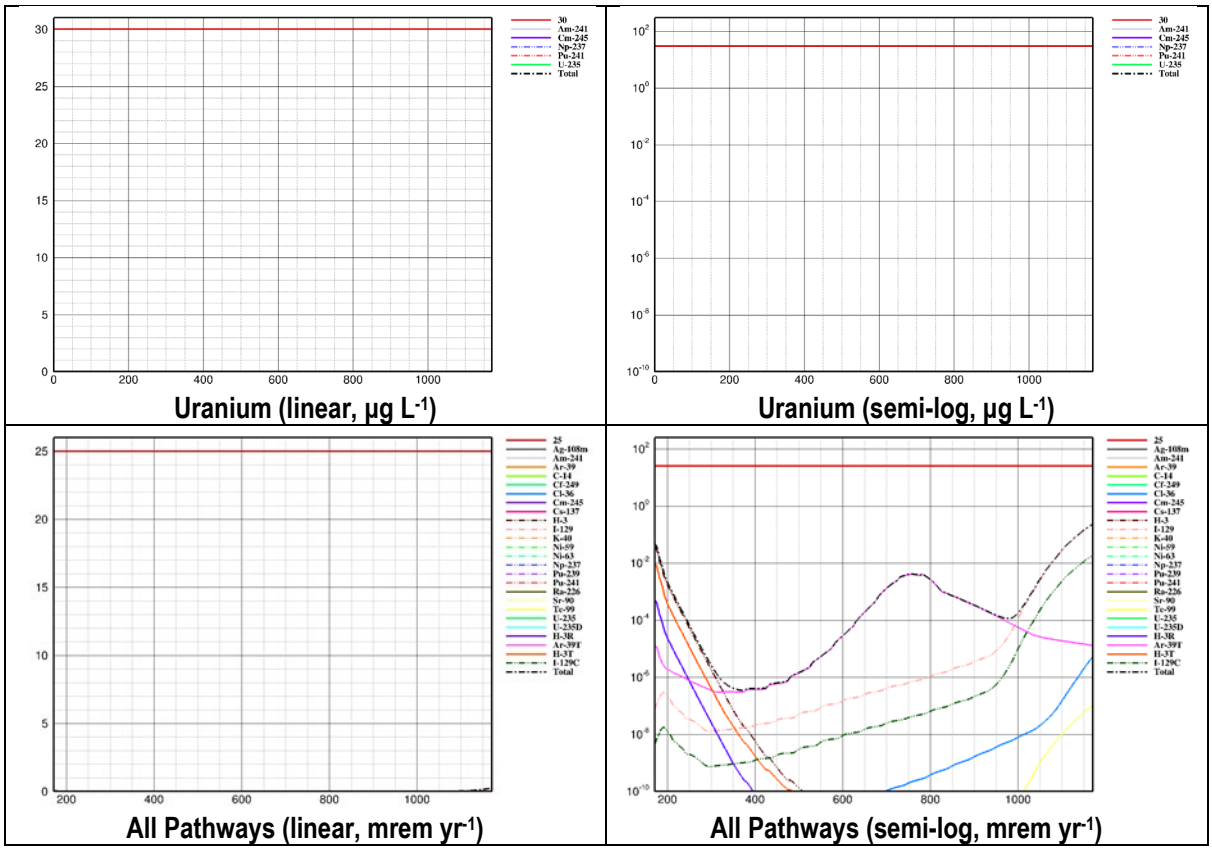


Figure H-122 (cont'd). Dose History Time Profiles for ILV Based on Unbiased CWTS Closure Inventory

H.1.5.3. Naval Reactor Component Disposal Areas

Dose history time profiles (based on an upper-bound, unbiased CWTS closure inventory) for four of the GW pathways (gross-alpha, beta-gamma, uranium, and all-pathways) are shown for the NR07E and NR26E in Figure H-123 and Figure H-124, respectively. Radium profiles are not provided because there are no radium contributors in the list of parent radionuclides of concern.

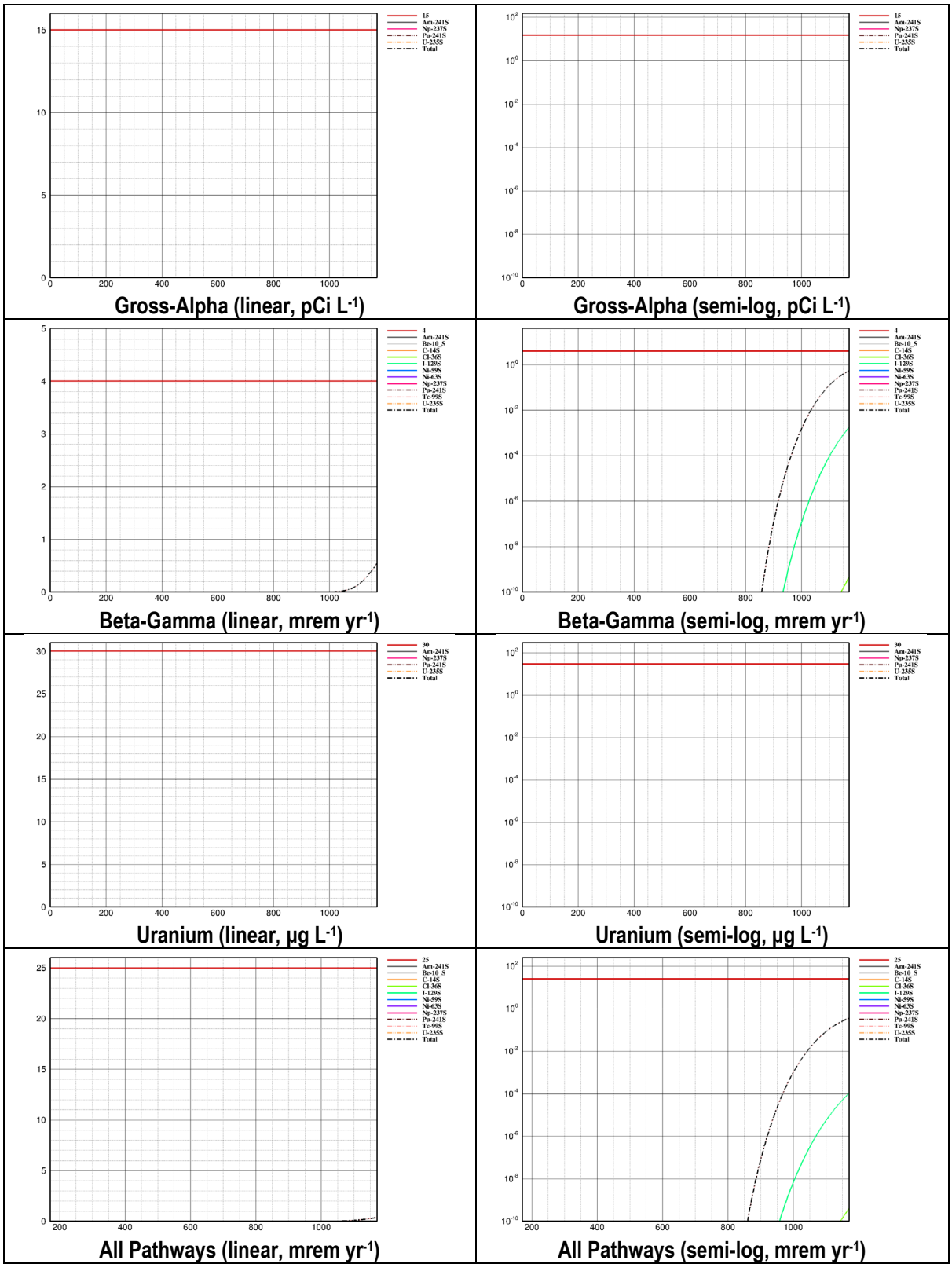


Figure H-123. Dose History Time Profiles for NR07E Based on Unbiased CWTS Closure Inventory

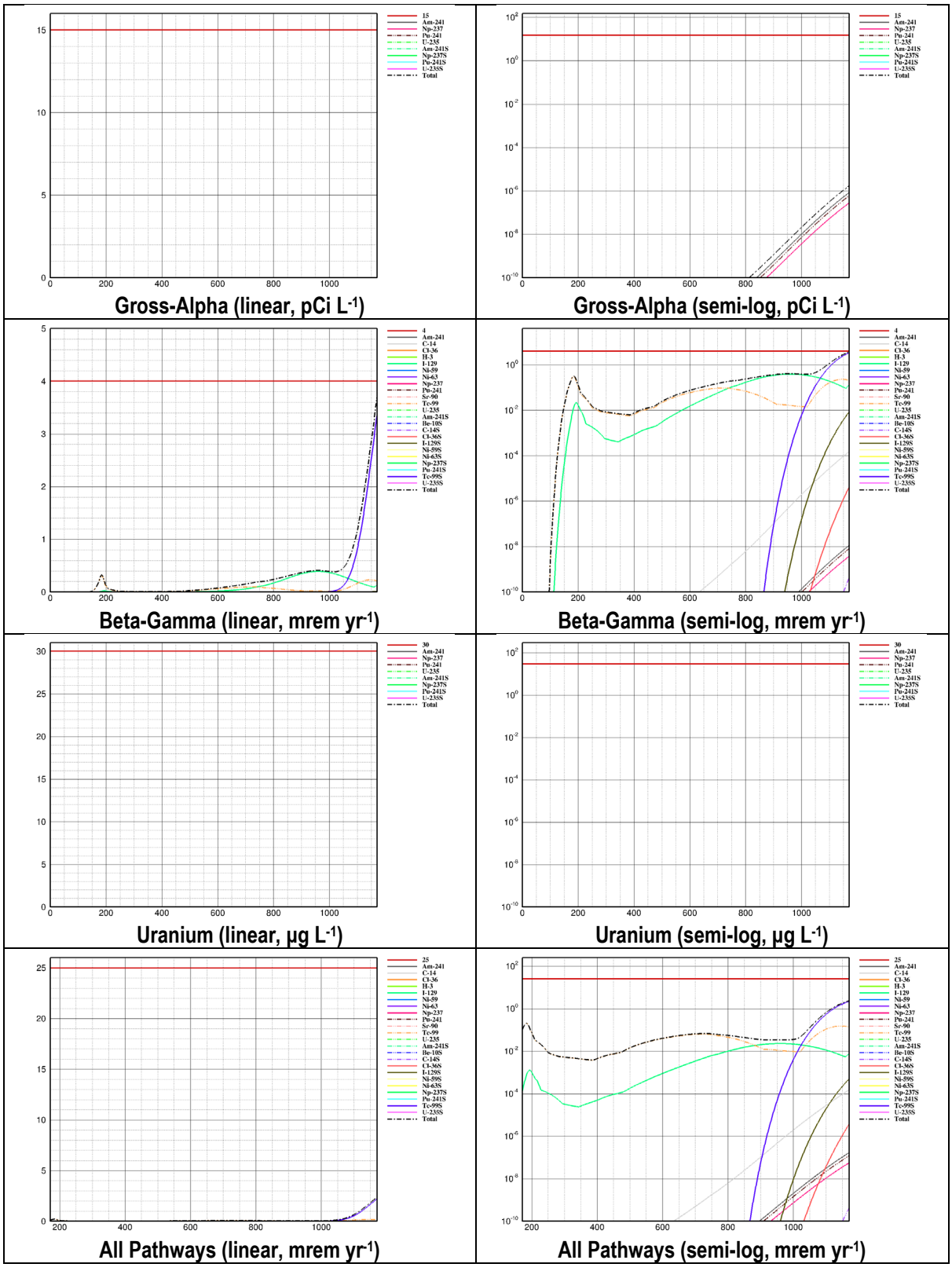


Figure H-124. Dose History Time Profiles for NR07E Based on Unbiased CWTS Closure Inventory

H.2 INADVERTENT HUMAN INTRUDER PATHWAYS

Most information about the IHI pathways is provided in Chapter 7 and Appendix G. Table H-69 lists the number of generic waste form and SWF parent radionuclides in each DU requiring inventory limits for the IHI pathways. This information is based on the IHI screening analyses and the existing and future SWM disposal plans.

Table H-69. Number of Generic and Special Waste Form Parent Radionuclides Requiring Inventory Limits for Inadvertent Human Intruder Pathways

Reference DU-Type	DU	DU Status	Number of Parent Radionuclides		
			Generic Waste Form	SWF	Total
Trench	ST01	Closed	29	4	33
	ST02	Closed	29	9	38
	ST03	Closed	29	5	34
	ST04	Closed	29	5	34
	ST05	Closed	29	6	35
	ST06	Open	29	4	33
	ST07	Open	29	4	33
	ST08	Open	29	10	39
	ST09	Open	29	17	46
	ST10	Future	29	16	45
	ST11	Future	29	2	31
	ST14	Open	29	8	37
	ST17	Future	29	2	31
	ST18	Future	29	2	31
	ST19	Future	29	2	31
	ST20	Future	29	2	31
	ST21	Future	29	2	31
	ST22	Future	29	2	31
	ST23	Open	29	31	60
	ST24	Future	29	1	30
	ET01	Closed	29	7	36
	ET02	Open	29	1	30
	ET03	Open	29	1	30
	ET04	Future	29	1	30
	ET05	Future	29	1	30
	ET06	Future	29	1	30
	ET07	Future	29	1	30
	ET08	Future	29	1	30
	ET09	Future	29	1	30
LAWV	LAWV	Open	4	0	4
ILV	ILV	Open	2	1	3
NRCDAG and NRCDAS	NR07E	Closed	0	12	12
	NR26E	Open	0	13	13

H.3 AIR PATHWAY

Table H-70 lists the number of generic waste form and SWF parent radionuclides in each DU requiring inventory limits for the air exposure pathway. This information is based on air screening analyses and existing and future SWM disposal plans.

Table H-70. Number of Generic and Special Waste Form Parent Radionuclides Requiring Inventory Limits for Air Pathway

Reference DU-Type	DU	DU Status	Number of Parent Radionuclides		
			Generic Waste Form	SWF	Total
Trench	ST01	Closed	2	2	4
	ST02	Closed	2	1	3
	ST03	Closed	2	2	4
	ST04	Closed	2	1	3
	ST05	Closed	2	1	3
	ST06	Open	2	1	3
	ST07	Open	2	2	4
	ST08	Open	2	3	5
	ST09	Open	2	5	7
	ST10	Future	2	3	5
	ST11	Future	2	1	3
	ST14	Open	2	2	4
	ST17	Future	2	1	3
	ST18	Future	2	1	3
	ST19	Future	2	1	3
	ST20	Future	2	1	3
	ST21	Future	2	1	3
	ST22	Future	2	1	3
	ST23	Open	2	3	5
	ST24	Future	2	0	2
	ET01	Closed	2	0	2
	ET02	Open	2	0	2
	ET03	Open	2	0	2
	ET04	Future	2	0	2
	ET05	Future	2	0	2
	ET06	Future	2	0	2
	ET07	Future	2	0	2
	ET08	Future	2	0	2
	ET09	Future	2	0	2
LAWV	LAWV	Open	2	0	2
ILV	ILV	Open	3	4	7
NRCDAG and NRCDAS	NR07E	Closed	0	2	2
	NR26E	Open	1	2	3

To calculate inventory limits for the air pathway, the following three-step process is employed:

1. A unit curie of a parent radionuclide is uniformly distributed within a DU's waste zone, and a 1-D GoldSim®-based transport model is used to calculate surface fluxes of the parent radionuclide and its progeny.
2. The surface fluxes serve as point sources in an atmospheric transport model (CAP88-PC) to compute atmospheric concentrations at the site boundary and the ELLWF 100-meter POA boundary.
3. The atmospheric concentrations of the parent radionuclide and its progeny at each POA are converted into air pathway doses.

Some details of this three-step process are shown in Figure H-125 and discussed in Section 3.6 and Sections 5.1.5, 5.2.3, 5.3.3, and 5.4.3 for STs and ETs, LAWV, ILV, and NRCDAs, respectively.

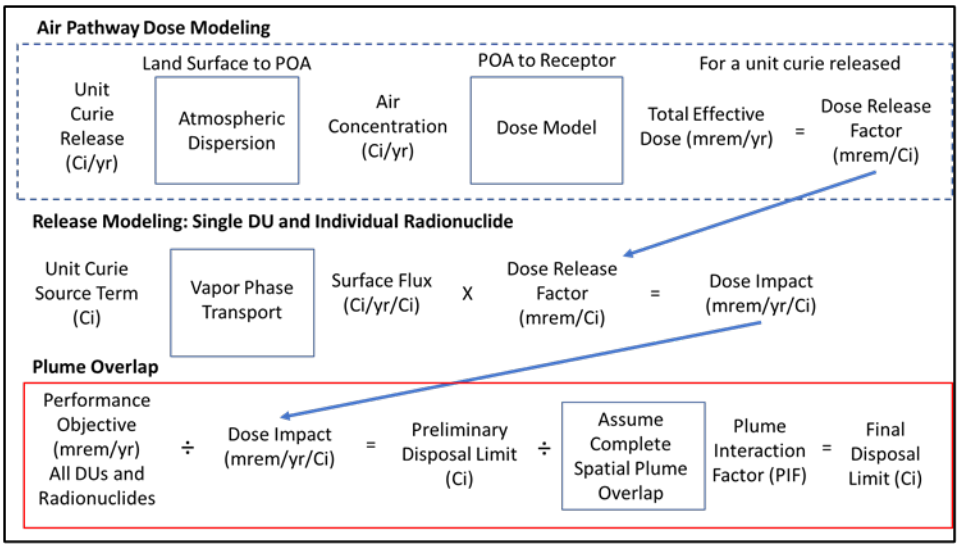


Figure H-125. Calculational Strategy for Computing Inventory Limits for Air Pathway

Supporting material, key aspects, and results are provided below. Based on waste form type, future burial plans, and handling in the transport modeling process, Table H-8 indicates how generic waste form and SWF parent radionuclides are addressed within the CWTS limits system.

H.3.1 Preliminary Inventory Limits

Preliminary inventory limits for the air pathway are generated by modeling the behavior of the six reference DU-types defined and used in the radionuclide screening process for the air pathway (Section 2.3.8.1 and Sections 5.1.5, 5.2.3, 5.3.3, and 5.4.3 for STs and ETs, LAWV, ILV, and NRCDAs, respectively). Preliminary inventory limits (Table H-71) are calculated from the peak dose factor for each air-pathway radionuclide reported in Chapter 5 as follows:

$$L_{DU,i}^{air-prelim} = \frac{PO}{D_{DU,i}^{peak}} \qquad \text{Eq. (H-2)}$$

where:

$L_{DU,i}^{air-prelim}$ Air pathway preliminary inventory limit for i^{th} parent radionuclide in specific DU (Ci)

$D_{DU,i}^{peak}$ Air pathway peak dose factor for i^{th} parent radionuclide in a specific DU (mrem yr^{-1} per Ci buried)

PO Performance objective for the air pathway (10 mrem yr^{-1})

Table H-71. Peak Dose Factors and Preliminary Inventory Limits for Air Pathway by Reference DU-Type

Radionuclide	Peak Dose Factor (mrem yr^{-1} Ci^{-1})	Time of Peak (Year)	Preliminary Inventory Limit (Ci)
Trench			
C-14	4.79E-05	266	2.09E+05
H-3	5.50E-15	162	1.82E+15
CIG			
C-14A	8.58E-08	371.04	1.17E+08
H-3A	4.82E-15	168.84	2.07E+15
LAWV			
C-14	8.27E-14	1,171	1.21E+14
H-3	2.95E-19	170.99	3.39E+19
ILV			
C-14	1.46E-17	1,171	6.85E+17
H-3	---	---	---
Kr-85	1.64E-10	71.47	6.09E+10
NRCDAG [a]			
C-14	2.25E-05	71.51	4.44E+05
NRCDAS [b]			
C-14S	1.38E-06	1,171	7.25E+06
H-3S	---	---	---

Notes:

Numerical value below 1E-20 (dose) or exceeding 1E+20 (limit) indicated by "---". In this scenario, the peak dose factor is beyond quantification and, therefore, no time of peak dose is reported.

Refer to Table H-8 for legend that defines the highlighting colors for shaded radionuclides.

[a] NRCDAG refers to large shear block boxes (bolted containers), stacked two high, and is treated as generic waste.

[b] NRCDAS refers to a welded KAPL CB/TS steel cask and is treated as a SWF.

The preliminary inventory limits by DU-type are reorganized and placed in their appropriate DU locations as shown in Table H-72. For all SWFs not explicitly modeled (i.e., SWFs other than CIG and NRCDAS), the inventory limit for the generic waste form in the DU is applied. This is a conservative (pessimistically leaning) approach because SWFs are generally more robust than their generic-waste-form counterparts.

Table H-72. Preliminary Inventory Limits (Ci) for Air Pathway for All Disposal Units

Radionuclide	STs and ETs	LAWV	ILV	NR07E	NR26E
Generic Waste Form					
C-14	2.09E+05	1.21E+14	6.85E+17	NA	4.44E+05
H-3	1.82E+15	3.39E+19	---	NA	SO
Kr-85	SO	SO	6.09E+10	NA	SO
SWF					
C-14A	1.17E+08	NA	NA	NA	NA
C-14B	2.09E+05	NA	NA	NA	NA
C-14H	2.09E+05	NA	NA	NA	NA
C-14K	1.17E+08	NA	6.85E+17	NA	NA
C-14N	2.09E+05	NA	NA	NA	NA
C-14S	NA	NA	NA	7.25E+06	7.25E+06
C-14T	NA	NA	6.85E+17	NA	NA
C-14X	2.09E+05	NA	NA	NA	NA
H-3A	2.07E+15	NA	NA	NA	NA
H-3B	1.82E+15	NA	NA	NA	NA
H-3C	1.82E+15	NA	NA	NA	NA
H-3F	1.82E+15	NA	NA	NA	NA
H-3R	NA	NA	---	NA	NA
H-3S	NA	NA	NA	---	---
H-3T	NA	NA	---	NA	NA
H-3X	1.82E+15	NA	NA	NA	NA

Notes:
"NA" implies that the radionuclide does not have an air pathway inventory limit for these DUs.
Numerical value exceeding 1E+20 represented by "---".
"SO" implies that radionuclides were screened out in Section 2.3.8.1.
Refer to Table H-8 for legend that defines the highlighting colors for shaded radionuclides.

H.3.2 Atmospheric Plume Overlap

To address the impact of atmospheric plume overlap at a point along a POA, a multidimensional model is required to generate best-estimate model predictions because of the distribution of ground sources being released from multiple DUs. Instead, a simple, bounding approach is chosen for this PA using the CAP88-PC software (U.S. EPA, 2020), which is a 1-D atmospheric transport model with limited dispersion and depositional mechanisms. In CAP88-PC, all DUs are modeled assuming a point source; plume overlap is not considered. For each DU, the location of its point source is placed 100 meters upwind of the POA.

PIFs account for possible plume overlap. Pessimistically, all DU source terms (plumes) migrating downwind are assumed to be completely aligned, which effectively assumes that DUs are sitting geometrically on top of each other. The PO (10 mrem yr^{-1}) can be conservatively (i.e., pessimistically leaning) divided by the number of DUs to assign a portion of the PO to each DU and ensure that the PO is not exceeded during worst-case plume overlap. For simplicity, this division of dose is achieved by dividing the preliminary limit by an atmospheric PIF.

Based on this conservative (pessimistically leaning) approach, atmospheric PIFs are independent of DU and parent radionuclide. Given a total of 27 DUs in operation at closure:

$$\eta^{Air} = 27 \qquad \text{Eq. (H-3)}$$

where η^{Air} is the atmospheric PIF. This value for η^{Air} is conservative (pessimistically leaning) for the following reasons:

- All preliminary inventory limits are computed based on a 100-meter travel distance from each DU to the 100-meter POA. Complete plume alignment at the 100-meter boundary, however, will require most DU travel distances to be significantly longer.
- All disposal times are set to the end of operations instead of actual burial times.
- As a result, the transport timing of peak concentrations for each DU will vary because of these differences in burial timing and travel distance.

SOFs for an individual DU (Section 8.1) address multiple air pathway radionuclides or SWFs within the DU. This PIF approach assumes the worst case and complete alignment of all DU footprints.

H.3.3 Final Inventory Limits

In this section, final inventory limits are derived from the preliminary limits for the air pathway and their appropriate atmospheric PIFs.

H.3.3.1. Slit and Engineered Trenches

The final, DU-specific inventory limits for the air pathway are provided in Table H-73 and Table H-74 for STs and in Table H-75 for ETs. The inventory limits assume a single time window that spans the entire compliance period (Year 71 to Year 1,171). Note that no ETs contain SWFs with the parent radionuclides of interest.

Table H-73. Final Inventory Limits for Air Pathway for ST01 through ST07

Radionuclide	Final Inventory Limit (Ci)						
	ST01	ST02	ST03	ST04	ST05	ST06	ST07
Generic Waste Form							
C-14	7.74E+03						
H-3	6.73E+13						
SWF							
C-14N	7.74E+03						
H-3C	NA	NA	6.73E+13	NA	NA	NA	6.73E+13
H-3F	6.73E+13	NA	NA	NA	NA	NA	NA

Notes:

"NA" implies that this radionuclide does not appear in this DU now or in future burial.

Refer to Table H-8 for legend that defines the highlighting colors for shaded radionuclides.

Table H-74. Final Inventory Limits for Air Pathway for ST08 through ST024

Radionuclide	Final Inventory Limit (Ci)							
	ST08	ST09	ST10	ST11	ST14	ST18	ST23	ST24
Generic Waste Form								
C-14	7.74E+03							
H-3	6.73E+13							
SWF								
C-14A	NA	NA	NA	NA	NA	NA	4.32E+06	NA
C-14B	7.74E+03	7.74E+03	7.74E+03	NA	NA	NA	NA	NA
C-14H	NA	NA	NA	NA	7.74E+03	NA	NA	NA
C-14K (A)	NA	NA	NA	NA	NA	NA	4.32E+06	NA
C-14N	7.74E+03	7.74E+03	7.74E+03	7.74E+03	7.74E+03	7.74E+03	NA	NA
C-14X	NA	7.74E+03	NA	NA	NA	NA	NA	NA
H-3A	NA	NA	NA	NA	NA	NA	7.68E+13	NA
H-3B	6.73E+13	6.73E+13	6.73E+13	NA	NA	NA	NA	NA
H-3X	NA	6.73E+13	NA	NA	NA	NA	NA	NA

Notes:

"NA" implies that this radionuclide does not appear in this DU now or in future burial.

C-14K (A) resides within the CIG SWF.

Refer to Table H-8 for legend that defines the highlighting colors for shaded radionuclides.

Table H-75. Final Inventory Limits for Air Pathway for ET01 through ET09

Radionuclide	Final Inventory Limit (Ci)
Generic Waste Form	
C-14	7.74E+03
H-3	6.73E+13
SWF	
None	NA

Notes:

"NA" implies that this radionuclide does not appear in this DU now or in future burial.

H.3.3.2. Low-Activity Waste Vault and Intermediate-Level Vault

Table H-76 summarizes the final, DU-specific inventory limits for the air pathway for the LAWV and ILV. The final inventory limits assume a single time window that spans the entire compliance period (Year 71 to Year 1,171).

Table H-76. Final Inventory Limits for Air Pathway for Low-Activity Waste Vault and Intermediate-Level Vault

Radionuclide	Final Inventory Limit (Ci)	
	LAWV	ILV
Generic Waste Form		
C-14	4.48E+12	2.54E+16
H-3	1.25E+18	---
Kr-85	SO	2.25E+09
SWF		
C-14K	NA	2.54E+16
C-14T	NA	2.54E+16
H-3R	NA	---
H-3T	NA	---

Notes:

"NA" implies that this radionuclide does not appear in this DU now or in future burial.

Numerical value exceeding 1E+20 represented by "---".

"SO" implies that radionuclides were screened out in Section 2.3.8.1.

Refer to Table H-8 for legend that defines the highlighting colors for shaded radionuclides.

H.3.3.3. Naval Reactor Component Disposal Areas

Table H-77 lists the final, DU-specific inventory limits for the air pathway for NR07E and NR26E. The inventory limits assume a single time window that spans the entire compliance period (Year 71 to Year 1,171).

Table H-77. Final Inventory Limits for Air Pathway for Naval Reactor Component Disposal Areas

Radionuclide	Final Inventory Limits (Ci)	
	NR07E	NR26E
Generic Waste Form		
C-14	NA	1.65E+04
SWF		
C-14S	2.69E+05	
H-3S	---	

Notes:

"NA" implies that this radionuclide does not appear in this DU now or in future burial.

Numerical value exceeding 1E+20 represented by "---".

Refer to Table H-8 for legend that defines the highlighting colors for shaded radionuclides.

H.4 RADON PATHWAY

Table H-78 provides the number of generic waste form and SWF parent radionuclides in each DU requiring inventory limits for the radon pathway. This information is based on radon radionuclide screening analyses summarized in Section 2.3.8.2 and on existing and future SWM disposal plans.

Table H-78. Number of Generic and Special Waste Form Parent Radionuclides Requiring Inventory Limits for the Radon Pathway

Reference DU-Type	DU	DU Status	Number of Parent Radionuclides		
			Generic Waste Form	SWF	Total
Trench	ST01	Closed	3	0	3
	ST02	Closed	3	1	4
	ST03	Closed	3	0	3
	ST04	Closed	3	0	3
	ST05	Closed	3	0	3
	ST06	Open	3	2	3
	ST07	Open	3	0	3
	ST08	Open	3	0	3
	ST09	Open	3	1	4
	ST10	Future	3	1	4
	ST11	Future	3	0	3
	ST14	Open	3	0	3
	ST17	Future	3	0	3
	ST18	Future	3	0	3
	ST19	Future	3	0	3
	ST20	Future	3	0	3
	ST21	Future	3	0	3
	ST22	Future	3	0	3
	ST23	Open	3	1	4
	ST24	Future	3	0	3
	ET01	Closed	3	0	3
	ET02	Open	3	0	3
	ET03	Open	3	0	3
	ET04	Future	3	0	3
	ET05	Future	3	0	3
	ET06	Future	3	0	3
	ET07	Future	3	0	3
	ET08	Future	3	0	3
	ET09	Future	3	0	3
LAWV	LAWV	Open	1	0	1
ILV	ILV	Open	1	0	1
NRCDAG and NRCDAS	NR07E	Closed	0	0	0
	NR26E	Open	0	2	2

To calculate inventory limits for the radon pathway, the following three-step process is employed:

- A unit curie of a parent radionuclide is uniformly buried within a DU's waste zone (waste zone height provided in Chapter 5), and a reference-DU-type-specific, 1-D, GoldSim®-based transport model is used to estimate the ground-surface flux of Rn-222.
- The peak Rn-222 flux during the compliance period (i.e., Year 71 to Year 1,171) is compared to the PO (i.e., 20 pCi m^{-2} s^{-1}), and an inventory limit is computed for each reference DU-type.
- The reference-DU-type-specific radon inventory limits are then converted into DU-specific values based on the size of a DU's actual waste-zone footprint.

Supporting material, key aspects, and results are provided below for the three-step process.

H.4.1 Waste-Zone Areal Footprints for Disposal Units

Actual waste-zone areal footprints are considered when generating inventory limits for the radon pathway for specific DUs. The DU-specific inventory limits are calculated by applying a geometry factor (waste-zone area ratio of DU to reference DU-type) as shown below.

$$L_{DU,i}^{Radon-prelim} = \left[\frac{A_{DU}^{WZ}}{A_{DU-type}^{WZ}} \right] L_{DU-type,i}^{Radon-prelim} \qquad \text{Eq. (H-4)}$$

where:

$L_{DU,i}^{Radon-prelim}$ Preliminary inventory limit for radon pathway for i^{th} parent radionuclide in *DU* (Ci)

$L_{DU-type,i}^{Radon-prelim}$ Preliminary inventory limit for radon pathway for i^{th} parent radionuclide in reference *DU-type* (Ci)

$A_{DU-type}^{WZ}$ Areal footprint of waste zone for reference *DU-type* (m^2)

A_{DU}^{WZ} Areal footprint of waste zone for *DU* (m^2)

The term in brackets represents a geometry factor (i.e., waste-zone volume ratio where the vertical height of the waste zone cancels out and only the waste-zone areal footprint differences remain). The actual footprint area of each DU and its reference DU-type area are listed in Table H-79.

The nine CIG trench segments (CIG-1 through CIG-9) within ST23 are treated as a single SWF in this analysis and their individual waste zone areas are summed. The ratio term in Eq. (H-4) yields the various geometry factors listed in Table H-80.

Based on their waste form type, future burial plans, and handling during transport modeling, Table H-8 indicates how generic waste form and SWF parent radionuclides are addressed within the CWTS limits system.

Table H-79. Footprint Area of Waste Zone by Disposal Unit and Reference DU-Type

Reference DU-Type	DU	Waste Zone Footprint Area (m^2)
Trench (reference areal footprint = 7459.0 m^2)	ST01	6101.2
	ST02	6095.6
	ST03	6094.3
	ST04	6094.3
	ST05	6094.3
	ST06	6093.6
	ST07	6094.3
	ST08	6094.4
	ST09	6094.4
	ST10	5537.1
	ST11	4747.5
	ST14	6094.4
	ST18	6018.3
	ST23g [a]	4851.4
	ST24	6094.3
	ET01	8997.0
	ET02	9717.1
	ET03	7511.2
	ET04	9596.8
	ET05	9448.7
	ET07	8918.6
	ET08	8918.8
	ET09	8918.6
	CIG [b]	1243.3
LAWV (reference areal footprint = 8360.0 m^2)	LAWV	8357.4
ILV (reference areal footprint = 974.0 m^2)	ILV	973.6
NRCDAG and NRCDAS (reference areal footprint = 546.0 m^2)	NR07E	546.1
	NR26E	4430.3

Notes:

[a] ST23g represents the waste-zone area for generic waste (area of ST23 – CIG).

[b] The total waste-zone area of the nine CIG trench segments equals the reference DU-type area in this analysis.

Table H-80. Radon Pathway Geometry Factors Accounting for Differences in Reference DU-Type and Waste-Zone Footprint Area of Individual Disposal Units

Reference DU-Type	DU	Value of Geometry Factor in Eq. (H-4)
Trench (reference areal footprint = 7459.0 m^2)	ST01	0.818
	ST02	0.817
	ST03	0.817
	ST04	0.817
	ST05	0.817
	ST06	0.817
	ST07	0.817
	ST08	0.817
	ST09	0.817
	ST10	0.742
	ST11	0.636
	ST14	0.817
	ST18	0.807
	ST23g [a]	0.650
	ST23	0.817
	ST24	0.817
	ET01	1.206
	ET02	1.303
	ET03	1.007
	ET04	1.287
	ET05	1.267
	ET07	1.196
	ET08	1.196
	ET09	1.196
	CIG [b]	1.000
LAWV (reference areal footprint = 8360.0 m^2)	LAWV	1.000
ILV (reference areal footprint = 974.0 m^2)	ILV	1.000
NRCDAG and NRCDAS (reference areal footprint = 546.0 m^2)	NR07E	1.000
	NR26E	8.114

Notes:

[a] ST23g represents the waste-zone area for generic waste (area of ST23 – CIG).

[b] The total waste-zone area of the nine CIG trench segments equals the reference DU-type area in this analysis.

H.4.2 Preliminary Inventory Limits

Preliminary inventory limits are generated based on modeling the six reference DU-types defined and utilized in the radionuclide screening process in Section 2.3.8.2. Preliminary inventory limits are calculated from the peak activity rate per Ci buried of each radon-pathway parent radionuclide reported in Chapter 5 as follows:

$$L_{DU-type,i}^{Radon-prelim} = \left[\frac{PO}{J_{DU,i}^{peak}} \right] A_{DU-type}^{WZ} \qquad \text{Eq. (H-5)}$$

where:

$L_{DU-type,i}^{Radon-prelim}$ Preliminary limit for radon pathway for i^{th} parent radionuclide in reference *DU-type* (Ci)

PO Performance objective (20 pCi m^{-2} s^{-1})

$J_{DU,i}^{peak}$ Rn-222 peak activity rate (pCi s^{-1}) per Ci buried from i^{th} parent radionuclide

$A_{DU-type}^{WZ}$ Reference areal footprint of waste zone for reference *DU-type* (m^2)

Table H-81 lists the reference areal footprints for the waste zones used to develop preliminary inventory limits. As indicated in Table H-81, two SWFs are explicitly considered: (1) CIG (disposed in ST23; all nine CIG trench segments are composited into a single SWF); (2) NRCDAS (NR welded, steel shipping casks disposed in NR07E and NR26E). The radionuclide screening process for the radon pathway is discussed in Section 2.3.8.2. Preliminary inventory limits for parent radionuclides contained within all other SWFs are assigned their generic-waste-form values.

Table H-81. Waste-Zone Areal Footprints for Reference DU-Types Used in Radon Pathway

Reference DU-Type	Footprint Area (m^2)
Trench	7,459.0
CIG [a]	1,243.3
LAWV	8,360.0
ILV	974.0
NRCDAG [b]	546.0
NRCDAS [a,c]	546.0

Notes:

[a] CIG trench segments and KAPL CB/TS welded steel casks (NRCDAS) are modeled as reference DU-types in the radon pathway but are implemented in the inventory limits system as SWFs.

[b] NRCDAG refers to large shear block boxes (bolted containers), stacked two high, and is treated as a generic waste form.

[c] NRCDAS refers to a KAPL CB/TS welded steel cask and is treated as a SWF.

Peak activity rates per Ci buried, peak times, and preliminary inventory limits on a reference DU-type basis are listed in Table H-82.

Table H-82. Peak Activity Rates and Preliminary Inventory Limits for Radon Pathway by Reference DU-Type

Radionuclide [a]	Peak Activity Rate per Ci (pCi s^{-1} Ci^{-1})	Peak Time (Year)	Preliminary Inventory Limit (Ci)
Trench			
Ra-226	2.19E+03	72	6.81E+01
Th-230	1.61E+02	170.99	9.25E+02
U-234	1.28E-01	170.99	1.16E+06
CIG			
U-234A	5.35E-01	1,171	4.65E+04
LAWV			
Ra-226	7.89E-01	72	1.06E+05
ILV			
Ra-226	1.06E-02	72	1.83E+06
NRCDAS			
Ra-226S	8.73E-06	1,171	6.25E+08
Th-230S	5.73E-06	1,171	9.53E+08

Notes:

Refer to Table H-8 for legend that defines the highlighting colors for shaded radionuclides.

[a] Inventory limits for other screened-in radionuclides and reference DU-types (NRCDAG and NRCDAS) are not appliable based on screening performed in Chapter 2, Section 2.3.8.2. See Table 2-35.

In Table H-83, preliminary inventory limits for each radionuclide by reference DU-type are reorganized and assigned to their appropriate DU disposal locations.

Table H-83. Preliminary Inventory Limits for Radon Pathway for Generic and Special Waste Form Radionuclides in All Disposal Units

Radionuclide	STs and ETs	LAWV	ILV	NR07E	NR26E
Generic Waste Form					
Ra-226	6.81E+01	1.06E+05	1.83E+06	NA	NA
Th-230	9.25E+02	NA	NA	NA	NA
U-234	1.16E+06	NA	NA	NA	NA
SWF					
Ra-226T	6.81E+01	NA	NA	NA	NA
Ra-226S	None	NA	NA	NA	6.25E+08
Th-230S	None	NA	NA	NA	9.53E+08
Th-230T	9.25E+02	NA	NA	NA	NA
U-234A	4.65E+04 [a]	NA	NA	NA	NA
U-234B	1.16E+06	NA	NA	NA	NA
U-234G	1.16E+06	NA	NA	NA	NA

Notes:

"NA" implies that this radionuclide does not appear in this DU now or in future burial.

Refer to Table H-8 for legend that defines the highlighting colors for shaded radionuclides in the first column.

[a] Orange shading indicates that the inventory limit for U-234A in STs incorporates some of the SWF barriers.

Note that preliminary inventory limits for all ST and ET DUs equal the limits for the trench reference DU-type. Final inventory limits are also equal to the preliminary limits because zero plume overlap is assumed. The inventory limits for the radon pathway have only one time window that spans the entire compliance period (Year 71 to Year 1,171).

DU-specific inventory limits are calculated from the reference DU-type limits by applying the geometry factors listed in Table H-80.

H.4.2.1. Slit and Engineered Trenches

Preliminary and, in this case, final DU-specific inventory limits for the radon pathway are reported for STs in Table H-84 and Table H-85 and ETs in Table H-86.

Table H-84. Preliminary and Final Inventory Limits for Radon Pathway for ST01 through ST07

Radionuclide	Inventory Limit (Ci)						
	ST01	ST02	ST03	ST04	ST05	ST06	ST07
Generic Waste Form							
Ra-226	5.57E+01	5.56E+01					
Th-230	7.57E+02	7.56E+02					
U-234	9.50E+05	9.49E+05					
SWF							
Ra-226T	NA	NA	NA	NA	NA	5.56E+01	NA
Th-230T						7.56E+02	
U-234G		9.49E+05				NA	

Notes:
"NA" implies that this radionuclide does not appear in this DU now or in future burial.
Refer to Table H-8 for legend that defines the highlighting colors for shaded radionuclides in the first column.

Table H-85. Preliminary and Final Inventory Limits for Radon Pathway for ST08 through ST24

Radionuclide	Inventory Limit (Ci)							
	ST08	ST09	ST10	ST11	ST14	ST18	ST23	ST24
Generic Waste Form								
Ra-226	5.56E+01		5.05E+01	4.33E+01	5.56E+01	5.49E+01	4.43E+01	5.56E+01
Th-230	7.56E+02		6.87E+02	5.89E+02	7.56E+02	7.47E+02	6.02E+02	7.56E+02
U-234	9.49E+05		8.62E+05	7.39E+05	9.49E+05	9.37E+05	7.55E+05	9.49E+05
SWF								
U-234A	NA	NA	NA	NA	NA	NA	4.65E+04	NA
U-234B		9.49E+05	8.62E+05				NA	

Notes:
"NA" implies that this radionuclide does not appear in this DU now or in future burial.
Refer to Table H-8 for legend that defines the highlighting colors for shaded radionuclides in the first column.

Table H-86. Preliminary and Final Inventory Limits for Radon Pathway for ET01 through ET09

Radionuclide	Inventory Limit (Ci)							
	ET01	ET02	ET03	ET04	ET05	ET07	ET08	ET09
Generic Waste Form								
Ra-226	8.21E+01	8.87E+01	6.85E+01	8.76E+01	8.62E+01	8.14E+01		
Th-230	1.12E+03	1.21E+03	9.32E+02	1.19E+03	1.17E+03	1.11E+03		
U-234	1.40E+06	1.51E+06	1.17E+06	1.49E+06	1.47E+06	1.39E+06		
SWF								
None	NA							

Notes:
"NA" implies that this radionuclide does not appear in this DU now or in future burial.

H.4.2.2. Low-Activity Waste Vault and Intermediate-Level Vault

Table H-87 lists preliminary and, in this case, final DU-specific inventory limits for the radon pathway for the LAWV and ILV.

Table H-87. Preliminary and Final Inventory Limits for Radon Pathway for LAWV and ILV

Radionuclide	Inventory Limit (Ci)	
	LAWV	ILV
Generic Waste Form		
Ra-226	1.06E+05	1.83E+06
SWF		
None	NA	SO

Notes:
"NA" implies that this radionuclide does not appear in this DU now or in future burial.
"SO" means that SWF U-234T is screened out in Chapter 2, Section 2.3.8.2.

H.4.2.3. Naval Reactor Component Disposal Areas

Table H-88 lists preliminary and, in this case, final DU-specific inventory limits for the radon pathway for NR07E and NR26E. Based on the screening summarized in Section 2.3.8.2, no radionuclides require inventory limits for the radon pathway.

Table H-88. Preliminary (as well as Final) Radon Pathway Inventory Limits for Naval Reactor Pads

Radionuclide	Inventory Limit (Ci)	
	NR07E	NR26E
Generic Waste Form		
None	NA	SO
SWF		
Ra-226S	NA	6.25E+08
Th-230S	NA	9.53E+08

Notes:
"NA" implies that this radionuclide does not appear in this DU now or in future burial.
"SO" means that radionuclides are screened out in Chapter 2, Section 2.3.8.2.

H.4.3 Radon Plume Overlap

No subsurface PIFs are applied for the radon pathway; therefore, the preliminary inventory limits become the final inventory limits once waste-zone areal footprint differences are accounted for as discussed in Section H.4.1.

H.4.4 Final Inventory Limits

The preliminary inventory limits for the radon pathway presented in Section H.4.2 are considered final inventory limits.

H.5 INVENTORY TRIGGER VALUES

As stated in Chapter 8, inventory trigger values are established, where necessary, for the GW, IHI, air, and radon exposure pathways for each DU. Preliminary trigger values are discussed in Chapter 2, Section 2.3, while the final trigger values are reported in this section. The process of computing a final trigger value for a specific parent radionuclide, given its preliminary value,

involves accounting for plume overlap. The final inventory trigger values are computed by exposure pathway based on the following aspects:

- **GW**: DU-specific GW PIFs are employed. Preliminary trigger values are reference DU-type-specific, while final trigger values become DU-specific.
- **IHI**: Preliminary trigger values are also final because inventory limits do not depend on the status of neighboring DUs.
- **Air**: Atmospheric plume overlap is employed. Preliminary trigger values are reference DU-type-specific, while the final trigger values become DU-specific.
- **Radon**: Preliminary trigger values are also final because inventory limits do not depend on the status of neighboring DUs.

H.5.1 Inventory Trigger Values for Groundwater Pathways

As discussed in Chapter 2, Section 2.3.7.3, inventory trigger values for the GW pathways exist for every reference DU-type. The parent radionuclide listing for each reference DU-type is provided in Table H-89. A total of 42 parent radionuclides require trigger values for the GW pathways.

Table H-89. Parent Radionuclides Requiring Inventory Trigger Values for Groundwater Pathways by Reference DU-Type

Index	Reference DU-type					ALL [a]
	Trench	LAWV	ILV	NRCDAG	NRCDAS	
1	Am-245	--	Am-245	Am-245	--	Am-245
2	--	--	--	--	Am-245S	Am-245S
3	--	--	--	Ar-39	--	Ar-39
4	--	--	--	--	Ar-39S	Ar-39S
5	--	Be-10	Be-10	--	--	Be-10
6	--	--	Bk-247	Bk-247	--	Bk-247
7	--	--	--	--	Bk-247S	Bk-247S
8	--	--	Ca-41	Ca-41	--	Ca-41
9	--	--	--	--	Ca-41S	Ca-41S
10	--	--	Cd-113	Cd-113	--	Cd-113
11	Cm-249	--	Cm-249	Cm-249	--	Cm-249
12	--	--	--	--	Cm-249S	Cm-249S
13	--	--	Cs-135	Cs-135	--	Cs-135
14	--	--	--	K-40	--	K-40
15	--	--	--	--	K-40S	K-40S
16	Kr-81	Kr-81	Kr-81	Kr-81	--	Kr-81
17	--	--	--	--	Kr-81S	Kr-81S
18	Mn-53	Mn-53	Mn-53	Mn-53	--	Mn-53
19	Np-235	Np-235	Np-235	Np-235	--	Np-235
20	--	--	--	--	Np-235S	Np-235S
21	Np-236	Np-236	Np-236	Np-236	--	Np-236
22	--	--	--	--	Np-236S	Np-236S
23	--	Pa-231	Pa-231	--	--	Pa-231
24	--	--	--	--	Pa-231S	Pa-231S
25	--	Pd-107	Pd-107	Pd-107	--	Pd-107
26	Pt-190	Pt-190	Pt-190	Pt-190	--	Pt-190
27	--	--	--	--	Pt-190S	Pt-190S
28	Re-186m	Rb-87	Rb-87	Pt-193	--	Pt-193
29	--	--	--	Rb-87	--	Rb-87
30	--	--	--	--	Rb-87S	Rb-87S
31	--	Re-186m	Re-186m	Re-186m	--	Re-186m
32	--	--	--	--	Re-186mS	Re-186mS
33	Re-187	Re-187	Re-187	Re-187	--	Re-187
34	--	--	--	--	Re-187S	Re-187S
35	Si-32	Si-32	Si-32	Si-32	--	Si-32
36	--	--	--	--	Si-32S	Si-32S
37	Tc-97	Tc-97	Tc-97	Tc-97	--	Tc-97
38	--	--	--	--	Tc-97S	Tc-97S
39	Tc-98	Tc-98	Tc-98	Tc-98	--	Tc-98
40	--	--	--	--	Tc-98S	Tc-98S
41	U-235	--	--	--	--	U-235
42	--	U-237	U-237	U-237	--	U-237
Total Number Radionuclides	**13**	**15**	**21**	**22**	**17**	**42**

Notes:

[a] Composite parent radionuclide listing for all five reference DU-types.

DU-specific trigger values for the GW pathways are calculated as follows:

- **STs and ETs:** Trigger values for the trench reference DU-type are updated using DU-specific GW PIFs for STs and ETs, resulting in DU-specific trigger values for STs and ETs.
- **LAWV and ILV:** Trigger values for the LAWV and ILV reference DU-types are updated using DU-specific GW PIFs for the LAWV and ILV, resulting in DU-specific trigger values for the LAWV and ILV.
- **NR07E and NR26E:** Trigger values for NRCDAG and NRCDAS are updated using DU-specific GW PIFs for NR07E and NR26E, resulting in DU-specific trigger values for NR07E and NR26E. For the NRCDAs, two separate reference DU-types are considered: welded steel cask SWF (NRCDAS) and all other waste in bolted containers (NRCDAG). NR07E is closed and only contains welded casks; therefore, its trigger value list is represented by the NRCDAS reference DU-type. NR26E is still open and contains both reference DU-types; therefore, its trigger value list is the composite of two reference DU-types (NRCDAG and NRCDAS).

H.5.1.1. Slit and Engineered Trenches

GW PIFs are applied to the inventory trigger values for the GW pathways for the trench reference DU-type to arrive at the individual DU-specific inventory trigger values for the GW pathways in Table H-90, Table H-91, and Table H-92.

Table H-90. DU-Specific Inventory Trigger Values for Groundwater Pathways for Parent Radionuclides in Slit Trenches (ST01-ST08)

Parent Radionuclide	Inventory Trigger Value (Ci)							
	ST01	ST02	ST03	ST04	ST05	ST06	ST07	ST08
GW PIF	1.825	18.985	15.352	16.270	14.680	3.000	7.000	7.050
Am-245	8.29E+03	7.97E+02	9.86E+02	9.30E+02	1.03E+03	5.04E+03	2.16E+03	2.15E+03
Cm-249	3.99E+04	3.84E+03	4.74E+03	4.48E+03	4.96E+03	2.43E+04	1.04E+04	1.03E+04
Kr-81	2.44E-01	2.35E-02	2.90E-02	2.74E-02	3.04E-02	1.49E-01	6.37E-02	6.32E-02
Mn-53	9.68E-05	9.31E-06	1.15E-05	1.09E-05	1.20E-05	5.89E-05	2.52E-05	2.51E-05
Np-235	1.10E+01	1.05E+00	1.30E+00	1.23E+00	1.36E+00	6.67E+00	2.86E+00	2.84E+00
Np-236	3.69E-08	3.54E-09	4.38E-09	4.13E-09	4.58E-09	2.24E-08	9.61E-09	9.54E-09
Pt-190	4.07E-08	3.91E-09	4.84E-09	4.56E-09	5.06E-09	2.47E-08	1.06E-08	1.05E-08
Re-186m	1.24E-07	1.20E-08	1.48E-08	1.40E-08	1.55E-08	7.57E-08	3.24E-08	3.22E-08
Re-187	6.03E-06	5.79E-07	7.16E-07	6.76E-07	7.49E-07	3.67E-06	1.57E-06	1.56E-06
Si-32	2.86E-08	2.75E-09	3.40E-09	3.21E-09	3.56E-09	1.74E-08	7.46E-09	7.40E-09
Tc-97	4.02E-06	3.86E-07	4.78E-07	4.51E-07	4.99E-07	2.44E-06	1.05E-06	1.04E-06
Tc-98	4.08E-07	3.92E-08	4.85E-08	4.57E-08	5.07E-08	2.48E-07	1.06E-07	1.06E-07
U-235	9.34E-07	8.98E-08	1.11E-07	1.05E-07	1.16E-07	5.68E-07	2.44E-07	2.42E-07

Table H-91. DU-Specific Inventory Trigger Values for Groundwater Pathways for Parent Radionuclides in Slit Trenches (ST09-ST24)

Parent Radionuclide	Inventory Trigger Value (Ci)						
	ST09	ST10	ST11	ST14	ST18	ST23	ST24
GW PIF	2.253	5.200	4.000	13.040	8.354	1.800	1.550
Am-245	6.72E+03	2.91E+03	3.78E+03	1.16E+03	1.81E+03	8.41E+03	9.76E+03
Cm-249	3.23E+04	1.40E+04	1.82E+04	5.59E+03	8.72E+03	4.05E+04	4.70E+04
Kr-81	1.98E-01	8.57E-02	1.11E-01	3.42E-02	5.33E-02	2.48E-01	2.87E-01
Mn-53	7.84E-05	3.40E-05	4.42E-05	1.36E-05	2.12E-05	9.82E-05	1.14E-04
Np-235	8.88E+00	3.85E+00	5.00E+00	1.53E+00	2.40E+00	1.11E+01	1.29E+01
Np-236	2.99E-08	1.29E-08	1.68E-08	5.16E-09	8.05E-09	3.74E-08	4.34E-08
Pt-190	3.29E-08	1.43E-08	1.86E-08	5.69E-09	8.89E-09	4.12E-08	4.79E-08
Re-186m	1.01E-07	4.37E-08	5.67E-08	1.74E-08	2.72E-08	1.26E-07	1.46E-07
Re-187	4.88E-06	2.11E-06	2.75E-06	8.43E-07	1.32E-06	6.11E-06	7.09E-06
Si-32	2.32E-08	1.00E-08	1.31E-08	4.00E-09	6.25E-09	2.90E-08	3.37E-08
Tc-97	3.25E-06	1.41E-06	1.83E-06	5.62E-07	8.78E-07	4.07E-06	4.73E-06
Tc-98	3.30E-07	1.43E-07	1.86E-07	5.71E-08	8.91E-08	4.13E-07	4.80E-07
U-235	7.57E-07	3.28E-07	4.26E-07	1.31E-07	2.04E-07	9.47E-07	1.10E-06

Table H-92. DU-Specific Inventory Trigger Values for Groundwater Pathways for Parent Radionuclides in Engineered Trenches (ET01-ET09)

Parent Radionuclide	Inventory Trigger Value (Ci)							
	ET01	ET02	ET03	ET04	ET05	ET07	ET08	ET09
GW PIF	4.684	6.380	6.000	6.800	14.000	2.000	2.000	2.150
Am-245	3.23E+03	2.37E+03	2.52E+03	2.23E+03	1.08E+03	7.57E+03	7.57E+03	7.04E+03
Cm-249	1.56E+04	1.14E+04	1.21E+04	1.07E+04	5.20E+03	3.64E+04	3.64E+04	3.39E+04
Kr-81	9.51E-02	6.98E-02	7.43E-02	6.55E-02	3.18E-02	2.23E-01	2.23E-01	2.07E-01
Mn-53	3.77E-05	2.77E-05	2.95E-05	2.60E-05	1.26E-05	8.84E-05	8.84E-05	8.22E-05
Np-235	4.27E+00	3.14E+00	3.33E+00	2.94E+00	1.43E+00	1.00E+01	1.00E+01	9.31E+00
Np-236	1.44E-08	1.05E-08	1.12E-08	9.89E-09	4.80E-09	3.36E-08	3.36E-08	3.13E-08
Pt-190	1.58E-08	1.16E-08	1.24E-08	1.09E-08	5.30E-09	3.71E-08	3.71E-08	3.45E-08
Re-186m	4.85E-08	3.56E-08	3.78E-08	3.34E-08	1.62E-08	1.13E-07	1.13E-07	1.06E-07
Re-187	2.35E-06	1.72E-06	1.83E-06	1.62E-06	7.86E-07	5.50E-06	5.50E-06	5.11E-06
Si-32	1.11E-08	8.18E-09	8.70E-09	7.68E-09	3.73E-09	2.61E-08	2.61E-08	2.43E-08
Tc-97	1.57E-06	1.15E-06	1.22E-06	1.08E-06	5.24E-07	3.67E-06	3.67E-06	3.41E-06
Tc-98	1.59E-07	1.17E-07	1.24E-07	1.09E-07	5.32E-08	3.72E-07	3.72E-07	3.46E-07
U-235	3.64E-07	2.67E-07	2.84E-07	2.51E-07	1.22E-07	8.52E-07	8.52E-07	7.93E-07

H.5.1.2. Low-Activity Waste Vault and Intermediate-Level Vault

GW PIFs are applied to the inventory trigger values for the GW pathways for the LAWV and ILV reference DU-types to account for GW plume interactions with other DUs. The resulting DU-specific inventory trigger values for the GW pathways are shown in Table H-93.

Table H-93. DU-Specific Inventory Trigger Values for Groundwater Pathways for Parent Radionuclides in Low-Activity Waste Vault and Intermediate-Level Vault

Parent Radionuclide	Inventory Trigger Value (Ci)	
	LAWV	ILV
GW PIF	3.970	2.561
Am-245	SO	5.94E+03
Be-10	6.18E-06	1.42E-06
Bk-247	SO	1.34E+04
Ca-41	SO	7.52E-06
Cd-113	SO	6.29E-07
Cm-249	SO	2.57E+04
Cs-135	SO	1.37E-06
Kr-81	5.87E-01	1.35E-01
Mn-53	2.81E-04	3.99E-04
Np-235	2.77E+01	1.17E+01
Np-236	8.94E-08	3.72E-08
Pa-231	2.42E-08	1.02E-08
Pd-107	1.82E-04	4.19E-05
Pt-190	9.77E-08	2.25E-08
Rb-87	1.95E-06	4.56E-07
Re-186m	2.99E-07	6.87E-08
Re-187	1.45E-05	3.33E-06
Si-32	1.85E-07	4.35E-08
Tc-97	9.65E-06	2.22E-06
Tc-98	9.79E-07	2.25E-07
U-237	2.82E+00	1.17E+00
Total Number Radionuclides	**15**	**21**

Notes:

"SO" means that these parent radionuclides (i.e., Am-245, Bk-247, Ca-41, Cd-113, Cm-249, and Cs-135) were screened out for the LAWV in Chapter 2, Section 2.3.8.2 but are retained for the ILV.

H.5.1.3. Naval Reactor Component Disposal Areas

GW PIFs are applied to the inventory trigger values for the GW pathways for the NRCDAG and NRCDAS reference DU-types to account for GW plume interactions with other DUs as described in Section H.5.1. The resulting DU-specific inventory trigger values for the GW pathways are shown in Table H-94. Trigger values for NR07E are provided only for SWF parent radionuclides comprising the NRCDAS reference DU-type.

Table H-94. DU-Specific Inventory Trigger Values for Groundwater Pathways for Parent Radionuclides in NR07E and NR26E

Parent Radionuclide	Inventory Trigger Value (Ci)	
	NR07E	NR26E
GW PIF	20.000	6.000
Am-245	--	1.73E+03
Am-245S	5.65E+02	1.88E+03
Ar-39	--	3.16E-02
Ar-39S	6.60E-02	2.20E-01
Bk-247	--	4.50E+03
Bk-247S	1.56E+03	5.19E+03
Ca-41	--	1.98E-06
Ca-41S	1.60E-05	5.35E-05
Cd-113	--	4.94E-07
Cm-249	--	7.84E+03
Cm-249S	2.60E+03	8.67E+03
Cs-135	--	3.65E-07
K-40	--	7.11E-08
K-40S	5.73E-07	1.91E-06
Kr-81	--	3.56E-02
Kr-81S	1.07E-02	3.56E-02
Mn-53	--	3.14E-04
Np-235	--	5.29E+00
Np-235S	2.11E+00	7.03E+00
Np-236	--	1.67E-08
Np-236S	6.84E-09	2.28E-08
Pa-231S	1.87E-09	6.25E-09
Pd-107	--	1.11E-05
Pt-190	--	5.92E-09
Pt-190S	1.97E-04	6.57E-04
Pt-193	--	9.70E-03
Rb-87	--	1.22E-07
Rb-87S	1.39E+04	4.63E+04
Re-186m	--	1.81E-08
Re-186mS	6.10E-09	2.03E-08
Re-187	--	8.78E-07
Re-187S	2.94E-07	9.82E-07
Si-32	--	5.33E-09
Si-32S	8.34E-08	2.78E-07
Tc-97	--	5.85E-07
Tc-97S	1.96E-07	6.55E-07
Tc-98	--	5.94E-08
Tc-98S	1.99E-08	6.64E-08
U-237	--	5.26E-01
Total Number Radionuclides	**17**	**39**

Notes:

For NR07E, cells corresponding to generic-waste-form parent radionuclides comprising the NRCDAG reference DU-type are indicated by --."

H.5.2 Inventory Trigger Values for Inadvertent Human Intruder Pathways

As discussed in Chapter 2, Section 2.3.7.2, inventory trigger values for the IHI pathways exist for every reference DU-type. The parent radionuclide listing for each reference DU-type is provided in Table H-95. A total of 74 parent radionuclides require trigger values for the IHI pathways. DU-specific trigger values for the IHI pathways are calculated as follows:

- **STs and ETs:** Trigger values for the trench reference DU-type are updated with the DU-specific footprint areas, resulting in DU-specific trigger values for STs and ETs.
- **LAWV and ILV:** Trigger values for the LAWV and ILV reference DU-types undergo no adjustment and become the DU-specific trigger values for the LAWV and ILV.
- **NR07E and NR26E:** Trigger values for NRCDAG and NRCDAS are updated using DU-specific footprint areas, resulting in DU-specific trigger values for NR07E and NR26E. As described in Section H.5.1, NR07E is closed and contains welded casks only; therefore, its trigger value list is represented by the NRCDAS reference DU-type. NR26E is still open and contains both reference DU-types; therefore, its trigger value list is the composite of two reference DU-types (NRCDAG and NRCDAS).

Table H-95. Parent Radionuclides Requiring Inventory Trigger Values for Inadvertent Human Intruder Pathways by Reference DU-Type

Index	Reference DU-type					NRCDA [a]	ALL [b]
	Trench	LAWV	ILV	NRCDAG	NRCDAS		
1	--	Ac-227	Ac-227	--	Ac-227	Ac-227	Ac-227
2	--	Al-26	Al-26	Al-26	Al-26	Al-26	Al-26
3	--	--	--	--	Am-245	Am-245	Am-245
4	--	--	--	--	Am-246m	Am-246m	Am-246m
5	--	Bi-207	Bi-207	Bi-207	Bi-207	Bi-207	Bi-207
6	Bi-208	Bi-208	Bi-208	Bi-208	Bi-208	Bi-208	Bi-208
7	Bi-210m	Bi-210m	Bi-210m	Bi-210m	Bi-210m	Bi-210m	Bi-210m
8	--	Bk-247	--	Bk-247	Bk-247	Bk-247	Bk-247
9	--	--	--	--	Bk-250	Bk-250	Bk-250
10	Cf-248	--	--	--	Cf-248	Cf-248	Cf-248
11	Cm-249	--	--	--	--	--	Cm-249
12	Cm-250	--	--	--	Cf-250	Cf-250	Cf-250
13	--	--	--	--	Cf-252	Cf-252	Cf-252
14	--	--	--	--	Cm-249	Cm-249	Cm-249
15	--	Cm-250	Cm-250	Cm-250	Cm-250	Cm-250	Cm-250
16	Dy-154	--	--	--	--	--	Dy-154
17	Eu-150	Eu-150	Eu-150	Eu-150	Eu-150	Eu-150	Eu-150
18	--	--	--	Eu-152	--	Eu-152	Eu-152
19	--	--	--	Eu-154	--	Eu-154	Eu-154
20	Fe-60	Fe-60	Fe-60	Fe-60	Fe-60	Fe-60	Fe-60
21	Gd-148	--	--	--	--	--	Gd-148
22	Gd-150	--	--	--	--	--	Gd-150
23	Hf-178m	--	--	--	--	--	Hf-178m
24	Hf-182	Hf-182	Hf-182	Hf-182	Hf-182	Hf-182	Hf-182
25	Hg-194	Hg-194	Hg-194	Hg-194	Hg-194	Hg-194	Hg-194
26	Ho-163	--	--	--	--	--	Ho-163
27	--	Ho-166m	Ho-166m	Ho-166m	Ho-166m	Ho-166m	Ho-166m

Index	Reference DU-type					NRCDA [a]	ALL [b]
	Trench	LAWV	ILV	NRCDAG	NRCDAS		
28	Ir-192n	Ir-192n	Ir-192n	Ir-192n	Ir-192n	Ir-192n	Ir-192n
29	--	--	--	K-40	K-40	K-40	K-40
30	Kr-81	Kr-81	--	--	Kr-81	Kr-81	Kr-81
31	La-137	--	--	--	La-137	La-137	La-137
32	La-138	--	La-138	La-138	La-138	La-138	La-138
33	Lu-176	--	--	--	Lu-176	Lu-176	Lu-176
34	Mn-53	--	--	--	--	--	Mn-53
35	Nb-91	Nb-91	Nb-91	Nb-91	Nb-91	Nb-91	Nb-91
36	Nb-92	Nb-92	Nb-92	Nb-92	Nb-92	Nb-92	Nb-92
37	Np-235	--	--	--	Np-235	Np-235	Np-235
38	Np-236	Np-236	Np-236	Np-236	Np-236	Np-236	Np-236
39	--	--	--	--	Np-238	Np-238	Np-238
40	--	--	--	--	Os-194	Os-194	Os-194
41	--	Pa-231	Pa-231	--	Pa-231	Pa-231	Pa-231
42	Pa-232	--	Pa-232	Pa-232	Pa-232	Pa-232	Pa-232
43	--	--	--	--	Pa-233	Pa-233	Pa-233
44	Pb-202	Pb-202	Pb-202	Pb-202	Pb-202	Pb-202	Pb-202
45	Pm-145	--	--	--	--	--	Pm-145
46	Po-208	--	--	--	--	--	Po-208
47	Po-209	Po-209	Po-209	Po-209	--	Po-209	Po-209
48	--	--	--	--	Pb-210	Pb-210	Pb-210
49	--	--	--	--	Pm-145	Pm-145	Pm-145
50	--	--	--	--	Pm-146	Pm-146	Pm-146
51	--	--	--	--	Po-208	Po-208	Po-208
52	--	--	--	--	Po-209	Po-209	Po-209
53	Pu-236	Pu-236	Pu-236	Pu-236	Pu-236	Pu-236	Pu-236
54	Pu-243	--	--	--	Pu-243	Pu-243	Pu-243
55	--	--	--	--	Pu-246	Pu-246	Pu-246
56	--	--	--	--	Ra-226	Ra-226	Ra-226
57	--	--	--	--	Ra-228	Ra-228	Ra-228
58	Re-186m	Re-186m	Re-186m	Re-186m	Re-186m	Re-186m	Re-186m
59	--	--	--	--	Rn-222	Rn-222	Rn-222
60	Si-32	--	--	--	--	--	Si-32
61	--	--	--	--	Sm-145	Sm-145	Sm-145
62	Sm-146	--	--	--	--	--	Sm-146
63	Tb-157	--	--	--	Tb-157	Tb-157	Tb-157
64	Tb-158	Tb-158	Tb-158	Tb-158	Tb-158	Tb-158	Tb-158
65	Tc-97	--	--	--	Tc-97	Tc-97	Tc-97
66	Tc-98	Tc-98	Tc-98	Tc-98	Tc-98	Tc-98	Tc-98
67	--	--	--	--	Te-123	Te-123	Te-123
68	--	--	Th-229	Th-229	Th-229	Th-229	Th-229
69	--	--	--	--	Th-230	Th-230	Th-230
70	Th-232	--	--	--	--	--	Th-232
71	Ti-44	Ti-44	Ti-44	Ti-44	Ti-44	Ti-44	Ti-44
72	U-235	--	--	--	--	--	U-235
73	U-238	--	--	--	--	--	U-238
74	--	--	V-50	V-50	V-50	V-50	V-50
Total Number Radionuclides	**42**	**25**	**27**	**29**	**57**	**60**	**74**

Notes:

[a] Composite parent radionuclide listing for NRCDAG plus NRCDAS.

[b] Composite parent radionuclide listing for all five reference DU-types.

H.5.2.1. Slit and Engineered Trenches

Individual ST and ET footprint area corrections are applied to the inventory trigger values for the IHI pathways for the trench reference DU-type to arrive at the individual DU-specific inventory trigger values for the IHI pathways in Table H-96, Table H-97, and Table H-98.

Table H-96. DU-Specific Inventory Trigger Values for Inadvertent Human Intruder Pathways for Parent Radionuclides in Slit Trenches (ST01-ST08)

Parent Radionuclide	Inventory Trigger Value (Ci)							
	ST01	ST02	ST03	ST04	ST05	ST06	ST07	ST08
Bi-208	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04
Bi-210m	6.94E-03	6.94E-03	6.94E-03	6.94E-03	6.94E-03	6.94E-03	6.94E-03	6.94E-03
Cf-248	2.33E+04	2.32E+04	2.32E+04	2.32E+04	2.32E+04	2.32E+04	2.32E+04	2.32E+04
Cm-249	3.78E+04	3.77E+04	3.77E+04	3.77E+04	3.77E+04	3.77E+04	3.77E+04	3.77E+04
Cm-250	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02
Dy-154	7.18E-01	7.17E-01	7.17E-01	7.17E-01	7.17E-01	7.17E-01	7.17E-01	7.17E-01
Eu-150	2.33E+00	2.33E+00	2.33E+00	2.33E+00	2.33E+00	2.33E+00	2.33E+00	2.33E+00
Fe-60	6.27E-04	6.26E-04	6.26E-04	6.26E-04	6.26E-04	6.26E-04	6.26E-04	6.26E-04
Gd-148	3.73E+02	3.73E+02	3.73E+02	3.73E+02	3.73E+02	3.72E+02	3.73E+02	3.73E+02
Gd-150	7.70E-01	7.69E-01	7.69E-01	7.69E-01	7.69E-01	7.69E-01	7.69E-01	7.69E-01
Hf-178m	2.86E+02	2.86E+02	2.86E+02	2.86E+02	2.86E+02	2.86E+02	2.86E+02	2.86E+02
Hf-182	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03
Hg-194	3.16E-03	3.16E-03	3.16E-03	3.16E-03	3.16E-03	3.16E-03	3.16E-03	3.16E-03
Ho-163	1.63E+04	1.62E+04	1.62E+04	1.62E+04	1.62E+04	1.62E+04	1.62E+04	1.62E+04
Ir-192n	7.67E-03	7.66E-03	7.66E-03	7.66E-03	7.66E-03	7.66E-03	7.66E-03	7.66E-03
Kr-81	2.34E+00	2.34E+00	2.34E+00	2.34E+00	2.34E+00	2.34E+00	2.34E+00	2.34E+00
La-137	9.12E-01	9.11E-01	9.11E-01	9.11E-01	9.11E-01	9.11E-01	9.11E-01	9.11E-01
La-138	1.29E-03	1.29E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03
Lu-176	4.25E-03	4.24E-03	4.24E-03	4.24E-03	4.24E-03	4.24E-03	4.24E-03	4.24E-03
Mn-53	8.68E+01	8.67E+01	8.67E+01	8.67E+01	8.67E+01	8.67E+01	8.67E+01	8.67E+01
Nb-91	1.64E+00	1.64E+00	1.64E+00	1.64E+00	1.64E+00	1.64E+00	1.64E+00	1.64E+00
Nb-92	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03
Np-235	3.00E+06	3.00E+06	3.00E+06	3.00E+06	3.00E+06	3.00E+06	3.00E+06	3.00E+06
Np-236	5.75E-03	5.74E-03	5.74E-03	5.74E-03	5.74E-03	5.74E-03	5.74E-03	5.74E-03
Pa-232	1.40E+03	1.40E+03	1.40E+03	1.40E+03	1.40E+03	1.40E+03	1.40E+03	1.40E+03
Pb-202	4.26E-03	4.26E-03	4.25E-03	4.25E-03	4.25E-03	4.25E-03	4.25E-03	4.25E-03
Pm-145	2.54E+06	2.54E+06	2.54E+06	2.54E+06	2.54E+06	2.54E+06	2.54E+06	2.54E+06
Po-208	3.13E+06	3.13E+06	3.12E+06	3.12E+06	3.12E+06	3.12E+06	3.12E+06	3.12E+06
Po-209	5.17E+00	5.17E+00	5.17E+00	5.17E+00	5.17E+00	5.17E+00	5.17E+00	5.17E+00
Pu-236	1.69E+00	1.69E+00	1.69E+00	1.69E+00	1.69E+00	1.69E+00	1.69E+00	1.69E+00
Pu-243	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05
Re-186m	7.98E-02	7.97E-02	7.97E-02	7.97E-02	7.97E-02	7.97E-02	7.97E-02	7.97E-02
Si-32	1.77E+01	1.77E+01	1.77E+01	1.77E+01	1.77E+01	1.77E+01	1.77E+01	1.77E+01
Sm-146	7.44E-01	7.43E-01	7.43E-01	7.43E-01	7.43E-01	7.43E-01	7.43E-01	7.43E-01
Tb-157	1.42E+02	1.42E+02	1.42E+02	1.42E+02	1.42E+02	1.42E+02	1.42E+02	1.42E+02
Tb-158	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02
Tc-97	1.34E-01	1.34E-01	1.34E-01	1.34E-01	1.34E-01	1.34E-01	1.34E-01	1.34E-01
Tc-98	9.78E-04	9.77E-04	9.77E-04	9.77E-04	9.77E-04	9.77E-04	9.77E-04	9.77E-04
Th-232	6.44E-04	6.44E-04	6.44E-04	6.44E-04	6.44E-04	6.44E-04	6.44E-04	6.44E-04
Ti-44	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01
U-235	1.20E-02	1.20E-02	1.20E-02	1.20E-02	1.20E-02	1.20E-02	1.20E-02	1.20E-02
U-238	5.46E-02	5.45E-02	5.45E-02	5.45E-02	5.45E-02	5.45E-02	5.45E-02	5.45E-02

Table H-97. DU-Specific Inventory Trigger Values for Inadvertent Human Intruder Pathways for Parent Radionuclides in Slit Trenches (ST09-ST24)

Parent Radionuclide	Inventory Trigger Value (Ci)						
	ST09	ST10	ST11	ST14	ST18	ST23	ST24
Bi-208	5.49E-04	4.99E-04	4.27E-04	5.49E-04	5.42E-04	4.37E-04	5.49E-04
Bi-210m	6.94E-03	6.30E-03	5.40E-03	6.94E-03	6.85E-03	5.52E-03	6.94E-03
Cf-248	2.32E+04	2.11E+04	1.81E+04	2.32E+04	2.29E+04	1.85E+04	2.32E+04
Cm-249	3.77E+04	3.43E+04	2.94E+04	3.77E+04	3.73E+04	3.00E+04	3.77E+04
Cm-250	1.18E-02	1.07E-02	9.16E-03	1.18E-02	1.16E-02	9.36E-03	1.18E-02
Dy-154	7.17E-01	6.51E-01	5.58E-01	7.17E-01	7.08E-01	5.71E-01	7.17E-01
Eu-150	2.33E+00	2.12E+00	1.81E+00	2.33E+00	2.30E+00	1.85E+00	2.33E+00
Fe-60	6.26E-04	5.69E-04	4.88E-04	6.26E-04	6.18E-04	4.98E-04	6.26E-04
Gd-148	3.73E+02	3.38E+02	2.90E+02	3.73E+02	3.68E+02	2.97E+02	3.73E+02
Gd-150	7.69E-01	6.99E-01	5.99E-01	7.69E-01	7.59E-01	6.12E-01	7.69E-01
Hf-178m	2.86E+02	2.59E+02	2.22E+02	2.86E+02	2.82E+02	2.27E+02	2.86E+02
Hf-182	1.12E-03	1.02E-03	8.72E-04	1.12E-03	1.11E-03	8.91E-04	1.12E-03
Hg-194	3.16E-03	2.87E-03	2.46E-03	3.16E-03	3.12E-03	2.52E-03	3.16E-03
Ho-163	1.62E+04	1.47E+04	1.26E+04	1.62E+04	1.60E+04	1.29E+04	1.62E+04
Ir-192n	7.66E-03	6.96E-03	5.97E-03	7.66E-03	7.56E-03	6.10E-03	7.66E-03
Kr-81	2.34E+00	2.12E+00	1.82E+00	2.34E+00	2.31E+00	1.86E+00	2.34E+00
La-137	9.11E-01	8.28E-01	7.10E-01	9.11E-01	9.00E-01	7.25E-01	9.11E-01
La-138	1.28E-03	1.17E-03	1.00E-03	1.28E-03	1.27E-03	1.02E-03	1.28E-03
Lu-176	4.24E-03	3.85E-03	3.30E-03	4.24E-03	4.19E-03	3.38E-03	4.24E-03
Mn-53	8.67E+01	7.88E+01	6.75E+01	8.67E+01	8.56E+01	6.90E+01	8.67E+01
Nb-91	1.64E+00	1.49E+00	1.28E+00	1.64E+00	1.62E+00	1.30E+00	1.64E+00
Nb-92	1.12E-03	1.02E-03	8.73E-04	1.12E-03	1.11E-03	8.92E-04	1.12E-03
Np-235	3.00E+06	2.72E+06	2.33E+06	3.00E+06	2.96E+06	2.39E+06	3.00E+06
Np-236	5.74E-03	5.22E-03	4.47E-03	5.74E-03	5.67E-03	4.57E-03	5.74E-03
Pa-232	1.40E+03	1.27E+03	1.09E+03	1.40E+03	1.39E+03	1.12E+03	1.40E+03
Pb-202	4.25E-03	3.87E-03	3.31E-03	4.25E-03	4.20E-03	3.39E-03	4.25E-03
Pm-145	2.54E+06	2.31E+06	1.98E+06	2.54E+06	2.51E+06	2.02E+06	2.54E+06
Po-208	3.12E+06	2.84E+06	2.43E+06	3.12E+06	3.09E+06	2.49E+06	3.12E+06
Po-209	5.17E+00	4.70E+00	4.03E+00	5.17E+00	5.10E+00	4.11E+00	5.17E+00
Pu-236	1.69E+00	1.53E+00	1.31E+00	1.69E+00	1.67E+00	1.34E+00	1.69E+00
Pu-243	1.54E+05	1.40E+05	1.20E+05	1.54E+05	1.52E+05	1.23E+05	1.54E+05
Re-186m	7.97E-02	7.24E-02	6.21E-02	7.97E-02	7.87E-02	6.34E-02	7.97E-02
Si-32	1.77E+01	1.60E+01	1.38E+01	1.77E+01	1.74E+01	1.41E+01	1.77E+01
Sm-146	7.43E-01	6.75E-01	5.79E-01	7.43E-01	7.33E-01	5.91E-01	7.43E-01
Tb-157	1.42E+02	1.29E+02	1.10E+02	1.42E+02	1.40E+02	1.13E+02	1.42E+02
Tb-158	1.10E-02	1.00E-02	8.60E-03	1.10E-02	1.09E-02	8.78E-03	1.10E-02
Tc-97	1.34E-01	1.22E-01	1.05E-01	1.34E-01	1.33E-01	1.07E-01	1.34E-01
Tc-98	9.77E-04	8.87E-04	7.61E-04	9.77E-04	9.64E-04	7.77E-04	9.77E-04
Th-232	6.44E-04	5.85E-04	5.01E-04	6.44E-04	6.36E-04	5.12E-04	6.44E-04
Ti-44	1.01E-01	9.15E-02	7.85E-02	1.01E-01	9.95E-02	8.02E-02	1.01E-01
U-235	1.20E-02	1.09E-02	9.35E-03	1.20E-02	1.19E-02	9.56E-03	1.20E-02
U-238	5.45E-02	4.95E-02	4.25E-02	5.45E-02	5.38E-02	4.34E-02	5.45E-02

Table H-98. DU-Specific Inventory Trigger Values for Inadvertent Human Intruder Pathways for Parent Radionuclides in Engineered Trenches (ET01-ET09)

Parent Radionuclide	Inventory Trigger Value (Ci)							
	ET01	ET02	ET03	ET04	ET05	ET07	ET08	ET09
Bi-208	8.10E-04	8.75E-04	6.76E-04	8.64E-04	8.51E-04	8.03E-04	8.03E-04	8.03E-04
Bi-210m	1.02E-02	1.11E-02	8.55E-03	1.09E-02	1.08E-02	1.02E-02	1.02E-02	1.02E-02
Cf-248	3.43E+04	3.70E+04	2.86E+04	3.66E+04	3.60E+04	3.40E+04	3.40E+04	3.40E+04
Cm-249	5.57E+04	6.02E+04	4.65E+04	5.94E+04	5.85E+04	5.52E+04	5.52E+04	5.52E+04
Cm-250	1.74E-02	1.88E-02	1.45E-02	1.85E-02	1.82E-02	1.72E-02	1.72E-02	1.72E-02
Dy-154	1.06E+00	1.14E+00	8.84E-01	1.13E+00	1.11E+00	1.05E+00	1.05E+00	1.05E+00
Eu-150	3.44E+00	3.71E+00	2.87E+00	3.67E+00	3.61E+00	3.41E+00	3.41E+00	3.41E+00
Fe-60	9.24E-04	9.98E-04	7.72E-04	9.86E-04	9.71E-04	9.16E-04	9.16E-04	9.16E-04
Gd-148	5.50E+02	5.94E+02	4.59E+02	5.87E+02	5.78E+02	5.45E+02	5.45E+02	5.45E+02
Gd-150	1.14E+00	1.23E+00	9.48E-01	1.21E+00	1.19E+00	1.13E+00	1.13E+00	1.13E+00
Hf-178m	4.22E+02	4.55E+02	3.52E+02	4.50E+02	4.43E+02	4.18E+02	4.18E+02	4.18E+02
Hf-182	1.65E-03	1.78E-03	1.38E-03	1.76E-03	1.73E-03	1.64E-03	1.64E-03	1.64E-03
Hg-194	4.67E-03	5.04E-03	3.90E-03	4.98E-03	4.90E-03	4.63E-03	4.63E-03	4.63E-03
Ho-163	2.40E+04	2.59E+04	2.00E+04	2.56E+04	2.52E+04	2.38E+04	2.38E+04	2.38E+04
Ir-192n	1.13E-02	1.22E-02	9.44E-03	1.21E-02	1.19E-02	1.12E-02	1.12E-02	1.12E-02
Kr-81	3.45E+00	3.73E+00	2.88E+00	3.68E+00	3.62E+00	3.42E+00	3.42E+00	3.42E+00
La-137	1.34E+00	1.45E+00	1.12E+00	1.43E+00	1.41E+00	1.33E+00	1.33E+00	1.33E+00
La-138	1.90E-03	2.05E-03	1.58E-03	2.02E-03	1.99E-03	1.88E-03	1.88E-03	1.88E-03
Lu-176	6.26E-03	6.76E-03	5.23E-03	6.68E-03	6.58E-03	6.21E-03	6.21E-03	6.21E-03
Mn-53	1.28E+02	1.38E+02	1.07E+02	1.37E+02	1.34E+02	1.27E+02	1.27E+02	1.27E+02
Nb-91	2.42E+00	2.61E+00	2.02E+00	2.58E+00	2.54E+00	2.40E+00	2.40E+00	2.40E+00
Nb-92	1.65E-03	1.79E-03	1.38E-03	1.76E-03	1.74E-03	1.64E-03	1.64E-03	1.64E-03
Np-235	4.42E+06	4.78E+06	3.69E+06	4.72E+06	4.65E+06	4.38E+06	4.38E+06	4.38E+06
Np-236	8.48E-03	9.16E-03	7.08E-03	9.04E-03	8.90E-03	8.40E-03	8.40E-03	8.40E-03
Pa-232	2.07E+03	2.24E+03	1.73E+03	2.21E+03	2.18E+03	2.05E+03	2.05E+03	2.05E+03
Pb-202	6.28E-03	6.78E-03	5.24E-03	6.70E-03	6.60E-03	6.23E-03	6.23E-03	6.23E-03
Pm-145	3.75E+06	4.05E+06	3.13E+06	4.00E+06	3.94E+06	3.72E+06	3.72E+06	3.72E+06
Po-208	4.61E+06	4.98E+06	3.85E+06	4.92E+06	4.84E+06	4.57E+06	4.57E+06	4.57E+06
Po-209	7.63E+00	8.24E+00	6.37E+00	8.14E+00	8.01E+00	7.56E+00	7.56E+00	7.56E+00
Pu-236	2.49E+00	2.69E+00	2.08E+00	2.66E+00	2.62E+00	2.47E+00	2.47E+00	2.47E+00
Pu-243	2.28E+05	2.46E+05	1.90E+05	2.43E+05	2.39E+05	2.26E+05	2.26E+05	2.26E+05
Re-186m	1.18E-01	1.27E-01	9.82E-02	1.25E-01	1.24E-01	1.17E-01	1.17E-01	1.17E-01
Si-32	2.61E+01	2.81E+01	2.18E+01	2.78E+01	2.74E+01	2.58E+01	2.58E+01	2.58E+01
Sm-146	1.10E+00	1.18E+00	9.15E-01	1.17E+00	1.15E+00	1.09E+00	1.09E+00	1.09E+00
Tb-157	2.09E+02	2.26E+02	1.75E+02	2.23E+02	2.20E+02	2.07E+02	2.07E+02	2.07E+02
Tb-158	1.63E-02	1.76E-02	1.36E-02	1.74E-02	1.71E-02	1.61E-02	1.61E-02	1.61E-02
Tc-97	1.98E-01	2.14E-01	1.66E-01	2.12E-01	2.08E-01	1.97E-01	1.97E-01	1.97E-01
Tc-98	1.44E-03	1.56E-03	1.20E-03	1.54E-03	1.51E-03	1.43E-03	1.43E-03	1.43E-03
Th-232	9.50E-04	1.03E-03	7.93E-04	1.01E-03	9.98E-04	9.42E-04	9.42E-04	9.42E-04
Ti-44	1.49E-01	1.61E-01	1.24E-01	1.59E-01	1.56E-01	1.47E-01	1.47E-01	1.47E-01
U-235	1.77E-02	1.91E-02	1.48E-02	1.89E-02	1.86E-02	1.76E-02	1.76E-02	1.76E-02
U-238	8.05E-02	8.69E-02	6.72E-02	8.58E-02	8.45E-02	7.98E-02	7.98E-02	7.98E-02

H.5.2.2. Low-Activity Waste Vault and Intermediate-Level Vault

The inventory trigger values for the IHI pathways for the LAWV and ILV reference DU-type do not require footprint area corrections because they are already calculated using each vault's actual

footprint area. The DU-specific inventory trigger values for the IHI pathways are shown in Table H-99.

Table H-99. DU-Specific Inventory Trigger Values for Inadvertent Human Intruder Pathways for Parent Radionuclides in Low-Activity Waste Vault and Intermediate-Level Vault

Parent Radionuclide	Inventory Trigger Value (Ci)	
	LAWV	ILV
Ac-227	6.96E+02	1.13E+05
Al-26	3.86E-02	6.90E-01
Bi-207	4.97E+00	2.05E+02
Bi-208	1.83E-02	1.23E-01
Bi-210m	7.25E+00	2.98E+03
Bk-247	5.81E+01	--
Cm-250	2.58E+00	1.50E+02
Eu-150	6.16E+00	3.79E+02
Fe-60	5.05E-02	1.79E+00
Hf-182	1.22E-01	5.06E+00
Hg-194	1.76E-01	3.36E+00
Ho-166m	2.45E-01	2.46E+01
Ir-192n	2.06E+00	1.28E+03
Kr-81	4.06E+03	--
La-138	--	2.92E+00
Nb-91	4.43E+02	2.84E+05
Nb-92	1.88E-01	1.63E+01
Np-236	3.92E-01	2.81E+00
Pa-231	2.91E+00	4.90E+02
Pa-232	--	3.69E+04
Pb-202	2.16E+00	1.80E+04
Po-209	1.53E+02	1.19E+04
Pu-236	6.21E+00	4.44E+01
Re-186m	9.12E+02	1.21E+05
Tb-158	5.42E-01	3.58E+01
Tc-98	2.38E-01	3.35E+01
Th-229	--	6.30E+01
Ti-44	7.48E-01	3.67E+01
V-50	--	1.63E+00
Total Number Radionuclides	**25**	**27**

H.5.2.3. Naval Reactor Component Disposal Areas

Footprint area corrections are applied to the inventory trigger values for the IHI pathways for the NRCDAG and NRCDAS reference DU-types to arrive at DU-specific trigger values as described in Sections H.5.1 and H.5.2. The resulting DU-specific inventory trigger values for the IHI pathways are shown in Table H-100. Trigger values for NR07E are provided only for SWF parent radionuclides comprising the NRCDAS reference DU-type.

Table H-100. DU-Specific Inventory Trigger Values for Inadvertent Human Intruder Pathways for Parent Radionuclides in NR07E and NR26E

Parent Radionuclide	Inventory Trigger Value (Ci)	
	NR07E	NR26E
Ac-227S	1.10E-01	8.91E-01
Al-26	--	4.65E-01
Al-26S	5.95E-05	4.82E-04
Am-245S	9.95E+04	8.08E+05
Am-246mS	4.46E+06	3.62E+07
Bi-207	--	2.96E+02
Bi-207S	4.09E-03	3.32E-02
Bi-208	--	9.75E-02
Bi-208S	5.56E-05	4.51E-04
Bi-210m	--	1.22E+03
Bi-210mS	7.49E-04	6.08E-03
Bk-247	--	1.45E+07
Bk-247S	1.76E-03	1.43E-02
Bk-250S	5.17E+05	4.19E+06
Cf-248S	3.20E+04	2.59E+05
Cf-250S	1.45E+01	1.18E+02
Cf-252S	1.63E+01	1.33E+02
Cm-249S	2.34E+03	1.90E+04
Cm-250	--	8.75E+01
Cm-250S	1.90E-03	1.54E-02
Eu-150	--	5.49E+02
Eu-152	--	5.60E+04
Eu-152S	2.87E-03	2.33E-02
Eu-154	--	8.80E+06
Fe-60	--	1.08E+00
Fe-60S	6.39E-05	5.18E-04
Hf-182	--	2.97E+00
Hf-182S	1.14E-04	9.22E-04
Hg-194	--	4.86E+00
Hg-194S	2.15E-04	1.74E-03
Ho-166m	--	1.82E+01
Ho-166mS	1.21E-04	9.81E-04
Ir-192n	--	1.85E+03
Ir-192nS	3.75E-04	3.05E-03
K-40	--	1.05E+01
K-40S	9.84E-04	7.99E-03
Kr-81S	2.37E-01	1.92E+00
La-137S	9.19E-02	7.46E-01
La-138	--	1.80E+00
La-138S	1.30E-04	1.06E-03
Lu-176S	4.31E-04	3.50E-03
Nb-91	--	2.04E+05
Nb-91S	1.28E-01	1.04E+00
Nb-92	--	8.48E+00
Nb-92S	1.14E-04	9.23E-04
Np-235S	3.18E+05	2.58E+06
Np-236	--	2.21E+00
Np-236S	5.93E-04	4.81E-03
Np-238S	5.13E+05	4.17E+06
Os-194S	7.02E+05	5.70E+06

Parent Radionuclide	Inventory Trigger Value (Ci)	
	NR07E	NR26E
Pa-231S	4.42E-04	3.59E-03
Pa-232	--	5.35E+04
Pa-232S	1.12E+01	9.13E+01
Pa-233S	1.40E+04	1.14E+05
Pb-202	--	4.25E+03
Pb-202S	4.29E-04	3.48E-03
Pb-210S	9.52E+01	7.72E+02
Pm-145S	3.49E+01	2.83E+02
Pm-146S	4.86E+05	3.94E+06
Po-208S	3.17E+05	2.57E+06
Po-209	--	1.72E+04
Po-209S	9.44E-02	7.66E-01
Pu-236	--	6.43E+01
Pu-236S	1.35E-02	1.10E-01
Pu-243S	1.52E+04	1.24E+05
Pu-246S	7.14E+03	5.79E+04
Ra-226S	1.01E-04	8.22E-04
Ra-228S	4.71E+04	3.82E+05
Re-186m	--	5.86E+04
Re-186mS	1.02E-02	8.30E-02
Rn-222S	2.02E+05	1.64E+06
Sm-145S	6.28E+02	5.10E+03
Tb-157S	1.22E+00	9.93E+00
Tb-158	--	5.18E+01
Tb-158S	4.23E-04	3.43E-03
Tc-97S	1.78E+00	1.45E+01
Tc-98	--	1.60E+01
Tc-98S	1.22E-04	9.87E-04
Te-123S	1.22E+02	9.92E+02
Th-229	--	4.22E+01
Th-229S	6.93E-04	5.62E-03
Th-230S	2.38E-04	1.93E-03
Ti-44	--	5.31E+01
Ti-44S	5.55E-04	4.50E-03
V-50	--	1.05E+00
V-50S	1.10E-04	8.90E-04
Total Number Radionuclides	**57**	**86**

Notes:

For NR07E, cells corresponding to generic-waste-form parent radionuclides comprising the NRCDAG reference DU-type are indicated by --."

H.5.3 Inventory Trigger Values for Air Pathway

As discussed in Chapter 2, Section 2.3.8.1, radionuclides with no current inventory, but which are not eliminated during the radionuclide screening process for the air pathway, are assigned preliminary trigger values. The preliminary inventory trigger values (Table H-101) are finalized as follows to account for atmospheric plume overlap contributions using an atmospheric PIF:

$$L_{DU,i}^{trig-air} = \frac{L_{DU-type,i}^{prem-trig-air}}{\eta^{Air}} \qquad \text{Eq. (H-6)}$$

where:

$L_{DU,i}^{trig-air}$ Final inventory trigger value for air pathway for i^{th} parent radionuclide within disposal unit *DU* (Ci)

$L_{DU-type,i}^{prem-trig-air}$ Preliminary inventory trigger value for air pathway for i^{th} parent radionuclide within reference *DU-type* (Ci)

η^{Air} Atmospheric PIF (unitless)

Table H-101. Results of Tier-3 Screening: Preliminary Trigger Values (Ci) for Air Pathway for Non-CWTS Radionuclides and CWTS Radionuclides with Zero Inventory

Parent Radionuclide	Reference DU-Type				
	Trench	LAWV	ILV	NRCDAG [a]	NRCDAS [b]
Ar-39	SO	SO	SO	2.22E+01	2.22E+01
Hg-194	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04
Hg-206	4.35E-01	4.35E-01	4.35E-01	4.35E-01	4.35E-01
Kr-81	6.67E+01	6.67E+01	6.67E+01	6.67E+01	6.67E+01
Kr-83m	2.33E+03	2.33E+03	2.33E+03	2.33E+03	2.33E+03

Notes:

"SO" signifies that the radionuclide is screened out in Chapter 2, Section 2.3.8.1.

[a] NRCDAG refers to large shear block boxes (bolted containers), stacked two high, and is treated as generic waste.

[b] NRCDAS refers to a welded KAPL CB/TS steel cask and is treated as a SWF.

Final inventory trigger values for the air pathway are computed based on a single atmospheric PIF that is independent of reference DU-type and specific DU. Results are summarized below by type of DU.

H.5.3.1. Slit and Engineered Trenches

The final, DU-specific inventory trigger values for the air pathway for STs and ETs are listed in Table H-102.

Table H-102. Final Inventory Trigger Values for Air Pathway for Slit and Engineered Trenches (ST01-ST11, ST14, ST18, ST23, ST24, ET01-ET05, and ET07-ET09)

Parent Radionuclide	Final Inventory Trigger Value (Ci)
Atmospheric PIF	27.0
Hg-194	1.37E-05
Hg-206	1.61E-02
Kr-81	2.47E+00
Kr-83m	8.61E+01

H.5.3.2. Low-Activity Waste Vault and Intermediate-Level Vault

Table H-103 lists the final, DU-specific inventory trigger values for the air pathway for the LAWV and ILV.

Table H-103. Final Inventory Trigger Values for Air Pathway for Low-Activity Waste Vault and Intermediate-Level Vault

Parent Radionuclide	Final Inventory Trigger Value (Ci)
Atmospheric PIF	27.0
Hg-194	1.37E-05
Hg-206	1.61E-02
Kr-81	2.47E+00
Kr-83m	8.61E+01

H.5.3.3. Naval Reactor Component Disposal Areas

Table H-104 lists the final, DU-specific inventory trigger values for the air pathway for NR07E and NR26E.

Table H-104. Final Inventory Trigger Values for Air Pathway for NR07E and NR26E

Parent Radionuclide	Final Inventory Trigger Value (Ci)
Atmospheric PIF	27.0
Ar-39	8.23E-01
Hg-194	1.37E-05
Hg-206	1.61E-02
Kr-81	2.47E+00
Kr-83m	8.61E+01

H.5.4 Inventory Trigger Values for Radon Pathway

Final inventory trigger values for the radon pathway are not required.

H.6 INVENTORY LIMITS COMPARISON TO PRIOR PERFORMANCE ASSESSMENTS

This appendix section provides a comparison and interpretation of PA2022 inventory limits versus PA2008 inventory limits as well as revised limits developed during subsequent ELLWF SAs and UDQEs. The following sections contain supporting material for Chapter 8 by exposure pathway.

H.6.1 Groundwater Pathways

H.6.1.1. Slit and Engineered Trenches

A variety of modeling changes have occurred since PA2008. A brief summary for each ST and ET is included in Table H-105. The list of changes provided can impact inventory limits positively or negatively.

Table H-105. Summary of Changes in Slit and Engineered Trench Modeling Between PA2008 and PA2022

DU	Timeline				Hydrostratigraphy		Percent Subsidence	(PA2008 SOFT) / (PA2022 SOFT)	Summary of Changes
	Date First Waste	Date Last Waste	Date Operational Cover	Change in Time Uncovered (years) *	Change in Depth to Water Table **	Clay Beneath Waste Zone			
ST01	12/21/1995	9/18/2003	12/21/2010	-15.00	20.00	11.00	0.00	1.30	Concrete Rubble from 2008 Changes less noticeable
ST02	9/20/2001	8/31/2006	12/21/2010	-20.75	20.00	11.00	2.00	19.00	Less time uncovered Increased depth to water table Increased clay beneath waste zone Less subsidence
ST03	10/20/2003	1/5/2010	12/21/2010	-22.83	9.00	4.00	4.90	14.30	Less time uncovered Increased depth to water table Increased clay beneath waste zone Less subsidence
ST04	2/26/2004	8/18/2010	12/21/2010	-23.18	9.00	4.00	3.60	13.80	Less time uncovered Increased depth to water table Increased clay beneath waste zone Less subsidence
ST05	5/27/2004	1/15/2006	12/21/2010	-23.43	0.00	2.00	0.54	15.40	Less time uncovered Increased depth to water table Increased clay beneath waste zone Less subsidence
ST06	4/29/2006	11/7/2029	4/7/2036	-0.06	0.00	2.00	2.00	16.00	Increased clay beneath waste zone Less subsidence
ST07	6/26/2006	4/7/2032	4/7/2036	-0.22	0.00	2.00	2.00	6.40	Increased clay beneath waste zone Less subsidence
ST08	2/6/2007	10/27/2037	1/25/2042	4.97	20.00	11.00	2.00	16.10	Less time uncovered Increased depth to water table Increased clay beneath waste zone Less subsidence
ST09	3/17/2011	7/1/2020	1/25/2042	0.86	20.00	11.00	2.00	2.30	Increased depth to water table Increased clay beneath waste zone Less subsidence
ST10	12/18/2020	11/18/2028	1/25/2042	-8.90	20.00	11.00	2.00	15.70	Less time uncovered Increased depth to water table Increased clay beneath waste zone Less subsidence
ST11	9/30/2021	5/6/2026	5/6/2030	-21.40	20.00	11.00	2.00	31.00	Less time uncovered Increased depth to water table Increased clay beneath waste zone Less subsidence
ST14	3/29/2011	9/14/2021	9/14/2025	-15.54	0.00	15.00	2.00	11.90	Less time uncovered Increased clay beneath waste zone Less subsidence
ST17	9/30/2021	7/29/2027	7/29/2031	-20.17	-9.00	10.00	2.00	7.30	Less time uncovered Increased clay beneath waste zone Less subsidence
ST18	9/30/2021	7/29/2027	7/29/2031	-20.17	-9.00	10.00	2.00	7.90	Less time uncovered More clay beneath waste zone Less subsidence
ST19	9/30/2021	7/29/2027	7/29/2031	-20.17	-9.00	10.00	2.00	9.50	Less time uncovered More clay beneath waste zone Less subsidence
ST20	9/30/2021	7/29/2027	7/29/2031	-20.17	-9.00	10.00	2.00	13.50	Less time uncovered More clay beneath waste zone Less subsidence

DU	Timeline				Hydrostratigraphy		Percent Subsidence	(PA2008 SOFT) / (PA2022 SOFT)	Summary of Changes
	Date First Waste	Date Last Waste	Date Operational Cover	Change in Time Uncovered (years) *	Change in Depth to Water Table **	Clay Beneath Waste Zone			
ST21	9/30/2021	8/9/2026	8/9/2030	-21.14	-9.00	10.00	2.00	23.60	Less time uncovered More clay beneath waste zone Less subsidence
ST22	9/30/2021	10/17/2025	10/17/2029	-21.95	-9.00	10.00	2.00	28.30	Less time uncovered More clay beneath waste zone Less subsidence
ST23	9/30/2021	10/15/2025	10/15/2029	-21.96	9.00	4.00	2.00	1.90	Less time uncovered Increased depth to water table More clay beneath waste zone Less subsidence
ST24	9/30/2021	8/25/2027	8/25/2031	-20.10	0.00	2.00	2.00	5.10	Less time uncovered More clay beneath waste zone Less subsidence
ET01	2/13/2001	3/30/2017	9/30/2040	9.63	0.00	15.00	2.00	3.90	More clay beneath waste zone Less subsidence
ET02	6/3/2004	1/24/2028	9/29/2040	6.33	-7.00	6.00	2.00	4.80	More clay beneath waste zone Less subsidence
ET03	9/19/2013	9/2/2021	9/30/2040	-2.97	9.00	4.00	0.00	10.80	Less time uncovered Increased depth to water table Increased clay beneath waste zone Less subsidence
ET04	12/18/2020	11/10/2027	9/30/2040	-10.22	20.00	11.00	2.00	36.80	Less time uncovered Increased depth to water table Increased clay beneath waste zone Less subsidence
ET05	9/30/2021	8/15/2028	9/30/2065	14.00	-9.00	10.00	2.00	6.60	More clay beneath waste zone Less subsidence
ET06	9/30/2021	7/14/2028	9/30/2065	14.00	-9.00	10.00	2.00	9.20	More clay beneath waste zone Less subsidence
ET07	9/30/2021	12/21/2040	9/30/2065	14.00	8.00	5.00	2.00	5.50	Increased depth to water table Increased clay beneath waste zone Less subsidence
ET08	9/30/2021	12/21/2040	9/30/2065	14.00	8.00	5.00	2.00	7.30	Increased depth to water table Increased clay beneath waste zone Less subsidence
ET09	9/30/2021	12/21/2040	9/30/2065	14.00	8.00	5.00	2.00	8.60	Increased depth to water table Increased clay beneath waste zone Less subsidence

Notes:

* Negative number indicates that the time uncovered decreased from PA2008 to PA2022.

** Negative number indicates that depth to the water table decreased from PA2008 to PA2022.

H.6.1.2. Low-Activity Waste Vault and Intermediate-Level Vault

As for I-129 in Chapter 8, Section 8.3.8, similar PA2008 versus PA2022 comparisons are presented below for C-14 and Cl-36.

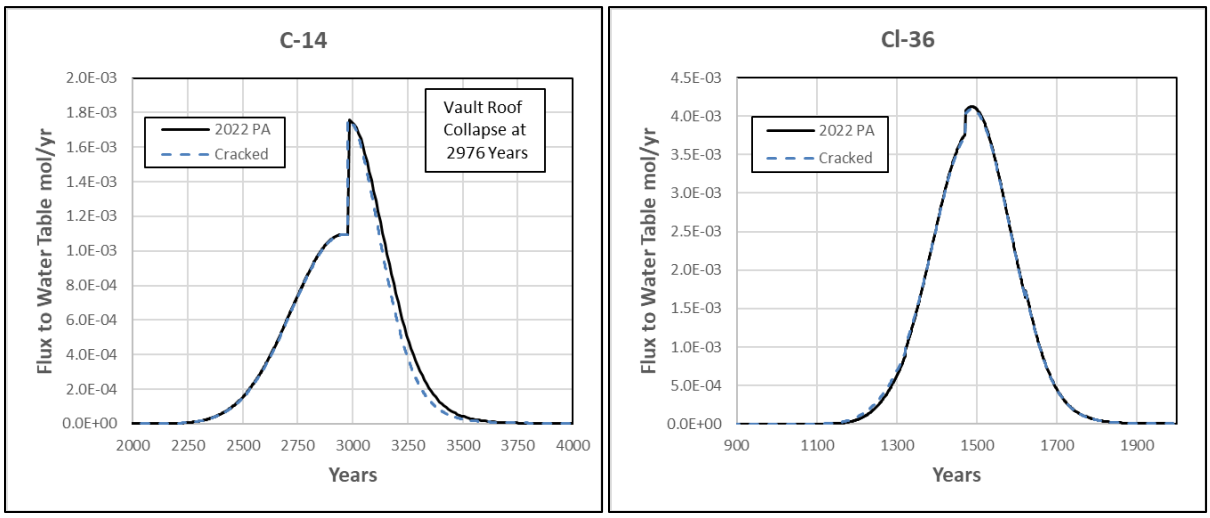


Figure H-126. Flux of C-14 and Cl-36 to Water Table for LAWV with Floor and Wall Gaps

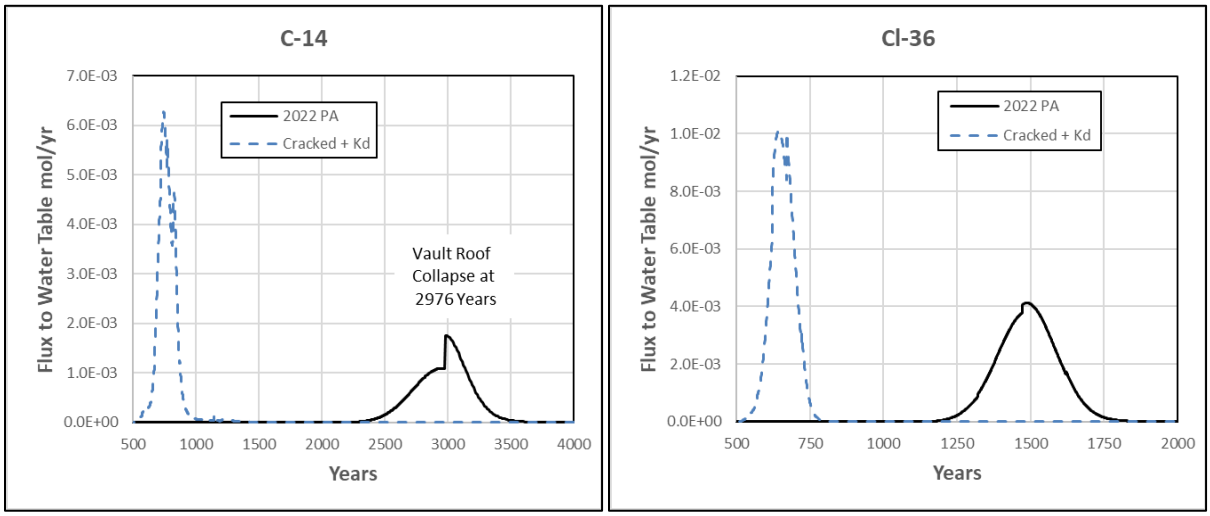


Figure H-127. Flux of C-14 and Cl-36 to Water Table for LAWV with Gaps and PA2008 K_d Values

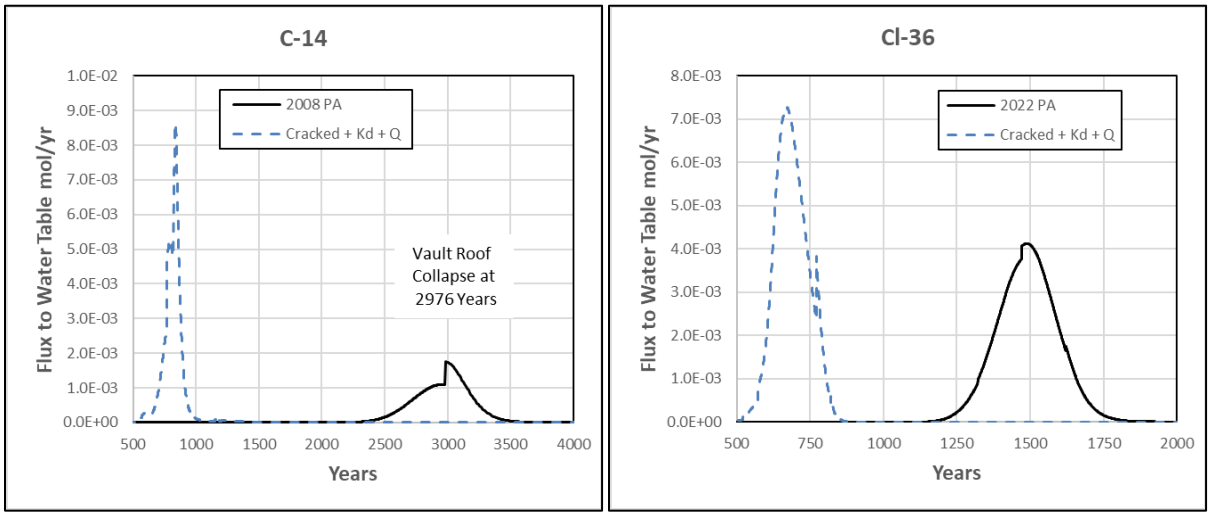


Figure H-128. Flux of C-14 and Cl-36 to Water Table for LAWV with Gaps, PA2008 K_d Values, and 2008 Infiltration Rates

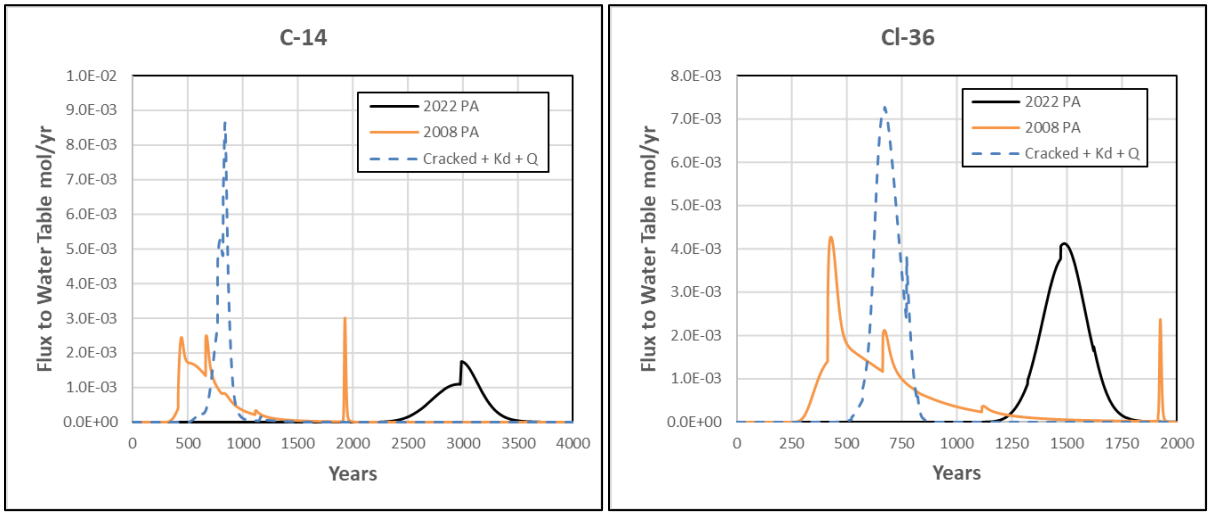


Figure H-129. Flux of C-14 and Cl-36 to Water Table for LAWV with Floor and Wall Gaps, PA2008 K_d Values, and PA2008 Infiltration Rates Compared to PA2008 and Nominal PA2022 Model Results

H.6.1.3. Naval Reactor Component Disposal Areas

No supporting information provided.

H.6.2 Inadvertent Human Intruder Pathways

No supporting information provided. See Chapter 7.

H.6.3 Air Pathway

Comparisons and interpretations of PA2022 inventory limits to limits reported in PA2008 and subsequent SAs are provided in Chapter 8, Section 8.5.6.

H.6.4 Radon Pathway

Comparisons and interpretations of PA2022 inventory limits to limits reported in PA2008 and subsequent SAs are provided in Chapter 8, Section 8.6.6.

H.7 PROJECTED CLOSURE INVENTORY SUPPORTING MATERIAL

Chapter 8 supporting material for estimating projected inventories for each DU is provided within this section. These inventory projections represent the "nominal PA" settings employed in the closure analyses performed in Chapter 9 and represent the best estimate deterministic values. Bias and uncertainty associated with CWTS inventories are addressed in the closure analysis efforts using Monte Carlo simulations.

To compute the best estimate projected inventories a computational strategy based on the following key available data was established:

- Composition vectors based on existing CWTS inventories:
- PA2022 inventory limits provided in Chapter 8.

Given these two key pieces of data projected closure inventories were computed as discussed in the following two sections.

H.7.1 Composition Vectors

As discussed in Chapter 8, an assumed composition vector must be employed to compute a future inventory within a given DU. These future composition vectors are unitless and are based on the available existing CWTS inventories as of March 31, 2021. In most cases, the currently open DUs have a significant quantity of existing materials (i.e., volume-filled percentages >50%). As such, the existing unitless composition vectors are employed as future composition vectors for these 11 DUs (see Chapter 8, Table 8-33):

- ET02 (79 vol%)
- ET03 (93 vol%)
- ST06 (91 vol%)
- ST07 (66 vol%)
- ST08 (95 vol%)
- ST09 (94 vol%)
- ST14 (90 vol%)
- ST23 (28 vol%)[2]
- ILV (59 vol%)
- LAWV (32 vol%)[3]

[2] Repurposed CIG01 DU where only future ST waste will be allowed.
[3] Unique in that disposed containers are movable after disposal.

- NR26E (12 vol%)[4]

As noted above, ST23, LAWV, and NR26E are only partially filled as of March 31, 2021; however, because of unique aspects, their future compositional vectors are set to the following:

- Current existing values for LAWV and NR26E
- A projected average value for ST23 as discussed below for future DUs.

Because the following seven closed DUs will not receive any future waste, their future compositional vectors are set to zero:

- ET01 (100 vol%)
- ST01 (100 vol%)
- ST02 (100 vol%)
- ST03 (100 vol%)
- ST04 (100 vol%)
- ST05 (100 vol%)
- NR07E (100 vol%)

The following ten remaining DUs are future units where the projected compositional vectors must be generated (the source used in estimating future vectors is provided in paratheses):

- ET04 (based on ET-Avg)
- ET05 (based on ET-Avg)
- ET07 (based on ET-Avg)
- ET08 (based on ET-Avg)
- ET09 (based on ET-Avg)
- ST10 (based on ST09 vector because both DUs have 33% of area set for future tall boxes)
- ST11 (based on ST-Avg)
- ST18 (based on ST-Avg)
- ST23 (based on no more CIG trench segments; future vector same as ST-Avg2)
- ST24 (based on ST-Avg2)

Three effectively average, unitless composition vectors are listed above: ET-Avg, ST-Avg, and ST-Avg2. These average composition vectors are created by averaging existing DU composition vectors where weighting is employed to project their inventory contributions to closure. The averaging scheme employed is shown in the following two equations:

$$ET_{avg,i} = Avg\left[I_{ET01,i}, \left(\frac{0.95}{S_{ET02}}\right) I_{ET02,i}, \left(\frac{0.95}{S_{ET03}}\right) I_{ET03,i} \right] \qquad \text{Eq. (H-7)}$$

[4] Off-site NR waste streams with specific compositions.

and

$$ST_{avg,i} = Avg\left[\begin{array}{l} I_{ST01,i}, I_{ST02,i}, I_{ST03,i}, I_{ST04,i}, I_{ST05,i}, \\ \left(\frac{0.95}{S_{ST06}}\right) I_{ST06,i}, \left(\frac{0.95}{S_{ST07}}\right) I_{ST07,i}, \left(\frac{0.95}{S_{ST08}}\right) I_{ST08,i}, \left(\frac{0.95}{S_{ST09}}\right) I_{ST09,i}, \left(\frac{0.95}{S_{ST14}}\right) I_{ST14,i} \end{array}\right] \quad \text{Eq. (H-8)}$$

where:

$ET_{avg,i}$ i^{th} parent radionuclide projected inventory for an average ET DU (Ci)

$ST_{avg,i}$ i^{th} parent radionuclide projected inventory for an average ST DU (Ci)

$I_{j,i}$ i^{th} parent radionuclide existing inventory for j^{th} DU(Ci)

S_j PA2022 total SOF for j^{th} DU based on existing inventory (unitless)

The unitless composition vectors are then computed by normalizing Eq. (H-7) and Eq. (H-8) using the following two equations:

$$\lambda_{ET-avg,i} = \frac{ET_{avg,i}}{\sum_{j=1}^{N_{ET-Avg}} ET_{avg,j}} \quad \text{Eq. (H-9)}$$

and

$$\lambda_{ST-avg,i} = \frac{ST_{avg,i}}{\sum_{j=1}^{N_{ST-Avg}} ST_{avg,j}} \quad \text{Eq. (H-10)}$$

where:

$\lambda_{ET-avg,i}$ i^{th} parent radionuclide composition for j^{th} ET DU based on existing inventory (unitless)

$\lambda_{ST-avg,i}$ i^{th} parent radionuclide composition for j^{th} ST DU based on existing inventory (unitless)

N_{ET-avg} Number of existing ET DUs (unitless)

N_{ST-avg} Number of existing ST DUs (unitless)

In the above equations, no weighting is required for inventories associated with closed units. For open units, the weighting factors (i.e., ratios in paratheses) are based on the following:

- SWM administrative limit of 95% SOF for projecting to an activity limit at closure.
- Computed maximum total SOF based on existing inventory and the new PA2022 inventory limits.

The maximum total SOF values for the existing DUs (i.e., PA2022 computed values given the March 31, 2021, existing inventories) are provided in Table H-106.

Table H-106. PA2022 Estimated Maximum Total SOF Values for Existing Inventory in Open Disposal Units as of March 31, 2021

Type of DU	DU	PA2022 SOF (unitless) for Existing Inventory [a]
ST	ST06	0.143
	ST07	0.456
	ST08	0.370
	ST09	0.936
	ST14	0.654
ET	ET02	0.751
	ET03	0.352

Notes:

[a] Computed maximum total SOF for existing inventory as of March 31, 2021, based on PA2022 inventory limits.

Two ST-Avg composition vectors are computed because some future STs have the option to include the SWF C-14N (i.e., ST23 and ST24), while others do not. The three estimated future composition vectors are listed in Table H-107.

Table H-107. Future Composition Vectors Based on Averaging of Existing Slit and Engineered Trench Inventories

Parent Radionuclide	ST-Avg (unitless)	ST-Avg2 (unitless)	ET-Avg (unitless)
Ag-108m	3.24E-07	3.24E-07	2.81E-08
Am-241	8.56E-03	8.57E-03	5.75E-03
Am-242m	2.93E-03	2.93E-03	7.06E-04
Am-243	9.83E-04	9.84E-04	7.26E-05
Be-10	1.02E-09	1.02E-09	1.20E-12
C-14	3.19E-04	3.19E-04	3.68E-04
Cf-249	6.82E-04	6.82E-04	8.04E-05
Cf-251	6.20E-04	6.21E-04	7.33E-05
Cl-36	1.50E-08	1.50E-08	1.04E-07
Cm-245	1.11E-05	1.11E-05	2.19E-06
Cm-247	1.51E-05	1.51E-05	7.99E-07
Cm-248	2.86E-06	2.86E-06	8.58E-10
Cs-135	4.56E-10	4.56E-10	2.20E-13
Cs-137	5.06E-01	5.06E-01	5.19E-01
H-3	1.30E-02	1.30E-02	5.65E-03
I-129	8.61E-07	8.61E-07	4.52E-07
K-40	3.85E-06	3.85E-06	6.38E-07
Nb-94	7.14E-06	7.14E-06	8.77E-06
Ni-59	5.36E-04	5.37E-04	3.63E-04
Ni-63	1.44E-02	1.44E-02	1.93E-02
Np-237	7.34E-05	7.34E-05	1.11E-04
Pa-231	6.11E-09	6.11E-09	1.78E-08
Pd-107	2.06E-10	2.06E-10	2.42E-16
Pu-239	1.87E-02	1.87E-02	1.95E-02
Pu-240	4.84E-03	4.84E-03	5.06E-03
Pu-241	1.05E-01	1.05E-01	7.75E-02
Ra-226	3.57E-06	3.57E-06	6.30E-06
Rb-87	8.40E-14	8.40E-14	4.45E-08
Sn-126	6.89E-06	6.89E-06	6.97E-07
Sr-90	3.07E-01	3.07E-01	3.26E-01
Tc-99	3.29E-04	3.29E-04	2.93E-04
Th-229	9.07E-06	9.07E-06	4.04E-05
Th-230	2.64E-06	2.64E-06	1.77E-05
Th-231	3.27E-04	3.27E-04	1.98E-05
U-232	8.18E-05	8.19E-05	1.89E-04
U-233	5.66E-03	5.66E-03	1.60E-02
U-234	9.66E-03	9.66E-03	3.67E-03
U-236	1.52E-04	1.52E-04	7.19E-05
U-233D [a]	3.09E-05	3.09E-05	7.25E-06
C-14N [a]	1.86E-04	--	--
Sum	*1.00E+00*	*1.00E+00*	*1.00E+00*

Notes:

[a] SWF parent radionuclide. All others are generic waste form parent radionuclides.

H.7.2 Future Inventory Vectors

As discussed in Chapter 8, CWTS-based future inventories are computed for all 27 DUs. This section tabulates the following quantities for each DU for every parent radionuclide having an inventory limit (i.e., the composite list for GW, IHI, air, and radon):

- Total projected CWTS inventory (Ci)
- Existing CWTS inventory (Ci)
- Future composition fraction (unitless)
- Future projected CWTS inventory (Ci)
- Bias factor (i.e., a multiplier, where a bias factor of 1.0 implies an unbiased value) used in deterministic closure analysis (unitless)

The future projected CWTS inventories for both generic waste form and SWF radionuclides for all 27 DUs are presented in Table H-108 through Table H-134. For the SWF entries, shading is also provided to indicate key aspects associated with each SWF. For SWFs, the following two aspects are tracked:

- Status as to whether the future disposal of a SWF is considered
- How the inventory limits are handled for a SWF (i.e., Tier-3 or Tier-4 GW analysis)

Based on waste-form type, future burial plans, and preliminary inventory limits, Table H-8 defines how the SWF radionuclides are addressed within the CWTS limits system.

The projected compositional vectors and CWTS inventory vectors are provided below. These vectors are employed in computing dose history time profiles (Chapter 8) and closure analyses (Chapter 9).

H.7.2.1. Slit and Engineered Trenches

Table H-108. An Upper-Bound Projected CWTS Closure Inventory for ST01

Parent Radionuclide (43 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241	3.79E-02	3.79E-02	2.87E-03	0.00E+00	0.66648
Am-242m	7.36E-03	7.36E-03	5.58E-04	0.00E+00	0.98774
Am-243	6.13E-05	6.13E-05	4.64E-06	0.00E+00	0.84375
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	8.94E-03	8.94E-03	6.78E-04	0.00E+00	0.66720
Cf-249	6.66E-06	6.66E-06	5.05E-07	0.00E+00	0.53811
Cf-251	6.59E-05	6.59E-05	5.00E-06	0.00E+00	0.50193
Cl-36	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Cm-245	2.74E-07	2.74E-07	2.08E-08	0.00E+00	0.50287
Cm-247	1.43E-06	1.43E-06	1.09E-07	0.00E+00	0.50000
Cm-248	1.43E-06	1.43E-06	1.09E-07	0.00E+00	0.50000
Cs-135	7.09E-08	7.09E-08	5.38E-09	0.00E+00	0.50000
Cs-137	7.09E+00	7.09E+00	5.37E-01	0.00E+00	0.52980
H-3	8.47E-01	8.47E-01	6.42E-02	0.00E+00	0.73174
I-129	1.99E-05	1.99E-05	1.50E-06	0.00E+00	0.63865
K-40	4.12E-03	4.12E-03	3.12E-04	0.00E+00	0.99187
Nb-94	1.08E-03	1.08E-03	8.15E-05	0.00E+00	1.00000
Ni-59	2.25E-02	2.25E-02	1.70E-03	0.00E+00	0.86126
Ni-63	1.58E+00	1.58E+00	1.20E-01	0.00E+00	0.99774
Np-237	1.19E-03	1.19E-03	9.00E-05	0.00E+00	0.54818
Pa-231	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pd-107	1.10E-07	1.10E-07	8.37E-09	0.00E+00	0.50000
Pu-239	2.57E-02	2.57E-02	1.95E-03	0.00E+00	0.54507
Pu-240	7.30E-03	7.30E-03	5.53E-04	0.00E+00	0.63616
Pu-241	2.24E-01	2.24E-01	1.70E-02	0.00E+00	0.53958
Ra-226	3.18E-03	3.18E-03	2.41E-04	0.00E+00	0.99290
Rb-87	8.59E-14	8.59E-14	6.51E-15	0.00E+00	0.50000
Sn-126	1.83E-04	1.83E-04	1.38E-05	0.00E+00	0.50153
Sr-90	3.25E+00	3.25E+00	2.46E-01	0.00E+00	0.75288
Tc-99	5.32E-03	5.32E-03	4.03E-04	0.00E+00	0.64756
Th-229	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Th-230	2.87E-04	2.87E-04	2.17E-05	0.00E+00	1.00000
Th-231	1.74E-03	1.74E-03	1.32E-04	0.00E+00	0.87580
U-232	1.18E-06	1.18E-06	8.93E-08	0.00E+00	0.99977
U-233	3.43E-04	3.43E-04	2.60E-05	0.00E+00	0.51132
U-234	7.69E-02	7.69E-02	5.83E-03	0.00E+00	0.76805
U-236	3.27E-03	3.27E-03	2.48E-04	0.00E+00	0.53723
U-233D	5.88E-03	5.88E-03	0.00E+00	0.00E+00	0.97725
C-14N	5.22E-02	5.22E-02	0.00E+00	0.00E+00	1.00000
H-3F	3.87E+00	3.87E+00	0.00E+00	0.00E+00	1.00000
I-129F	2.77E-07	2.77E-07	0.00E+00	0.00E+00	0.50000
I-129J	8.14E-05	8.14E-05	0.00E+00	0.00E+00	0.99000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-109. An Upper-Bound Projected CWTS Closure Inventory for ST02

Parent Radionuclide (47 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241	1.59E-01	1.59E-01	4.23E-03	0.00E+00	0.61282
Am-242m	3.11E-02	3.11E-02	8.26E-04	0.00E+00	0.98803
Am-243	1.69E-03	1.69E-03	4.47E-05	0.00E+00	0.54869
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	4.57E-02	4.57E-02	1.21E-03	0.00E+00	0.93938
Cf-249	6.23E-04	6.23E-04	1.65E-05	0.00E+00	0.50339
Cf-251	6.68E-04	6.68E-04	1.77E-05	0.00E+00	0.51425
Cl-36	1.05E-05	1.05E-05	2.80E-07	0.00E+00	1.00000
Cm-245	2.92E-06	2.92E-06	7.73E-08	0.00E+00	0.50054
Cm-247	2.48E-09	2.48E-09	6.57E-11	0.00E+00	0.50000
Cm-248	2.58E-05	2.58E-05	6.84E-07	0.00E+00	0.50129
Cs-135	1.18E-10	1.18E-10	3.12E-12	0.00E+00	0.50026
Cs-137	2.22E+01	2.22E+01	5.89E-01	0.00E+00	0.50507
H-3	1.07E+00	1.07E+00	2.83E-02	0.00E+00	0.78727
I-129	1.97E-05	1.97E-05	5.22E-07	0.00E+00	0.62672
K-40	3.21E-06	3.21E-06	8.53E-08	0.00E+00	0.50000
Nb-94	2.26E-03	2.26E-03	5.99E-05	0.00E+00	1.00000
Ni-59	3.65E-02	3.65E-02	9.67E-04	0.00E+00	0.96955
Ni-63	6.51E+00	6.51E+00	1.73E-01	0.00E+00	0.99953
Np-237	2.07E-03	2.07E-03	5.49E-05	0.00E+00	0.71286
Pa-231	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pd-107	1.83E-10	1.83E-10	4.86E-12	0.00E+00	0.50029
Pu-239	1.98E-01	1.98E-01	5.26E-03	0.00E+00	0.57104
Pu-240	7.68E-02	7.68E-02	2.04E-03	0.00E+00	0.68984
Pu-241	2.24E+00	2.24E+00	5.95E-02	0.00E+00	0.65013
Ra-226	6.49E-06	6.49E-06	1.72E-07	0.00E+00	0.50000
Rb-87	1.42E-16	1.42E-16	3.78E-18	0.00E+00	0.50000
Sn-126	2.14E-06	2.14E-06	5.68E-08	0.00E+00	0.62093
Sr-90	4.70E+00	4.70E+00	1.25E-01	0.00E+00	0.61559
Tc-99	2.02E-02	2.02E-02	5.37E-04	0.00E+00	0.60560
Th-229	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Th-230	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Th-231	5.63E-03	5.63E-03	1.49E-04	0.00E+00	0.91471
U-232	1.68E-07	1.68E-07	4.44E-09	0.00E+00	1.00000
U-233	1.56E-03	1.56E-03	4.15E-05	0.00E+00	0.55054
U-234	3.59E-01	3.59E-01	9.52E-03	0.00E+00	0.91885
U-236	1.15E-02	1.15E-02	3.05E-04	0.00E+00	0.77623
U-233D	2.56E-02	2.56E-02	0.00E+00	0.00E+00	0.96428
C-14N	7.68E-02	7.68E-02	0.00E+00	0.00E+00	1.00000
I-129D	4.41E-03	4.41E-03	0.00E+00	0.00E+00	0.50000
I-129G	5.15E-05	5.15E-05	0.00E+00	0.00E+00	0.53094
I-129H	1.18E-04	1.18E-04	0.00E+00	0.00E+00	0.52769
I-129I	8.64E-05	8.64E-05	0.00E+00	0.00E+00	0.98495
I-129J	3.45E-04	3.45E-04	0.00E+00	0.00E+00	0.99000
U-234G	2.80E+00	2.80E+00	0.00E+00	0.00E+00	0.53723
U-236G	1.42E-01	1.42E-01	0.00E+00	0.00E+00	0.53475

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-110. An Upper-Bound Projected CWTS Closure Inventory for ST03

Parent Radionuclide (44 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241	4.04E-01	4.04E-01	6.40E-03	0.00E+00	0.52046
Am-242m	3.38E-03	3.38E-03	5.35E-05	0.00E+00	0.94941
Am-243	2.39E-03	2.39E-03	3.79E-05	0.00E+00	0.51128
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	1.85E-02	1.85E-02	2.93E-04	0.00E+00	0.79562
Cf-249	3.32E-04	3.32E-04	5.26E-06	0.00E+00	0.76890
Cf-251	3.78E-04	3.78E-04	5.99E-06	0.00E+00	0.66934
Cl-36	2.10E-06	2.10E-06	3.32E-08	0.00E+00	1.00000
Cm-245	1.93E-04	1.93E-04	3.06E-06	0.00E+00	0.52302
Cm-247	4.97E-05	4.97E-05	7.87E-07	0.00E+00	0.50000
Cm-248	6.09E-05	6.09E-05	9.64E-07	0.00E+00	0.55232
Cs-135	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Cs-137	1.77E+01	1.77E+01	2.80E-01	0.00E+00	0.58876
H-3	8.52E-01	8.52E-01	1.35E-02	0.00E+00	0.56048
I-129	4.52E-05	4.52E-05	7.16E-07	0.00E+00	0.53829
K-40	5.31E-06	5.31E-06	8.40E-08	0.00E+00	0.50000
Nb-94	6.64E-04	6.64E-04	1.05E-05	0.00E+00	1.00000
Ni-59	1.41E-02	1.41E-02	2.24E-04	0.00E+00	0.72389
Ni-63	5.70E-01	5.70E-01	9.03E-03	0.00E+00	0.99994
Np-237	1.87E-02	1.87E-02	2.96E-04	0.00E+00	0.58625
Pa-231	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pd-107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pu-239	9.83E-01	9.83E-01	1.56E-02	0.00E+00	0.53839
Pu-240	2.74E-01	2.74E-01	4.33E-03	0.00E+00	0.59529
Pu-241	8.85E+00	8.85E+00	1.40E-01	0.00E+00	0.62153
Ra-226	2.25E-05	2.25E-05	3.56E-07	0.00E+00	0.50000
Rb-87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Sn-126	2.03E-04	2.03E-04	3.22E-06	0.00E+00	0.61535
Sr-90	3.14E+01	3.14E+01	4.98E-01	0.00E+00	0.54532
Tc-99	3.86E-02	3.86E-02	6.11E-04	0.00E+00	0.53008
Th-229	1.02E-04	1.02E-04	1.61E-06	0.00E+00	1.00000
Th-230	4.10E-05	4.10E-05	6.49E-07	0.00E+00	0.72407
Th-231	3.60E-02	3.60E-02	5.70E-04	0.00E+00	0.55073
U-232	3.90E-02	3.90E-02	6.17E-04	0.00E+00	0.99653
U-233	1.09E-01	1.09E-01	1.72E-03	0.00E+00	0.91554
U-234	1.75E+00	1.75E+00	2.77E-02	0.00E+00	0.61775
U-236	3.93E-02	3.93E-02	6.22E-04	0.00E+00	0.67351
U-233D	2.96E-03	2.96E-03	0.00E+00	0.00E+00	0.90544
C-14N	5.82E-03	5.82E-03	0.00E+00	0.00E+00	1.00000
I-129I	4.03E-05	4.03E-05	0.00E+00	0.00E+00	1.00000
I-129J	3.42E-05	3.42E-05	0.00E+00	0.00E+00	0.99000
H-3C	2.77E-01	2.77E-01	0.00E+00	0.00E+00	1.00000
I-129C	1.64E-02	1.64E-02	0.00E+00	0.00E+00	1.00000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-111. An Upper-Bound Projected CWTS Closure Inventory for ST04

Parent Radionuclide (43 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241	2.97E-01	2.97E-01	3.90E-03	0.00E+00	0.52419
Am-242m	1.55E-03	1.55E-03	2.03E-05	0.00E+00	0.81308
Am-243	1.58E-03	1.58E-03	2.07E-05	0.00E+00	0.52473
Be-10	4.78E-10	4.78E-10	6.26E-12	0.00E+00	1.00000
C-14	3.71E-02	3.71E-02	4.86E-04	0.00E+00	0.80935
Cf-249	1.26E-04	1.26E-04	1.65E-06	0.00E+00	0.55074
Cf-251	1.67E-04	1.67E-04	2.18E-06	0.00E+00	0.59948
Cl-36	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Cm-245	2.40E-04	2.40E-04	3.14E-06	0.00E+00	0.75072
Cm-247	5.95E-04	5.95E-04	7.79E-06	0.00E+00	0.50231
Cm-248	1.94E-07	1.94E-07	2.54E-09	0.00E+00	0.50546
Cs-135	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Cs-137	3.65E+01	3.65E+01	4.77E-01	0.00E+00	0.52098
H-3	8.55E+00	8.55E+00	1.12E-01	0.00E+00	0.96301
I-129	3.54E-05	3.54E-05	4.63E-07	0.00E+00	0.52849
K-40	6.55E-06	6.55E-06	8.58E-08	0.00E+00	0.50100
Nb-94	9.76E-04	9.76E-04	1.28E-05	0.00E+00	1.00000
Ni-59	1.93E-02	1.93E-02	2.52E-04	0.00E+00	0.82628
Ni-63	1.28E+00	1.28E+00	1.68E-02	0.00E+00	0.99917
Np-237	7.58E-03	7.58E-03	9.92E-05	0.00E+00	0.59648
Pa-231	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pd-107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pu-239	1.01E+00	1.01E+00	1.32E-02	0.00E+00	0.51990
Pu-240	2.65E-01	2.65E-01	3.46E-03	0.00E+00	0.53730
Pu-241	6.26E+00	6.26E+00	8.20E-02	0.00E+00	0.52302
Ra-226	2.82E-05	2.82E-05	3.69E-07	0.00E+00	0.93128
Rb-87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Sn-126	2.66E-05	2.66E-05	3.48E-07	0.00E+00	0.51691
Sr-90	1.73E+01	1.73E+01	2.26E-01	0.00E+00	0.52173
Tc-99	5.12E-02	5.12E-02	6.71E-04	0.00E+00	0.52812
Th-229	1.26E-03	1.26E-03	1.65E-05	0.00E+00	1.00000
Th-230	2.76E-04	2.76E-04	3.62E-06	0.00E+00	1.00000
Th-231	1.14E-01	1.14E-01	1.49E-03	0.00E+00	0.53870
U-232	7.82E-03	7.82E-03	1.02E-04	0.00E+00	0.90427
U-233	4.46E-01	4.46E-01	5.84E-03	0.00E+00	0.99692
U-234	4.25E+00	4.25E+00	5.57E-02	0.00E+00	0.55137
U-236	2.58E-02	2.58E-02	3.38E-04	0.00E+00	0.57488
U-233D	8.26E-04	8.26E-04	0.00E+00	0.00E+00	0.82049
C-14N	2.42E-02	2.42E-02	0.00E+00	0.00E+00	1.00000
I-129H	3.38E-05	3.38E-05	0.00E+00	0.00E+00	0.50000
I-129I	6.16E-05	6.16E-05	0.00E+00	0.00E+00	1.00000
I-129J	7.70E-06	7.70E-06	0.00E+00	0.00E+00	0.99000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-112. An Upper-Bound Projected CWTS Closure Inventory for ST05

Parent Radionuclide (44 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	3.19E-09	3.19E-09	3.56E-11	0.00E+00	1.00000
Am-241	6.57E-01	6.57E-01	7.35E-03	0.00E+00	0.69864
Am-242m	4.81E-02	4.81E-02	5.38E-04	0.00E+00	0.50278
Am-243	1.16E-02	1.16E-02	1.30E-04	0.00E+00	0.43008
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	3.63E-02	3.63E-02	4.06E-04	0.00E+00	0.93446
Cf-249	1.16E-02	1.16E-02	1.29E-04	0.00E+00	0.49930
Cf-251	1.10E-02	1.10E-02	1.23E-04	0.00E+00	0.53298
Cl-36	2.26E-06	2.26E-06	2.53E-08	0.00E+00	0.50000
Cm-245	4.87E-04	4.87E-04	5.45E-06	0.00E+00	0.72722
Cm-247	1.78E-04	1.78E-04	1.99E-06	0.00E+00	0.40205
Cm-248	3.53E-04	3.53E-04	3.95E-06	0.00E+00	0.35090
Cs-135	8.84E-14	8.84E-14	9.89E-16	0.00E+00	1.00000
Cs-137	2.94E+01	2.94E+01	3.29E-01	0.00E+00	0.74236
H-3	4.02E-01	4.02E-01	4.50E-03	0.00E+00	0.76422
I-129	5.72E-05	5.72E-05	6.40E-07	0.00E+00	0.83216
K-40	2.89E-04	2.89E-04	3.23E-06	0.00E+00	0.50000
Nb-94	8.70E-04	8.70E-04	9.73E-06	0.00E+00	1.00000
Ni-59	1.13E-02	1.13E-02	1.26E-04	0.00E+00	0.98917
Ni-63	2.72E+00	2.72E+00	3.04E-02	0.00E+00	0.72453
Np-237	5.55E-03	5.55E-03	6.22E-05	0.00E+00	0.50019
Pa-231	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pd-107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pu-239	1.70E+00	1.70E+00	1.91E-02	0.00E+00	0.67573
Pu-240	4.76E-01	4.76E-01	5.32E-03	0.00E+00	0.65803
Pu-241	8.49E+00	8.49E+00	9.50E-02	0.00E+00	0.63785
Ra-226	3.58E-04	3.58E-04	4.00E-06	0.00E+00	0.50180
Rb-87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Sn-126	3.24E-05	3.24E-05	3.63E-07	0.00E+00	0.57019
Sr-90	4.14E+01	4.14E+01	4.64E-01	0.00E+00	0.91463
Tc-99	4.54E-02	4.54E-02	5.09E-04	0.00E+00	0.39518
Th-229	2.22E-04	2.22E-04	2.49E-06	0.00E+00	1.00000
Th-230	3.93E-04	3.93E-04	4.40E-06	0.00E+00	0.54646
Th-231	3.51E-02	3.51E-02	3.93E-04	0.00E+00	0.55937
U-232	1.03E-03	1.03E-03	1.15E-05	0.00E+00	1.00000
U-233	2.03E+00	2.03E+00	2.27E-02	0.00E+00	0.51943
U-234	1.82E+00	1.82E+00	2.04E-02	0.00E+00	0.56796
U-236	2.58E-02	2.58E-02	2.88E-04	0.00E+00	0.76426
U-233D	1.76E-04	1.76E-04	0.00E+00	0.00E+00	0.65034
C-14N	5.02E-03	5.02E-03	0.00E+00	0.00E+00	1.00000
I-129J	7.65E-07	7.65E-07	0.00E+00	0.00E+00	0.99000
I-129R	8.18E-06	8.18E-06	0.00E+00	0.00E+00	0.50000
Sr-90R	7.40E+00	7.40E+00	0.00E+00	0.00E+00	0.50000
Tc-99R	1.79E-03	1.79E-03	0.00E+00	0.00E+00	0.50000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-113. An Upper-Bound Projected CWTS Closure Inventory for ST06

Parent Radionuclide (42 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	3.94E-04	5.63E-05	8.91E-07	3.38E-04	0.50000
Am-241	4.68E+00	6.69E-01	1.06E-02	4.01E+00	0.61236
Am-242m	2.48E+00	3.54E-01	5.60E-03	2.12E+00	0.50123
Am-243	1.05E+00	1.51E-01	2.38E-03	9.02E-01	0.88010
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	5.51E-02	7.87E-03	1.24E-04	4.72E-02	0.58582
Cf-249	5.87E-01	8.39E-02	1.33E-03	5.03E-01	0.68445
Cf-251	5.33E-01	7.62E-02	1.21E-03	4.57E-01	0.50152
Cl-36	1.15E-11	1.65E-12	2.61E-14	9.88E-12	0.50000
Cm-245	8.29E-03	1.18E-03	1.87E-05	7.10E-03	0.55501
Cm-247	8.32E-03	1.19E-03	1.88E-05	7.13E-03	0.52940
Cm-248	2.86E-03	4.09E-04	6.47E-06	2.45E-03	0.75265
Cs-135	4.14E-07	5.92E-08	9.36E-10	3.55E-07	0.75000
Cs-137	1.88E+02	2.69E+01	4.26E-01	1.61E+02	0.57137
H-3	1.38E+00	1.97E-01	3.11E-03	1.18E+00	0.51908
I-129	5.07E-04	7.25E-05	1.15E-06	4.34E-04	0.79832
K-40	3.00E-07	4.29E-08	6.78E-10	2.57E-07	0.63209
Nb-94	1.45E-05	2.07E-06	3.27E-08	1.24E-05	0.50759
Ni-59	1.44E-01	2.06E-02	3.26E-04	1.24E-01	0.68834
Ni-63	4.08E-01	5.83E-02	9.23E-04	3.50E-01	0.51715
Np-237	2.79E-02	3.98E-03	6.30E-05	2.39E-02	0.67106
Pa-231	1.97E-09	2.82E-10	4.46E-12	1.69E-09	0.50000
Pd-107	1.15E-07	1.65E-08	2.61E-10	9.88E-08	0.50000
Pu-239	6.91E+00	9.88E-01	1.56E-02	5.92E+00	0.57861
Pu-240	1.90E+00	2.72E-01	4.30E-03	1.63E+00	0.58437
Pu-241	3.78E+01	5.40E+00	8.54E-02	3.24E+01	0.54917
Ra-226	3.93E-04	5.62E-05	8.88E-07	3.37E-04	0.99396
Rb-87	8.83E-11	1.26E-11	2.00E-13	7.56E-11	0.50000
Sn-126	7.52E-03	1.07E-03	1.70E-05	6.44E-03	0.52063
Sr-90	1.91E+02	2.73E+01	4.31E-01	1.63E+02	0.97128
Tc-99	1.48E-01	2.11E-02	3.34E-04	1.26E-01	0.80826
Th-229	8.63E-03	1.23E-03	1.95E-05	7.40E-03	1.00000
Th-230	1.65E-03	2.36E-04	3.73E-06	1.41E-03	0.99999
Th-231	1.64E-01	2.34E-02	3.70E-04	1.40E-01	0.57438
U-232	4.54E-02	6.49E-03	1.03E-04	3.89E-02	1.00000
U-233	3.20E+00	4.58E-01	7.24E-03	2.75E+00	0.99582
U-234	1.83E+00	2.61E-01	4.13E-03	1.57E+00	0.61608
U-236	6.36E-02	9.09E-03	1.44E-04	5.45E-02	0.68100
U-233D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14N	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Ra-226T	3.99E-02	3.99E-02	0.00E+00	0.00E+00	0.52222
Th-230T	3.99E-02	3.99E-02	0.00E+00	0.00E+00	0.53333

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-114. An Upper-Bound Projected CWTS Closure Inventory for ST07

Parent Radionuclide (43 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241	1.29E+00	5.88E-01	1.14E-02	7.00E-01	0.57091
Am-242m	5.36E-04	2.45E-04	4.74E-06	2.91E-04	0.80949
Am-243	3.83E-03	1.75E-03	3.39E-05	2.08E-03	0.61536
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	5.04E-02	2.30E-02	4.47E-04	2.74E-02	0.57486
Cf-249	6.29E-04	2.87E-04	5.57E-06	3.42E-04	0.52280
Cf-251	5.21E-04	2.38E-04	4.61E-06	2.83E-04	0.54438
Cl-36	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Cm-245	2.56E-04	1.17E-04	2.27E-06	1.39E-04	0.54211
Cm-247	5.67E-04	2.59E-04	5.02E-06	3.08E-04	0.54735
Cm-248	7.15E-05	3.26E-05	6.34E-07	3.89E-05	0.88620
Cs-135	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Cs-137	6.01E+01	2.74E+01	5.33E-01	3.27E+01	0.52145
H-3	9.46E-01	4.32E-01	8.38E-03	5.14E-01	0.60116
I-129	6.67E-05	3.05E-05	5.92E-07	3.63E-05	0.64588
K-40	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Nb-94	6.02E-04	2.75E-04	5.33E-06	3.27E-04	1.00000
Ni-59	2.34E-01	1.07E-01	2.08E-03	1.27E-01	0.57815
Ni-63	1.11E+00	5.05E-01	9.80E-03	6.01E-01	0.99707
Np-237	1.04E-02	4.73E-03	9.19E-05	5.63E-03	0.76423
Pa-231	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pd-107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pu-239	4.85E+00	2.21E+00	4.30E-02	2.64E+00	0.54991
Pu-240	1.11E+00	5.07E-01	9.84E-03	6.04E-01	0.54401
Pu-241	2.98E+01	1.36E+01	2.64E-01	1.62E+01	0.58085
Ra-226	3.52E-06	1.61E-06	3.12E-08	1.91E-06	0.50150
Rb-87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Sn-126	1.80E-05	8.24E-06	1.60E-07	9.81E-06	0.61712
Sr-90	1.29E+01	5.87E+00	1.14E-01	6.99E+00	0.62055
Tc-99	1.82E-02	8.33E-03	1.62E-04	9.92E-03	0.57091
Th-229	4.26E-04	1.94E-04	3.77E-06	2.31E-04	1.00000
Th-230	5.59E-05	2.55E-05	4.95E-07	3.04E-05	0.96856
Th-231	1.48E-03	6.74E-04	1.31E-05	8.02E-04	0.99267
U-232	2.27E-03	1.04E-03	2.01E-05	1.23E-03	0.99944
U-233	1.98E-01	9.04E-02	1.76E-03	1.08E-01	0.90489
U-234	1.82E-01	8.32E-02	1.62E-03	9.91E-02	0.68434
U-236	5.47E-03	2.50E-03	4.85E-05	2.97E-03	0.80650
U-233D	2.22E-04	1.01E-04	1.97E-06	1.21E-04	0.76798
C-14N	2.62E-02	1.20E-02	2.33E-04	1.43E-02	1.00000
H-3C	6.99E-02	6.99E-02	0.00E+00	0.00E+00	1.00000
I-129C	3.75E-03	3.75E-03	0.00E+00	0.00E+00	1.00000
I-129J	7.81E-07	7.81E-07	0.00E+00	0.00E+00	0.99000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-115. An Upper-Bound Projected CWTS Closure Inventory for ST08

Parent Radionuclide (49 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241	1.29E+00	4.79E-01	1.05E-02	8.15E-01	0.76838
Am-242m	9.65E-01	3.57E-01	7.81E-03	6.08E-01	0.62503
Am-243	1.15E-01	4.25E-02	9.29E-04	7.23E-02	0.62668
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	4.78E-02	1.77E-02	3.87E-04	3.01E-02	0.72265
Cf-249	2.27E-01	8.42E-02	1.84E-03	1.43E-01	0.50046
Cf-251	2.07E-01	7.66E-02	1.67E-03	1.30E-01	0.50115
Cl-36	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Cm-245	3.94E-03	1.46E-03	3.18E-05	2.48E-03	0.51375
Cm-247	8.60E-03	3.18E-03	6.96E-05	5.42E-03	0.56538
Cm-248	6.34E-05	2.35E-05	5.13E-07	3.99E-05	0.88445
Cs-135	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Cs-137	9.28E+01	3.44E+01	7.51E-01	5.85E+01	0.54418
H-3	7.29E-01	2.70E-01	5.90E-03	4.59E-01	0.45690
I-129	2.44E-04	9.03E-05	1.97E-06	1.54E-04	0.53985
K-40	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Nb-94	8.73E-05	3.23E-05	7.07E-07	5.50E-05	1.00000
Ni-59	1.08E-01	3.99E-02	8.72E-04	6.79E-02	0.50616
Ni-63	1.51E-01	5.57E-02	1.22E-03	9.48E-02	1.00000
Np-237	1.18E-03	4.37E-04	9.56E-06	7.44E-04	0.56581
Pa-231	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pd-107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pu-239	3.53E+00	1.31E+00	2.86E-02	2.22E+00	0.77298
Pu-240	9.26E-01	3.43E-01	7.50E-03	5.83E-01	0.72121
Pu-241	1.15E+01	4.28E+00	9.34E-02	7.27E+00	0.77686
Ra-226	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Rb-87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Sn-126	1.85E-06	6.86E-07	1.50E-08	1.17E-06	0.50153
Sr-90	9.88E+00	3.66E+00	7.99E-02	6.22E+00	0.66359
Tc-99	1.32E-02	4.87E-03	1.06E-04	8.28E-03	0.44249
Th-229	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Th-230	8.33E-06	3.08E-06	6.74E-08	5.25E-06	1.00000
Th-231	2.30E-02	8.50E-03	1.86E-04	1.45E-02	0.55214
U-232	1.17E-07	4.34E-08	9.48E-10	7.38E-08	0.86155
U-233	4.68E-01	1.73E-01	3.79E-03	2.95E-01	0.49993
U-234	5.03E-01	1.86E-01	4.07E-03	3.17E-01	0.50348
U-236	1.16E-03	4.31E-04	9.41E-06	7.32E-04	0.50081
U-233D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14N	1.62E-03	1.62E-03	0.00E+00	0.00E+00	1.00000
Am-241B	2.50E-03	2.50E-03	0.00E+00	0.00E+00	0.49500
C-14B	8.70E-06	8.70E-06	0.00E+00	0.00E+00	0.45000
Cs-137B	4.91E-03	4.91E-03	0.00E+00	0.00E+00	0.50000
H-3B	9.93E-04	9.93E-04	0.00E+00	0.00E+00	0.82237
I-129B	1.58E-09	1.58E-09	0.00E+00	0.00E+00	0.45000
Ni-59B	6.09E-03	6.09E-03	0.00E+00	0.00E+00	0.49500
Sr-90B	1.85E-02	1.85E-02	0.00E+00	0.00E+00	0.50000
Tc-99B	2.20E-05	2.20E-05	0.00E+00	0.00E+00	0.45000
U-233B	1.32E-03	1.32E-03	0.00E+00	0.00E+00	0.90461

Notes: All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-116. An Upper-Bound Projected CWTS Closure Inventory for ST09

Parent Radionuclide (57 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241	1.81E+00	9.76E-01	1.13E-02	8.39E-01	0.63721
Am-242m	2.60E-02	1.40E-02	1.62E-04	1.20E-02	0.50018
Am-243	8.04E-04	4.32E-04	5.02E-06	3.72E-04	0.64383
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	2.96E-02	1.59E-02	1.85E-04	1.37E-02	0.83200
Cf-249	4.75E-04	2.55E-04	2.97E-06	2.19E-04	0.99858
Cf-251	1.44E-04	7.74E-05	9.00E-07	6.66E-05	0.99660
Cl-36	3.76E-06	2.02E-06	2.35E-08	1.74E-06	1.00000
Cm-245	4.51E-05	2.43E-05	2.82E-07	2.08E-05	0.69031
Cm-247	8.84E-06	4.76E-06	5.53E-08	4.09E-06	0.93423
Cm-248	1.93E-05	1.04E-05	1.21E-07	8.94E-06	1.00000
Cs-135	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Cs-137	7.18E+01	3.86E+01	4.48E-01	3.32E+01	0.51742
H-3	2.85E-01	1.53E-01	1.78E-03	1.32E-01	0.69624
I-129	3.74E-05	2.01E-05	2.34E-07	1.73E-05	0.57551
K-40	2.59E-05	1.39E-05	1.62E-07	1.20E-05	1.00000
Nb-94	6.24E-04	3.36E-04	3.90E-06	2.88E-04	1.00000
Ni-59	3.42E-02	1.84E-02	2.14E-04	1.58E-02	0.62225
Ni-63	6.23E-01	3.35E-01	3.90E-03	2.88E-01	0.99648
Np-237	1.19E-02	6.39E-03	7.43E-05	5.49E-03	0.72510
Pa-231	1.29E-05	6.94E-06	8.07E-08	5.96E-06	1.00000
Pd-107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pu-239	4.71E+00	2.53E+00	2.94E-02	2.18E+00	0.61844
Pu-240	1.08E+00	5.82E-01	6.77E-03	5.01E-01	0.57012
Pu-241	2.85E+01	1.53E+01	1.78E-01	1.32E+01	0.78846
Ra-226	1.09E-04	5.84E-05	6.79E-07	5.02E-05	0.52984
Rb-87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Sn-126	3.36E-09	1.81E-09	2.10E-11	1.55E-09	1.00000
Sr-90	2.30E+01	1.24E+01	1.44E-01	1.06E+01	0.53521
Tc-99	4.29E-02	2.31E-02	2.68E-04	1.98E-02	0.62162
Th-229	3.04E-04	1.63E-04	1.90E-06	1.40E-04	1.00000
Th-230	3.33E-04	1.79E-04	2.08E-06	1.54E-04	1.00000
Th-231	4.48E-03	2.41E-03	2.80E-05	2.07E-03	0.82212
U-232	1.49E-03	7.99E-04	9.29E-06	6.87E-04	0.97964
U-233	4.05E-01	2.18E-01	2.53E-03	1.87E-01	0.65484
U-234	3.63E-01	1.95E-01	2.27E-03	1.68E-01	0.71942
U-236	4.05E-03	2.18E-03	2.53E-05	1.87E-03	0.76478
U-233D	2.11E-13	1.14E-13	1.32E-15	9.77E-14	0.50000
C-14N	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241B	1.97E-02	1.06E-02	1.23E-04	9.13E-03	0.50000
C-14B	1.78E-04	9.56E-05	1.11E-06	8.22E-05	0.50000
Cs-137B	2.68E+01	1.44E+01	1.67E-01	1.24E+01	0.50000
H-3B	1.07E-01	5.78E-02	6.71E-04	4.96E-02	0.50000
I-129B	5.91E-06	3.18E-06	3.69E-08	2.73E-06	0.50000
Ni-59B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Np-237B	3.70E-06	1.99E-06	2.31E-08	1.71E-06	0.50000
Pu-239B	4.09E-02	2.20E-02	2.55E-04	1.89E-02	0.50000
Pu-240B	1.03E-02	5.53E-03	6.43E-05	4.76E-03	0.50000
Pu-241B	2.42E-01	1.30E-01	1.51E-03	1.12E-01	0.50000
Sr-90B	1.32E-01	7.08E-02	8.23E-04	6.09E-02	0.50000

Parent Radionuclide (57 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Tc-99B	4.96E-03	2.67E-03	3.10E-05	2.29E-03	0.50000
U-233B	1.39E-04	7.49E-05	8.71E-07	6.44E-05	0.50000
U-233E	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
U-234B	5.05E-05	2.72E-05	3.16E-07	2.34E-05	0.50000
C-14X	8.62E-01	8.62E-01	0.00E+00	0.00E+00	1.00000
H-3X	1.85E+02	1.85E+02	0.00E+00	0.00E+00	1.00000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-117. An Upper-Bound Projected CWTS Closure Inventory for ST10

Parent Radionuclide (55 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241	4.72E+00	0.00E+00	1.13E-02	4.72E+00	0.63721
Am-242m	6.77E-02	0.00E+00	1.62E-04	6.77E-02	0.50018
Am-243	2.09E-03	0.00E+00	5.02E-06	2.09E-03	0.64383
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	7.71E-02	0.00E+00	1.85E-04	7.71E-02	0.83200
Cf-249	1.24E-03	0.00E+00	2.97E-06	1.24E-03	0.99858
Cf-251	3.75E-04	0.00E+00	9.00E-07	3.75E-04	0.99660
Cl-36	9.78E-06	0.00E+00	2.35E-08	9.78E-06	1.00000
Cm-245	1.17E-04	0.00E+00	2.82E-07	1.17E-04	0.69031
Cm-247	2.30E-05	0.00E+00	5.53E-08	2.30E-05	0.93423
Cm-248	5.03E-05	0.00E+00	1.21E-07	5.03E-05	1.00000
Cs-135	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Cs-137	1.87E+02	0.00E+00	4.48E-01	1.87E+02	0.51742
H-3	7.41E-01	0.00E+00	1.78E-03	7.41E-01	0.69624
I-129	9.75E-05	0.00E+00	2.34E-07	9.75E-05	0.57551
K-40	6.74E-05	0.00E+00	1.62E-07	6.74E-05	1.00000
Nb-94	1.62E-03	0.00E+00	3.90E-06	1.62E-03	1.00000
Ni-59	8.90E-02	0.00E+00	2.14E-04	8.90E-02	0.62225
Ni-63	1.62E+00	0.00E+00	3.90E-03	1.62E+00	0.99648
Np-237	3.09E-02	0.00E+00	7.43E-05	3.09E-02	0.72510
Pa-231	3.36E-05	0.00E+00	8.07E-08	3.36E-05	1.00000
Pd-107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pu-239	1.23E+01	0.00E+00	2.94E-02	1.23E+01	0.61844
Pu-240	2.82E+00	0.00E+00	6.77E-03	2.82E+00	0.57012
Pu-241	7.41E+01	0.00E+00	1.78E-01	7.41E+01	0.78846
Ra-226	2.83E-04	0.00E+00	6.79E-07	2.83E-04	0.52984
Rb-87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Sn-126	8.75E-09	0.00E+00	2.10E-11	8.75E-09	1.00000
Sr-90	5.99E+01	0.00E+00	1.44E-01	5.99E+01	0.53521
Tc-99	1.12E-01	0.00E+00	2.68E-04	1.12E-01	0.62162
Th-229	7.91E-04	0.00E+00	1.90E-06	7.91E-04	1.00000
Th-230	8.66E-04	0.00E+00	2.08E-06	8.66E-04	1.00000
Th-231	1.17E-02	0.00E+00	2.80E-05	1.17E-02	0.82212
U-232	3.87E-03	0.00E+00	9.29E-06	3.87E-03	0.97964
U-233	1.05E+00	0.00E+00	2.53E-03	1.05E+00	0.65484
U-234	9.46E-01	0.00E+00	2.27E-03	9.46E-01	0.71942
U-236	1.05E-02	0.00E+00	2.53E-05	1.05E-02	0.76478

Parent Radionuclide (55 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
U-233D	5.50E-13	0.00E+00	1.32E-15	5.50E-13	0.50000
C-14N	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241B	5.14E-02	0.00E+00	1.23E-04	5.14E-02	0.50000
C-14B	4.63E-04	0.00E+00	1.11E-06	4.63E-04	0.50000
Cs-137B	6.97E+01	0.00E+00	1.67E-01	6.97E+01	0.50000
H-3B	2.80E-01	0.00E+00	6.71E-04	2.80E-01	0.50000
I-129B	1.54E-05	0.00E+00	3.69E-08	1.54E-05	0.50000
Ni-59B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Np-237B	9.64E-06	0.00E+00	2.31E-08	9.64E-06	0.50000
Pu-239B	1.06E-01	0.00E+00	2.55E-04	1.06E-01	0.50000
Pu-240B	2.68E-02	0.00E+00	6.43E-05	2.68E-02	0.50000
Pu-241B	6.30E-01	0.00E+00	1.51E-03	6.30E-01	0.50000
Sr-90B	3.43E-01	0.00E+00	8.23E-04	3.43E-01	0.50000
Tc-99B	1.29E-02	0.00E+00	3.10E-05	1.29E-02	0.50000
U-233B	3.63E-04	0.00E+00	8.71E-07	3.63E-04	0.50000
U-233E	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
U-234B	1.32E-04	0.00E+00	3.16E-07	1.32E-04	0.50000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-118. An Upper-Bound Projected CWTS Closure Inventory for ST11

Parent Radionuclide (40 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	1.30E-04	0.00E+00	3.24E-07	1.30E-04	1.00000
Am-241	3.42E+00	0.00E+00	8.56E-03	3.42E+00	0.76838
Am-242m	1.17E+00	0.00E+00	2.93E-03	1.17E+00	0.98803
Am-243	3.93E-01	0.00E+00	9.83E-04	3.93E-01	0.88010
Be-10	4.08E-07	0.00E+00	1.02E-09	4.08E-07	1.00000
C-14	1.28E-01	0.00E+00	3.19E-04	1.28E-01	0.96033
Cf-249	2.73E-01	0.00E+00	6.82E-04	2.73E-01	0.99858
Cf-251	2.48E-01	0.00E+00	6.20E-04	2.48E-01	0.99809
Cl-36	5.99E-06	0.00E+00	1.50E-08	5.99E-06	1.00000
Cm-245	4.44E-03	0.00E+00	1.11E-05	4.44E-03	0.86008
Cm-247	6.04E-03	0.00E+00	1.51E-05	6.04E-03	0.93423
Cm-248	1.14E-03	0.00E+00	2.86E-06	1.14E-03	1.00000
Cs-135	1.82E-07	0.00E+00	4.56E-10	1.82E-07	1.00000
Cs-137	2.02E+02	0.00E+00	5.06E-01	2.02E+02	0.74236
H-3	5.20E+00	0.00E+00	1.30E-02	5.20E+00	0.96301
I-129	3.44E-04	0.00E+00	8.61E-07	3.44E-04	0.83216
K-40	1.54E-03	0.00E+00	3.85E-06	1.54E-03	1.00000
Nb-94	2.85E-03	0.00E+00	7.14E-06	2.85E-03	1.00000
Ni-59	2.14E-01	0.00E+00	5.36E-04	2.14E-01	0.98917
Ni-63	5.77E+00	0.00E+00	1.44E-02	5.77E+00	1.00000
Np-237	2.93E-02	0.00E+00	7.34E-05	2.93E-02	0.76423
Pa-231	2.44E-06	0.00E+00	6.11E-09	2.44E-06	1.00000
Pd-107	8.22E-08	0.00E+00	2.06E-10	8.22E-08	1.00000
Pu-239	7.46E+00	0.00E+00	1.87E-02	7.46E+00	0.77298
Pu-240	1.94E+00	0.00E+00	4.84E-03	1.94E+00	0.72121
Pu-241	4.20E+01	0.00E+00	1.05E-01	4.20E+01	0.78846
Ra-226	1.43E-03	0.00E+00	3.57E-06	1.43E-03	1.00000
Rb-87	3.36E-11	0.00E+00	8.40E-14	3.36E-11	1.00000
Sn-126	2.76E-03	0.00E+00	6.89E-06	2.76E-03	1.00000
Sr-90	1.23E+02	0.00E+00	3.07E-01	1.23E+02	0.97128
Tc-99	1.32E-01	0.00E+00	3.29E-04	1.32E-01	0.80826
Th-229	3.63E-03	0.00E+00	9.07E-06	3.63E-03	1.00000
Th-230	1.05E-03	0.00E+00	2.64E-06	1.05E-03	1.00000
Th-231	1.31E-01	0.00E+00	3.27E-04	1.31E-01	0.99862
U-232	3.27E-02	0.00E+00	8.18E-05	3.27E-02	1.00000
U-233	2.26E+00	0.00E+00	5.66E-03	2.26E+00	0.99692
U-234	3.86E+00	0.00E+00	9.66E-03	3.86E+00	0.95039
U-236	6.06E-02	0.00E+00	1.52E-04	6.06E-02	0.99980
U-233D	1.23E-02	0.00E+00	3.09E-05	1.23E-02	1.00000
C-14N	7.42E-02	0.00E+00	1.86E-04	7.42E-02	1.00000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-119. An Upper-Bound Projected CWTS Closure Inventory for ST14

Parent Radionuclide (46 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241	6.71E-01	4.39E-01	2.81E-03	2.32E-01	0.59559
Am-242m	4.17E-03	2.73E-03	1.75E-05	1.44E-03	0.50002
Am-243	6.52E-03	4.26E-03	2.73E-05	2.25E-03	0.50906
Be-10	1.79E-06	1.17E-06	7.50E-09	6.19E-07	1.00000
C-14	9.11E-02	5.96E-02	3.82E-04	3.15E-02	0.96033
Cf-249	5.51E-05	3.60E-05	2.31E-07	1.91E-05	0.99116
Cf-251	1.83E-04	1.20E-04	7.69E-07	6.35E-05	0.99809
Cl-36	5.18E-07	3.39E-07	2.17E-09	1.79E-07	0.85276
Cm-245	1.57E-05	1.03E-05	6.60E-08	5.45E-06	0.86008
Cm-247	8.46E-07	5.54E-07	3.55E-09	2.93E-07	0.50000
Cm-248	4.96E-15	3.24E-15	2.08E-17	1.72E-15	1.00000
Cs-135	9.31E-08	6.09E-08	3.90E-10	3.22E-08	0.45000
Cs-137	1.64E+02	1.07E+02	6.87E-01	5.67E+01	0.53474
H-3	3.89E-01	2.54E-01	1.63E-03	1.35E-01	0.91617
I-129	2.93E-05	1.91E-05	1.23E-07	1.01E-05	0.56125
K-40	5.61E-06	3.67E-06	2.35E-08	1.94E-06	1.00000
Nb-94	2.10E-03	1.37E-03	8.81E-06	7.27E-04	1.00000
Ni-59	5.30E-02	3.46E-02	2.22E-04	1.83E-02	0.92781
Ni-63	3.13E+00	2.05E+00	1.31E-02	1.08E+00	0.99997
Np-237	8.59E-03	5.62E-03	3.60E-05	2.97E-03	0.55462
Pa-231	4.49E-10	2.93E-10	1.88E-12	1.55E-10	0.45812
Pd-107	2.59E-08	1.69E-08	1.09E-10	8.96E-09	0.45000
Pu-239	7.99E-01	5.22E-01	3.35E-03	2.76E-01	0.61892
Pu-240	2.33E-01	1.53E-01	9.78E-04	8.08E-02	0.62294
Pu-241	6.70E+00	4.38E+00	2.81E-02	2.32E+00	0.75689
Ra-226	1.28E-04	8.35E-05	5.35E-07	4.42E-05	0.50625
Rb-87	1.98E-11	1.30E-11	8.30E-14	6.85E-12	0.45000
Sn-126	5.29E-04	3.46E-04	2.22E-06	1.83E-04	0.71418
Sr-90	6.19E+01	4.05E+01	2.60E-01	2.14E+01	0.61211
Tc-99	3.87E-02	2.53E-02	1.62E-04	1.34E-02	0.63502
Th-229	1.83E-04	1.20E-04	7.69E-07	6.35E-05	1.00000
Th-230	3.61E-04	2.36E-04	1.51E-06	1.25E-04	0.99931
Th-231	6.13E-03	4.01E-03	2.57E-05	2.12E-03	0.99862
U-232	8.50E-04	5.56E-04	3.56E-06	2.94E-04	0.99052
U-233	7.42E-02	4.86E-02	3.11E-04	2.57E-02	0.95349
U-234	4.54E-01	2.97E-01	1.90E-03	1.57E-01	0.95039
U-236	7.56E-04	4.95E-04	3.17E-06	2.62E-04	0.99980
U-233D	8.87E-06	5.80E-06	3.72E-08	3.07E-06	0.50000
C-14N	3.20E-02	2.09E-02	1.34E-04	1.11E-02	1.00000
Ag-108mH	3.29E+00	3.29E+00	0.00E+00	0.00E+00	0.45000
C-14H	5.18E+00	5.18E+00	0.00E+00	0.00E+00	0.45000
Nb-94H	1.10E-01	1.10E-01	0.00E+00	0.00E+00	0.45000
Ni-59H	3.68E+01	3.68E+01	0.00E+00	0.00E+00	0.45000
Ni-63H	3.25E+03	3.25E+03	0.00E+00	0.00E+00	0.45000
Tc-99H	3.19E-03	3.19E-03	0.00E+00	0.00E+00	0.45000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-120. An Upper-Bound Projected CWTS Closure Inventory for ST18

Parent Radionuclide (40 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	2.91E-05	0.00E+00	3.24E-07	2.91E-05	1.00000
Am-241	7.67E-01	0.00E+00	8.56E-03	7.67E-01	0.76838
Am-242m	2.62E-01	0.00E+00	2.93E-03	2.62E-01	0.98803
Am-243	8.81E-02	0.00E+00	9.83E-04	8.81E-02	0.88010
Be-10	9.15E-08	0.00E+00	1.02E-09	9.15E-08	1.00000
C-14	2.86E-02	0.00E+00	3.19E-04	2.86E-02	0.96033
Cf-249	6.11E-02	0.00E+00	6.82E-04	6.11E-02	0.99858
Cf-251	5.56E-02	0.00E+00	6.20E-04	5.56E-02	0.99809
Cl-36	1.34E-06	0.00E+00	1.50E-08	1.34E-06	1.00000
Cm-245	9.94E-04	0.00E+00	1.11E-05	9.94E-04	0.86008
Cm-247	1.35E-03	0.00E+00	1.51E-05	1.35E-03	0.93423
Cm-248	2.56E-04	0.00E+00	2.86E-06	2.56E-04	1.00000
Cs-135	4.08E-08	0.00E+00	4.56E-10	4.08E-08	1.00000
Cs-137	4.53E+01	0.00E+00	5.06E-01	4.53E+01	0.74236
H-3	1.17E+00	0.00E+00	1.30E-02	1.17E+00	0.96301
I-129	7.71E-05	0.00E+00	8.61E-07	7.71E-05	0.83216
K-40	3.45E-04	0.00E+00	3.85E-06	3.45E-04	1.00000
Nb-94	6.39E-04	0.00E+00	7.14E-06	6.39E-04	1.00000
Ni-59	4.81E-02	0.00E+00	5.36E-04	4.81E-02	0.98917
Ni-63	1.29E+00	0.00E+00	1.44E-02	1.29E+00	1.00000
Np-237	6.57E-03	0.00E+00	7.34E-05	6.57E-03	0.76423
Pa-231	5.47E-07	0.00E+00	6.11E-09	5.47E-07	1.00000
Pd-107	1.84E-08	0.00E+00	2.06E-10	1.84E-08	1.00000
Pu-239	1.67E+00	0.00E+00	1.87E-02	1.67E+00	0.77298
Pu-240	4.34E-01	0.00E+00	4.84E-03	4.34E-01	0.72121
Pu-241	9.40E+00	0.00E+00	1.05E-01	9.40E+00	0.78846
Ra-226	3.19E-04	0.00E+00	3.57E-06	3.19E-04	1.00000
Rb-87	7.53E-12	0.00E+00	8.40E-14	7.53E-12	1.00000
Sn-126	6.17E-04	0.00E+00	6.89E-06	6.17E-04	1.00000
Sr-90	2.75E+01	0.00E+00	3.07E-01	2.75E+01	0.97128
Tc-99	2.95E-02	0.00E+00	3.29E-04	2.95E-02	0.80826
Th-229	8.13E-04	0.00E+00	9.07E-06	8.13E-04	1.00000
Th-230	2.36E-04	0.00E+00	2.64E-06	2.36E-04	1.00000
Th-231	2.93E-02	0.00E+00	3.27E-04	2.93E-02	0.99862
U-232	7.33E-03	0.00E+00	8.18E-05	7.33E-03	1.00000
U-233	5.07E-01	0.00E+00	5.66E-03	5.07E-01	0.99692
U-234	8.65E-01	0.00E+00	9.66E-03	8.65E-01	0.95039
U-236	1.36E-02	0.00E+00	1.52E-04	1.36E-02	0.99980
U-233D	2.76E-03	0.00E+00	3.09E-05	2.76E-03	1.00000
C-14N	1.66E-02	0.00E+00	1.86E-04	1.66E-02	1.00000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-121. An Upper-Bound Projected CWTS Closure Inventory for ST23

Parent Radionuclide (75 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	2.12E-04	0.00E+00	3.24E-07	2.12E-04	1.00000
Am-241	5.60E+00	0.00E+00	8.57E-03	5.60E+00	0.76838
Am-242m	1.92E+00	0.00E+00	2.93E-03	1.92E+00	0.98803
Am-243	6.43E-01	0.00E+00	9.84E-04	6.43E-01	0.88010
Be-10	6.68E-07	0.00E+00	1.02E-09	6.68E-07	1.00000
C-14	2.09E-01	0.00E+00	3.19E-04	2.09E-01	0.96033
Cf-249	4.46E-01	0.00E+00	6.82E-04	4.46E-01	0.99858
Cf-251	4.06E-01	0.00E+00	6.21E-04	4.06E-01	0.99809
Cl-36	9.81E-06	0.00E+00	1.50E-08	9.81E-06	1.00000
Cm-245	7.26E-03	0.00E+00	1.11E-05	7.26E-03	0.86008
Cm-247	9.89E-03	0.00E+00	1.51E-05	9.89E-03	0.93423
Cm-248	1.87E-03	0.00E+00	2.86E-06	1.87E-03	1.00000
Cs-135	2.98E-07	0.00E+00	4.56E-10	2.98E-07	1.00000
Cs-137	3.31E+02	0.00E+00	5.06E-01	3.31E+02	0.74236
H-3	8.52E+00	0.00E+00	1.30E-02	8.52E+00	0.96301
I-129	5.63E-04	0.00E+00	8.61E-07	5.63E-04	0.83216
K-40	2.52E-03	0.00E+00	3.85E-06	2.52E-03	1.00000
Nb-94	4.67E-03	0.00E+00	7.14E-06	4.67E-03	1.00000
Ni-59	3.51E-01	0.00E+00	5.37E-04	3.51E-01	0.98917
Ni-63	9.44E+00	0.00E+00	1.44E-02	9.44E+00	1.00000
Np-237	4.80E-02	0.00E+00	7.34E-05	4.80E-02	0.76423
Pa-231	4.00E-06	0.00E+00	6.11E-09	4.00E-06	1.00000
Pd-107	1.35E-07	0.00E+00	2.06E-10	1.35E-07	1.00000
Pu-239	1.22E+01	0.00E+00	1.87E-02	1.22E+01	0.77298
Pu-240	3.17E+00	0.00E+00	4.84E-03	3.17E+00	0.72121
Pu-241	6.87E+01	0.00E+00	1.05E-01	6.87E+01	0.78846
Ra-226	2.33E-03	0.00E+00	3.57E-06	2.33E-03	1.00000
Rb-87	5.50E-11	0.00E+00	8.40E-14	5.50E-11	1.00000
Sn-126	4.51E-03	0.00E+00	6.89E-06	4.51E-03	1.00000
Sr-90	2.01E+02	0.00E+00	3.07E-01	2.01E+02	0.97128
Tc-99	2.15E-01	0.00E+00	3.29E-04	2.15E-01	0.80826
Th-229	5.94E-03	0.00E+00	9.07E-06	5.94E-03	1.00000
Th-230	1.73E-03	0.00E+00	2.64E-06	1.73E-03	1.00000
Th-231	2.14E-01	0.00E+00	3.27E-04	2.14E-01	0.99862
U-232	5.36E-02	0.00E+00	8.19E-05	5.36E-02	1.00000
U-233	3.70E+00	0.00E+00	5.66E-03	3.70E+00	0.99692
U-234	6.32E+00	0.00E+00	9.66E-03	6.32E+00	0.95039
U-236	9.92E-02	0.00E+00	1.52E-04	9.92E-02	0.99980
U-233D	2.02E-02	0.00E+00	3.09E-05	2.02E-02	1.00000
C-14K	6.81E-02	6.81E-02	0.00E+00	0.00E+00	0.51751
I-129K	3.60E-04	3.60E-04	0.00E+00	0.00E+00	0.50074
Tc-99K	1.12E-02	1.12E-02	0.00E+00	0.00E+00	0.51158
Am-241A	7.17E-02	7.17E-02	0.00E+00	0.00E+00	0.66718
Am-242mA	5.02E-07	5.02E-07	0.00E+00	0.00E+00	0.50000
Am-243A	7.51E-04	7.51E-04	0.00E+00	0.00E+00	0.50108
C-14A	5.47E-02	5.47E-02	0.00E+00	0.00E+00	0.60131
Cf-249A	8.79E-05	8.79E-05	0.00E+00	0.00E+00	0.50000
Cf-251A	8.90E-05	8.90E-05	0.00E+00	0.00E+00	0.50000
Cm-245A	1.54E-05	1.54E-05	0.00E+00	0.00E+00	0.50000
Cm-247A	8.76E-05	8.76E-05	0.00E+00	0.00E+00	0.50000
Cm-248A	8.76E-05	8.76E-05	0.00E+00	0.00E+00	0.50000

Parent Radionuclide (75 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Cs-135A	4.48E-06	4.48E-06	0.00E+00	0.00E+00	0.50000
Cs-137A	2.07E+03	2.07E+03	0.00E+00	0.00E+00	0.50658
H-3A	5.37E+03	5.37E+03	0.00E+00	0.00E+00	0.95786
I-129A	1.35E-05	1.35E-05	0.00E+00	0.00E+00	0.71369
K-40A	1.35E-09	1.35E-09	0.00E+00	0.00E+00	1.00000
Nb-94A	1.38E-04	1.38E-04	0.00E+00	0.00E+00	1.00000
Ni-59A	1.90E-03	1.90E-03	0.00E+00	0.00E+00	0.87084
Ni-63A	1.93E-01	1.93E-01	0.00E+00	0.00E+00	0.99999
Np-237A	1.28E-03	1.28E-03	0.00E+00	0.00E+00	0.58228
Pd-107A	6.76E-06	6.76E-06	0.00E+00	0.00E+00	0.50000
Pu-239A	3.04E-01	3.04E-01	0.00E+00	0.00E+00	0.60343
Pu-240A	2.92E-02	2.92E-02	0.00E+00	0.00E+00	0.61110
Pu-241A	9.28E-01	9.28E-01	0.00E+00	0.00E+00	0.60668
Ra-226A	7.83E-12	7.83E-12	0.00E+00	0.00E+00	1.00000
Rb-87A	5.25E-12	5.25E-12	0.00E+00	0.00E+00	0.50000
Sn-126A	4.32E-05	4.32E-05	0.00E+00	0.00E+00	0.77373
Sr-90A	8.87E+00	8.87E+00	0.00E+00	0.00E+00	0.71656
Tc-99A	6.44E-03	6.44E-03	0.00E+00	0.00E+00	0.57416
Th-231A	7.54E-05	7.54E-05	0.00E+00	0.00E+00	0.67259
U-232A	3.27E-08	3.27E-08	0.00E+00	0.00E+00	0.50000
U-233A	9.20E-04	9.20E-04	0.00E+00	0.00E+00	0.67103
U-233E	1.52E-02	1.52E-02	0.00E+00	0.00E+00	1.00000
U-234A	3.88E-02	3.88E-02	0.00E+00	0.00E+00	0.67475
U-236A	9.85E-04	9.85E-04	0.00E+00	0.00E+00	0.64807

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-122. An Upper-Bound Projected CWTS Closure Inventory for ST24

Parent Radionuclide (39 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	1.18E-04	0.00E+00	3.24E-07	1.18E-04	1.00000
Am-241	3.11E+00	0.00E+00	8.57E-03	3.11E+00	0.76838
Am-242m	1.06E+00	0.00E+00	2.93E-03	1.06E+00	0.98803
Am-243	3.57E-01	0.00E+00	9.84E-04	3.57E-01	0.88010
Be-10	3.71E-07	0.00E+00	1.02E-09	3.71E-07	1.00000
C-14	1.16E-01	0.00E+00	3.19E-04	1.16E-01	0.96033
Cf-249	2.47E-01	0.00E+00	6.82E-04	2.47E-01	0.99858
Cf-251	2.25E-01	0.00E+00	6.21E-04	2.25E-01	0.99809
Cl-36	5.44E-06	0.00E+00	1.50E-08	5.44E-06	1.00000
Cm-245	4.03E-03	0.00E+00	1.11E-05	4.03E-03	0.86008
Cm-247	5.48E-03	0.00E+00	1.51E-05	5.48E-03	0.93423
Cm-248	1.04E-03	0.00E+00	2.86E-06	1.04E-03	1.00000
Cs-135	1.65E-07	0.00E+00	4.56E-10	1.65E-07	1.00000
Cs-137	1.84E+02	0.00E+00	5.06E-01	1.84E+02	0.74236
H-3	4.72E+00	0.00E+00	1.30E-02	4.72E+00	0.96301
I-129	3.12E-04	0.00E+00	8.61E-07	3.12E-04	0.83216
K-40	1.40E-03	0.00E+00	3.85E-06	1.40E-03	1.00000
Nb-94	2.59E-03	0.00E+00	7.14E-06	2.59E-03	1.00000
Ni-59	1.95E-01	0.00E+00	5.37E-04	1.95E-01	0.98917
Ni-63	5.23E+00	0.00E+00	1.44E-02	5.23E+00	1.00000
Np-237	2.66E-02	0.00E+00	7.34E-05	2.66E-02	0.76423
Pa-231	2.22E-06	0.00E+00	6.11E-09	2.22E-06	1.00000
Pd-107	7.46E-08	0.00E+00	2.06E-10	7.46E-08	1.00000
Pu-239	6.77E+00	0.00E+00	1.87E-02	6.77E+00	0.77298
Pu-240	1.76E+00	0.00E+00	4.84E-03	1.76E+00	0.72121
Pu-241	3.81E+01	0.00E+00	1.05E-01	3.81E+01	0.78846
Ra-226	1.29E-03	0.00E+00	3.57E-06	1.29E-03	1.00000
Rb-87	3.05E-11	0.00E+00	8.40E-14	3.05E-11	1.00000
Sn-126	2.50E-03	0.00E+00	6.89E-06	2.50E-03	1.00000
Sr-90	1.11E+02	0.00E+00	3.07E-01	1.11E+02	0.97128
Tc-99	1.19E-01	0.00E+00	3.29E-04	1.19E-01	0.80826
Th-229	3.29E-03	0.00E+00	9.07E-06	3.29E-03	1.00000
Th-230	9.57E-04	0.00E+00	2.64E-06	9.57E-04	1.00000
Th-231	1.19E-01	0.00E+00	3.27E-04	1.19E-01	0.99862
U-232	2.97E-02	0.00E+00	8.19E-05	2.97E-02	1.00000
U-233	2.05E+00	0.00E+00	5.66E-03	2.05E+00	0.99692
U-234	3.51E+00	0.00E+00	9.66E-03	3.51E+00	0.95039
U-236	5.50E-02	0.00E+00	1.52E-04	5.50E-02	0.99980
U-233D	1.12E-02	0.00E+00	3.09E-05	1.12E-02	1.00000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-123. An Upper-Bound Projected CWTS Closure Inventory for ET01

Parent Radionuclide (45 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	1.51E-07	1.51E-07	1.47E-09	0.00E+00	1.00000
Am-241	6.56E-01	6.56E-01	6.40E-03	0.00E+00	0.49774
Am-242m	5.31E-03	5.31E-03	5.19E-05	0.00E+00	0.80425
Am-243	2.00E-03	2.00E-03	1.95E-05	0.00E+00	0.61305
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	1.31E-01	1.31E-01	1.28E-03	0.00E+00	0.95630
Cf-249	8.12E-06	8.12E-06	7.93E-08	0.00E+00	0.50951
Cf-251	5.74E-05	5.74E-05	5.60E-07	0.00E+00	0.54389
Cl-36	7.00E-05	7.00E-05	6.83E-07	0.00E+00	1.00000
Cm-245	2.93E-04	2.93E-04	2.86E-06	0.00E+00	0.54123
Cm-247	6.81E-11	6.81E-11	6.65E-13	0.00E+00	0.51492
Cm-248	9.44E-15	9.44E-15	9.21E-17	0.00E+00	1.00000
Cs-135	1.33E-11	1.33E-11	1.29E-13	0.00E+00	0.50041
Cs-137	5.32E+01	5.32E+01	5.20E-01	0.00E+00	0.64990
H-3	2.21E+00	2.21E+00	2.15E-02	0.00E+00	0.59583
I-129	7.20E-05	7.20E-05	7.03E-07	0.00E+00	0.54086
K-40	1.37E-04	1.37E-04	1.34E-06	0.00E+00	0.89110
Nb-94	3.23E-03	3.23E-03	3.15E-05	0.00E+00	1.00000
Ni-59	1.17E-01	1.17E-01	1.14E-03	0.00E+00	0.80057
Ni-63	7.45E+00	7.45E+00	7.27E-02	0.00E+00	0.99996
Np-237	7.69E-03	7.69E-03	7.51E-05	0.00E+00	0.56833
Pa-231	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pd-107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pu-239	1.45E+00	1.45E+00	1.41E-02	0.00E+00	0.50067
Pu-240	3.84E-01	3.84E-01	3.75E-03	0.00E+00	0.54078
Pu-241	8.95E+00	8.95E+00	8.74E-02	0.00E+00	0.52354
Ra-226	4.02E-03	4.02E-03	3.92E-05	0.00E+00	0.66215
Rb-87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Sn-126	6.39E-05	6.39E-05	6.24E-07	0.00E+00	0.50978
Sr-90	2.52E+01	2.52E+01	2.46E-01	0.00E+00	0.59043
Tc-99	3.93E-02	3.93E-02	3.84E-04	0.00E+00	0.65479
Th-229	5.42E-03	5.42E-03	5.29E-05	0.00E+00	1.00000
Th-230	6.75E-03	6.75E-03	6.59E-05	0.00E+00	0.80119
Th-231	6.40E-03	6.40E-03	6.25E-05	0.00E+00	0.69079
U-232	2.78E-02	2.78E-02	2.71E-04	0.00E+00	0.99994
U-233	2.08E+00	2.08E+00	2.03E-02	0.00E+00	0.99683
U-234	4.33E-01	4.33E-01	4.23E-03	0.00E+00	0.68221
U-236	2.61E-02	2.61E-02	2.55E-04	0.00E+00	0.56185
U-233D	4.92E-03	4.92E-03	0.00E+00	0.00E+00	0.77040
I-129D	1.33E-03	1.33E-03	0.00E+00	0.00E+00	0.50000
I-129E	9.04E-04	9.04E-04	0.00E+00	0.00E+00	1.00000
I-129G	1.56E-06	1.56E-06	0.00E+00	0.00E+00	0.50000
I-129H	9.57E-06	9.57E-06	0.00E+00	0.00E+00	0.50000
I-129I	7.44E-07	7.44E-07	0.00E+00	0.00E+00	0.50000
I-129J	3.60E-05	3.60E-05	0.00E+00	0.00E+00	0.99000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-124. An Upper-Bound Projected CWTS Closure Inventory for ET02

Parent Radionuclide (39 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	4.40E-08	3.30E-08	1.55E-10	1.10E-08	1.00000
Am-241	2.14E+00	1.61E+00	7.58E-03	5.35E-01	0.51600
Am-242m	2.72E-01	2.04E-01	9.64E-04	6.80E-02	0.60919
Am-243	3.83E-02	2.87E-02	1.35E-04	9.56E-03	0.50871
Be-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	5.13E-02	3.85E-02	1.81E-04	1.28E-02	0.81649
Cf-249	5.75E-02	4.32E-02	2.03E-04	1.43E-02	0.50010
Cf-251	5.23E-02	3.93E-02	1.85E-04	1.31E-02	0.50008
Cl-36	1.59E-08	1.20E-08	5.63E-11	3.97E-09	1.00000
Cm-245	1.25E-03	9.35E-04	4.41E-06	3.11E-04	0.58003
Cm-247	5.66E-04	4.25E-04	2.00E-06	1.41E-04	0.63024
Cm-248	5.00E-07	3.76E-07	1.77E-09	1.25E-07	1.00000
Cs-135	1.45E-12	1.09E-12	5.14E-15	3.63E-13	1.00000
Cs-137	8.27E+01	6.20E+01	2.92E-01	2.06E+01	0.54377
H-3	6.19E-01	4.65E-01	2.19E-03	1.54E-01	0.58458
I-129	8.99E-05	6.74E-05	3.18E-07	2.24E-05	0.64865
K-40	5.77E-05	4.33E-05	2.04E-07	1.44E-05	0.77104
Nb-94	1.76E-03	1.32E-03	6.21E-06	4.38E-04	1.00000
Ni-59	8.13E-02	6.10E-02	2.88E-04	2.03E-02	0.61979
Ni-63	1.32E+00	9.91E-01	4.67E-03	3.29E-01	0.99858
Np-237	4.30E-02	3.23E-02	1.52E-04	1.07E-02	0.61301
Pa-231	9.69E-06	7.27E-06	3.43E-08	2.42E-06	1.00000
Pd-107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Pu-239	8.68E+00	6.51E+00	3.07E-02	2.16E+00	0.53108
Pu-240	1.97E+00	1.47E+00	6.95E-03	4.90E-01	0.52238
Pu-241	3.11E+01	2.33E+01	1.10E-01	7.75E+00	0.48186
Ra-226	1.12E-04	8.44E-05	3.98E-07	2.81E-05	0.67967
Rb-87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Sn-126	4.31E-04	3.24E-04	1.53E-06	1.08E-04	0.50222
Sr-90	1.44E+02	1.08E+02	5.11E-01	3.60E+01	0.52229
Tc-99	9.91E-02	7.44E-02	3.51E-04	2.47E-02	0.67887
Th-229	2.32E-02	1.74E-02	8.20E-05	5.78E-03	1.00000
Th-230	4.87E-03	3.66E-03	1.72E-05	1.22E-03	1.00000
Th-231	6.41E-03	4.81E-03	2.27E-05	1.60E-03	0.85676
U-232	1.06E-01	7.94E-02	3.74E-04	2.64E-02	0.99958
U-233	8.28E+00	6.22E+00	2.93E-02	2.07E+00	0.98752
U-234	7.07E-01	5.30E-01	2.50E-03	1.76E-01	0.69485
U-236	2.38E-02	1.79E-02	8.43E-05	5.95E-03	0.68826
U-233D	3.85E-06	2.89E-06	1.36E-08	9.59E-07	0.50723

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-125. An Upper-Bound Projected CWTS Closure Inventory for ET03

Parent Radionuclide (39 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	1.99E-05	7.00E-06	6.12E-08	1.29E-05	1.00000
Am-241	1.28E+00	4.51E-01	3.94E-03	8.30E-01	0.61081
Am-242m	2.27E-01	7.99E-02	6.99E-04	1.47E-01	0.54939
Am-243	1.15E-02	4.05E-03	3.54E-05	7.46E-03	0.61734
Be-10	8.59E-10	3.03E-10	2.65E-12	5.57E-10	1.00000
C-14	7.43E-02	2.62E-02	2.29E-04	4.81E-02	0.81425
Cf-249	1.39E-05	4.89E-06	4.28E-08	9.00E-06	0.54486
Cf-251	2.54E-05	8.93E-06	7.81E-08	1.64E-05	0.58305
Cl-36	5.96E-07	2.10E-07	1.84E-09	3.86E-07	1.00000
Cm-245	1.26E-05	4.42E-06	3.87E-08	8.14E-06	0.50512
Cm-247	5.13E-06	1.81E-06	1.58E-08	3.33E-06	0.67019
Cm-248	1.13E-07	3.98E-08	3.48E-10	7.33E-08	1.00000
Cs-135	1.42E-10	5.00E-11	4.37E-13	9.20E-11	1.00000
Cs-137	2.32E+02	8.18E+01	7.15E-01	1.51E+02	0.57558
H-3	1.10E+00	3.87E-01	3.39E-03	7.13E-01	0.64597
I-129	1.58E-04	5.55E-05	4.85E-07	1.02E-04	0.50960
K-40	2.54E-04	8.94E-05	7.82E-07	1.65E-04	1.00000
Nb-94	1.13E-03	3.96E-04	3.47E-06	7.29E-04	1.00000
Ni-59	5.47E-02	1.93E-02	1.69E-04	3.55E-02	0.99769
Ni-63	4.65E+00	1.64E+00	1.43E-02	3.02E+00	0.99958
Np-237	2.84E-02	9.98E-03	8.73E-05	1.84E-02	0.59720
Pa-231	3.07E-06	1.08E-06	9.47E-09	1.99E-06	1.00000
Pd-107	1.73E-13	6.10E-14	5.33E-16	1.12E-13	1.00000
Pu-239	3.77E+00	1.33E+00	1.16E-02	2.44E+00	0.66922
Pu-240	1.25E+00	4.40E-01	3.85E-03	8.10E-01	0.62716
Pu-241	1.50E+01	5.27E+00	4.61E-02	9.70E+00	0.60861
Ra-226	1.67E-04	5.88E-05	5.14E-07	1.08E-04	0.78766
Rb-87	3.18E-05	1.12E-05	9.79E-08	2.06E-05	1.00000
Sn-126	9.39E-09	3.31E-09	2.89E-11	6.08E-09	0.67963
Sr-90	6.25E+01	2.20E+01	1.92E-01	4.05E+01	0.68344
Tc-99	6.89E-02	2.42E-02	2.12E-04	4.46E-02	0.57661
Th-229	2.75E-06	9.69E-07	8.47E-09	1.78E-06	1.00000
Th-230	7.16E-04	2.52E-04	2.21E-06	4.64E-04	0.94191
Th-231	1.03E-03	3.63E-04	3.18E-06	6.69E-04	0.92468
U-232	5.98E-05	2.11E-05	1.84E-07	3.87E-05	0.59616
U-233	9.67E-01	3.40E-01	2.98E-03	6.27E-01	0.56159
U-234	1.46E+00	5.15E-01	4.51E-03	9.48E-01	0.58359
U-236	7.91E-05	2.79E-05	2.44E-07	5.13E-05	0.99999
U-233D	1.32E-09	4.64E-10	4.05E-12	8.53E-10	0.50000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-126. An Upper-Bound Projected CWTS Closure Inventory for ET04

Parent Radionuclide (39 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	1.53E-05	0.00E+00	2.81E-08	1.53E-05	1.00000
Am-241	3.13E+00	0.00E+00	5.75E-03	3.13E+00	0.61081
Am-242m	3.84E-01	0.00E+00	7.06E-04	3.84E-01	0.80425
Am-243	3.95E-02	0.00E+00	7.26E-05	3.95E-02	0.61734
Be-10	6.54E-10	0.00E+00	1.20E-12	6.54E-10	1.00000
C-14	2.00E-01	0.00E+00	3.68E-04	2.00E-01	0.95630
Cf-249	4.38E-02	0.00E+00	8.04E-05	4.38E-02	0.54486
Cf-251	3.99E-02	0.00E+00	7.33E-05	3.99E-02	0.58305
Cl-36	5.65E-05	0.00E+00	1.04E-07	5.65E-05	1.00000
Cm-245	1.19E-03	0.00E+00	2.19E-06	1.19E-03	0.58003
Cm-247	4.35E-04	0.00E+00	7.99E-07	4.35E-04	0.67019
Cm-248	4.67E-07	0.00E+00	8.58E-10	4.67E-07	1.00000
Cs-135	1.20E-10	0.00E+00	2.20E-13	1.20E-10	1.00000
Cs-137	2.82E+02	0.00E+00	5.19E-01	2.82E+02	0.64990
H-3	3.07E+00	0.00E+00	5.65E-03	3.07E+00	0.64597
I-129	2.46E-04	0.00E+00	4.52E-07	2.46E-04	0.64865
K-40	3.47E-04	0.00E+00	6.38E-07	3.47E-04	1.00000
Nb-94	4.77E-03	0.00E+00	8.77E-06	4.77E-03	1.00000
Ni-59	1.97E-01	0.00E+00	3.63E-04	1.97E-01	0.99769
Ni-63	1.05E+01	0.00E+00	1.93E-02	1.05E+01	0.99996
Np-237	6.04E-02	0.00E+00	1.11E-04	6.04E-02	0.61301
Pa-231	9.71E-06	0.00E+00	1.78E-08	9.71E-06	1.00000
Pd-107	1.32E-13	0.00E+00	2.42E-16	1.32E-13	1.00000
Pu-239	1.06E+01	0.00E+00	1.95E-02	1.06E+01	0.66922
Pu-240	2.75E+00	0.00E+00	5.06E-03	2.75E+00	0.62716
Pu-241	4.22E+01	0.00E+00	7.75E-02	4.22E+01	0.60861
Ra-226	3.43E-03	0.00E+00	6.30E-06	3.43E-03	0.78766
Rb-87	2.42E-05	0.00E+00	4.45E-08	2.42E-05	1.00000
Sn-126	3.79E-04	0.00E+00	6.97E-07	3.79E-04	0.67963
Sr-90	1.78E+02	0.00E+00	3.26E-01	1.78E+02	0.68344
Tc-99	1.59E-01	0.00E+00	2.93E-04	1.59E-01	0.67887
Th-229	2.20E-02	0.00E+00	4.04E-05	2.20E-02	1.00000
Th-230	9.66E-03	0.00E+00	1.77E-05	9.66E-03	1.00000
Th-231	1.08E-02	0.00E+00	1.98E-05	1.08E-02	0.92468
U-232	1.03E-01	0.00E+00	1.89E-04	1.03E-01	0.99994
U-233	8.70E+00	0.00E+00	1.60E-02	8.70E+00	0.99683
U-234	2.00E+00	0.00E+00	3.67E-03	2.00E+00	0.69485
U-236	3.91E-02	0.00E+00	7.19E-05	3.91E-02	0.99999
U-233D	3.95E-03	0.00E+00	7.25E-06	3.95E-03	0.77040

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-127. An Upper-Bound Projected CWTS Closure Inventory for ET05

Parent Radionuclide (39 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	1.37E-06	0.00E+00	2.81E-08	1.37E-06	1.00000
Am-241	2.81E-01	0.00E+00	5.75E-03	2.81E-01	0.61081
Am-242m	3.45E-02	0.00E+00	7.06E-04	3.45E-02	0.80425
Am-243	3.55E-03	0.00E+00	7.26E-05	3.55E-03	0.61734
Be-10	5.87E-11	0.00E+00	1.20E-12	5.87E-11	1.00000
C-14	1.80E-02	0.00E+00	3.68E-04	1.80E-02	0.95630
Cf-249	3.93E-03	0.00E+00	8.04E-05	3.93E-03	0.54486
Cf-251	3.58E-03	0.00E+00	7.33E-05	3.58E-03	0.58305
Cl-36	5.08E-06	0.00E+00	1.04E-07	5.08E-06	1.00000
Cm-245	1.07E-04	0.00E+00	2.19E-06	1.07E-04	0.58003
Cm-247	3.90E-05	0.00E+00	7.99E-07	3.90E-05	0.67019
Cm-248	4.19E-08	0.00E+00	8.58E-10	4.19E-08	1.00000
Cs-135	1.08E-11	0.00E+00	2.20E-13	1.08E-11	1.00000
Cs-137	2.54E+01	0.00E+00	5.19E-01	2.54E+01	0.64990
H-3	2.76E-01	0.00E+00	5.65E-03	2.76E-01	0.64597
I-129	2.21E-05	0.00E+00	4.52E-07	2.21E-05	0.64865
K-40	3.12E-05	0.00E+00	6.38E-07	3.12E-05	1.00000
Nb-94	4.29E-04	0.00E+00	8.77E-06	4.29E-04	1.00000
Ni-59	1.77E-02	0.00E+00	3.63E-04	1.77E-02	0.99769
Ni-63	9.44E-01	0.00E+00	1.93E-02	9.44E-01	0.99996
Np-237	5.43E-03	0.00E+00	1.11E-04	5.43E-03	0.61301
Pa-231	8.72E-07	0.00E+00	1.78E-08	8.72E-07	1.00000
Pd-107	1.18E-14	0.00E+00	2.42E-16	1.18E-14	1.00000
Pu-239	9.54E-01	0.00E+00	1.95E-02	9.54E-01	0.66922
Pu-240	2.47E-01	0.00E+00	5.06E-03	2.47E-01	0.62716
Pu-241	3.79E+00	0.00E+00	7.75E-02	3.79E+00	0.60861
Ra-226	3.08E-04	0.00E+00	6.30E-06	3.08E-04	0.78766
Rb-87	2.17E-06	0.00E+00	4.45E-08	2.17E-06	1.00000
Sn-126	3.41E-05	0.00E+00	6.97E-07	3.41E-05	0.67963
Sr-90	1.60E+01	0.00E+00	3.26E-01	1.60E+01	0.68344
Tc-99	1.43E-02	0.00E+00	2.93E-04	1.43E-02	0.67887
Th-229	1.97E-03	0.00E+00	4.04E-05	1.97E-03	1.00000
Th-230	8.67E-04	0.00E+00	1.77E-05	8.67E-04	1.00000
Th-231	9.69E-04	0.00E+00	1.98E-05	9.69E-04	0.92468
U-232	9.23E-03	0.00E+00	1.89E-04	9.23E-03	0.99994
U-233	7.82E-01	0.00E+00	1.60E-02	7.82E-01	0.99683
U-234	1.79E-01	0.00E+00	3.67E-03	1.79E-01	0.69485
U-236	3.51E-03	0.00E+00	7.19E-05	3.51E-03	0.99999
U-233D	3.55E-04	0.00E+00	7.25E-06	3.55E-04	0.77040

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-128. An Upper-Bound Projected CWTS Closure Inventory for ET07

Parent Radionuclide (39 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	8.05E-06	0.00E+00	2.81E-08	8.05E-06	1.00000
Am-241	1.65E+00	0.00E+00	5.75E-03	1.65E+00	0.61081
Am-242m	2.02E-01	0.00E+00	7.06E-04	2.02E-01	0.80425
Am-243	2.08E-02	0.00E+00	7.26E-05	2.08E-02	0.61734
Be-10	3.44E-10	0.00E+00	1.20E-12	3.44E-10	1.00000
C-14	1.06E-01	0.00E+00	3.68E-04	1.06E-01	0.95630
Cf-249	2.31E-02	0.00E+00	8.04E-05	2.31E-02	0.54486
Cf-251	2.10E-02	0.00E+00	7.33E-05	2.10E-02	0.58305
Cl-36	2.98E-05	0.00E+00	1.04E-07	2.98E-05	1.00000
Cm-245	6.28E-04	0.00E+00	2.19E-06	6.28E-04	0.58003
Cm-247	2.29E-04	0.00E+00	7.99E-07	2.29E-04	0.67019
Cm-248	2.46E-07	0.00E+00	8.58E-10	2.46E-07	1.00000
Cs-135	6.31E-11	0.00E+00	2.20E-13	6.31E-11	1.00000
Cs-137	1.49E+02	0.00E+00	5.19E-01	1.49E+02	0.64990
H-3	1.62E+00	0.00E+00	5.65E-03	1.62E+00	0.64597
I-129	1.30E-04	0.00E+00	4.52E-07	1.30E-04	0.64865
K-40	1.83E-04	0.00E+00	6.38E-07	1.83E-04	1.00000
Nb-94	2.51E-03	0.00E+00	8.77E-06	2.51E-03	1.00000
Ni-59	1.04E-01	0.00E+00	3.63E-04	1.04E-01	0.99769
Ni-63	5.54E+00	0.00E+00	1.93E-02	5.54E+00	0.99996
Np-237	3.18E-02	0.00E+00	1.11E-04	3.18E-02	0.61301
Pa-231	5.11E-06	0.00E+00	1.78E-08	5.11E-06	1.00000
Pd-107	6.94E-14	0.00E+00	2.42E-16	6.94E-14	1.00000
Pu-239	5.60E+00	0.00E+00	1.95E-02	5.60E+00	0.66922
Pu-240	1.45E+00	0.00E+00	5.06E-03	1.45E+00	0.62716
Pu-241	2.22E+01	0.00E+00	7.75E-02	2.22E+01	0.60861
Ra-226	1.81E-03	0.00E+00	6.30E-06	1.81E-03	0.78766
Rb-87	1.27E-05	0.00E+00	4.45E-08	1.27E-05	1.00000
Sn-126	2.00E-04	0.00E+00	6.97E-07	2.00E-04	0.67963
Sr-90	9.35E+01	0.00E+00	3.26E-01	9.35E+01	0.68344
Tc-99	8.39E-02	0.00E+00	2.93E-04	8.39E-02	0.67887
Th-229	1.16E-02	0.00E+00	4.04E-05	1.16E-02	1.00000
Th-230	5.09E-03	0.00E+00	1.77E-05	5.09E-03	1.00000
Th-231	5.68E-03	0.00E+00	1.98E-05	5.68E-03	0.92468
U-232	5.41E-02	0.00E+00	1.89E-04	5.41E-02	0.99994
U-233	4.58E+00	0.00E+00	1.60E-02	4.58E+00	0.99683
U-234	1.05E+00	0.00E+00	3.67E-03	1.05E+00	0.69485
U-236	2.06E-02	0.00E+00	7.19E-05	2.06E-02	0.99999
U-233D	2.08E-03	0.00E+00	7.25E-06	2.08E-03	0.77040

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-129. An Upper-Bound Projected CWTS Closure Inventory for ET08

Parent Radionuclide (39 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	1.07E-05	0.00E+00	2.81E-08	1.07E-05	1.00000
Am-241	2.18E+00	0.00E+00	5.75E-03	2.18E+00	0.61081
Am-242m	2.68E-01	0.00E+00	7.06E-04	2.68E-01	0.80425
Am-243	2.75E-02	0.00E+00	7.26E-05	2.75E-02	0.61734
Be-10	4.56E-10	0.00E+00	1.20E-12	4.56E-10	1.00000
C-14	1.40E-01	0.00E+00	3.68E-04	1.40E-01	0.95630
Cf-249	3.05E-02	0.00E+00	8.04E-05	3.05E-02	0.54486
Cf-251	2.78E-02	0.00E+00	7.33E-05	2.78E-02	0.58305
Cl-36	3.94E-05	0.00E+00	1.04E-07	3.94E-05	1.00000
Cm-245	8.31E-04	0.00E+00	2.19E-06	8.31E-04	0.58003
Cm-247	3.03E-04	0.00E+00	7.99E-07	3.03E-04	0.67019
Cm-248	3.26E-07	0.00E+00	8.58E-10	3.26E-07	1.00000
Cs-135	8.35E-11	0.00E+00	2.20E-13	8.35E-11	1.00000
Cs-137	1.97E+02	0.00E+00	5.19E-01	1.97E+02	0.64990
H-3	2.14E+00	0.00E+00	5.65E-03	2.14E+00	0.64597
I-129	1.71E-04	0.00E+00	4.52E-07	1.71E-04	0.64865
K-40	2.42E-04	0.00E+00	6.38E-07	2.42E-04	1.00000
Nb-94	3.33E-03	0.00E+00	8.77E-06	3.33E-03	1.00000
Ni-59	1.38E-01	0.00E+00	3.63E-04	1.38E-01	0.99769
Ni-63	7.33E+00	0.00E+00	1.93E-02	7.33E+00	0.99996
Np-237	4.22E-02	0.00E+00	1.11E-04	4.22E-02	0.61301
Pa-231	6.77E-06	0.00E+00	1.78E-08	6.77E-06	1.00000
Pd-107	9.19E-14	0.00E+00	2.42E-16	9.19E-14	1.00000
Pu-239	7.41E+00	0.00E+00	1.95E-02	7.41E+00	0.66922
Pu-240	1.92E+00	0.00E+00	5.06E-03	1.92E+00	0.62716
Pu-241	2.94E+01	0.00E+00	7.75E-02	2.94E+01	0.60861
Ra-226	2.39E-03	0.00E+00	6.30E-06	2.39E-03	0.78766
Rb-87	1.69E-05	0.00E+00	4.45E-08	1.69E-05	1.00000
Sn-126	2.65E-04	0.00E+00	6.97E-07	2.65E-04	0.67963
Sr-90	1.24E+02	0.00E+00	3.26E-01	1.24E+02	0.68344
Tc-99	1.11E-01	0.00E+00	2.93E-04	1.11E-01	0.67887
Th-229	1.53E-02	0.00E+00	4.04E-05	1.53E-02	1.00000
Th-230	6.74E-03	0.00E+00	1.77E-05	6.74E-03	1.00000
Th-231	7.53E-03	0.00E+00	1.98E-05	7.53E-03	0.92468
U-232	7.17E-02	0.00E+00	1.89E-04	7.17E-02	0.99994
U-233	6.07E+00	0.00E+00	1.60E-02	6.07E+00	0.99683
U-234	1.39E+00	0.00E+00	3.67E-03	1.39E+00	0.69485
U-236	2.73E-02	0.00E+00	7.19E-05	2.73E-02	0.99999
U-233D	2.75E-03	0.00E+00	7.25E-06	2.75E-03	0.77040

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-130. An Upper-Bound Projected CWTS Closure Inventory for ET09

Parent Radionuclide (39 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	1.16E-05	0.00E+00	2.81E-08	1.16E-05	1.00000
Am-241	2.38E+00	0.00E+00	5.75E-03	2.38E+00	0.61081
Am-242m	2.92E-01	0.00E+00	7.06E-04	2.92E-01	0.80425
Am-243	3.01E-02	0.00E+00	7.26E-05	3.01E-02	0.61734
Be-10	4.97E-10	0.00E+00	1.20E-12	4.97E-10	1.00000
C-14	1.52E-01	0.00E+00	3.68E-04	1.52E-01	0.95630
Cf-249	3.33E-02	0.00E+00	8.04E-05	3.33E-02	0.54486
Cf-251	3.03E-02	0.00E+00	7.33E-05	3.03E-02	0.58305
Cl-36	4.30E-05	0.00E+00	1.04E-07	4.30E-05	1.00000
Cm-245	9.07E-04	0.00E+00	2.19E-06	9.07E-04	0.58003
Cm-247	3.31E-04	0.00E+00	7.99E-07	3.31E-04	0.67019
Cm-248	3.55E-07	0.00E+00	8.58E-10	3.55E-07	1.00000
Cs-135	9.11E-11	0.00E+00	2.20E-13	9.11E-11	1.00000
Cs-137	2.15E+02	0.00E+00	5.19E-01	2.15E+02	0.64990
H-3	2.34E+00	0.00E+00	5.65E-03	2.34E+00	0.64597
I-129	1.87E-04	0.00E+00	4.52E-07	1.87E-04	0.64865
K-40	2.64E-04	0.00E+00	6.38E-07	2.64E-04	1.00000
Nb-94	3.63E-03	0.00E+00	8.77E-06	3.63E-03	1.00000
Ni-59	1.50E-01	0.00E+00	3.63E-04	1.50E-01	0.99769
Ni-63	8.00E+00	0.00E+00	1.93E-02	8.00E+00	0.99996
Np-237	4.60E-02	0.00E+00	1.11E-04	4.60E-02	0.61301
Pa-231	7.39E-06	0.00E+00	1.78E-08	7.39E-06	1.00000
Pd-107	1.00E-13	0.00E+00	2.42E-16	1.00E-13	1.00000
Pu-239	8.09E+00	0.00E+00	1.95E-02	8.09E+00	0.66922
Pu-240	2.10E+00	0.00E+00	5.06E-03	2.10E+00	0.62716
Pu-241	3.21E+01	0.00E+00	7.75E-02	3.21E+01	0.60861
Ra-226	2.61E-03	0.00E+00	6.30E-06	2.61E-03	0.78766
Rb-87	1.84E-05	0.00E+00	4.45E-08	1.84E-05	1.00000
Sn-126	2.89E-04	0.00E+00	6.97E-07	2.89E-04	0.67963
Sr-90	1.35E+02	0.00E+00	3.26E-01	1.35E+02	0.68344
Tc-99	1.21E-01	0.00E+00	2.93E-04	1.21E-01	0.67887
Th-229	1.67E-02	0.00E+00	4.04E-05	1.67E-02	1.00000
Th-230	7.35E-03	0.00E+00	1.77E-05	7.35E-03	1.00000
Th-231	8.21E-03	0.00E+00	1.98E-05	8.21E-03	0.92468
U-232	7.82E-02	0.00E+00	1.89E-04	7.82E-02	0.99994
U-233	6.62E+00	0.00E+00	1.60E-02	6.62E+00	0.99683
U-234	1.52E+00	0.00E+00	3.67E-03	1.52E+00	0.69485
U-236	2.98E-02	0.00E+00	7.19E-05	2.98E-02	0.99999
U-233D	3.00E-03	0.00E+00	7.25E-06	3.00E-03	0.77040

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

H.7.2.2. Low-Activity Waste and Intermediate-Level Vaults

Table H-131. An Upper-Bound Projected CWTS Closure Inventory for LAWV

Parent Radionuclide (21 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	2.91E-04	8.96E-05	2.09E-10	2.01E-04	1.00000
Am-241	1.36E+00	4.20E-01	9.81E-07	9.44E-01	0.60581
C-14	6.35E-01	1.95E-01	4.57E-07	4.39E-01	0.71807
Ca-41	6.72E-05	2.07E-05	4.84E-11	4.65E-05	1.00000
Cl-36	6.40E-03	1.97E-03	4.60E-09	4.43E-03	1.00000
Cm-245	7.53E-03	2.32E-03	5.42E-09	5.21E-03	0.50344
Cs-137	2.74E+02	8.43E+01	1.97E-04	1.90E+02	0.84428
H-3	1.39E+06	4.27E+05	9.99E-01	9.61E+05	0.56064
I-129	5.77E-04	1.78E-04	4.15E-10	3.99E-04	0.82247
K-40	1.84E-06	5.65E-07	1.32E-12	1.27E-06	0.50023
Nb-94	4.95E-01	1.52E-01	3.56E-07	3.42E-01	1.00000
Ni-59	5.05E+00	1.56E+00	3.63E-06	3.50E+00	0.99036
Ni-63	8.64E+02	2.66E+02	6.22E-04	5.98E+02	0.83574
Np-237	1.39E-01	4.29E-02	1.00E-07	9.65E-02	0.68332
Pu-239	5.27E+00	1.62E+00	3.79E-06	3.65E+00	0.67518
Pu-241	3.56E+01	1.10E+01	2.56E-05	2.46E+01	0.56399
Ra-226	1.28E-01	3.95E-02	9.23E-08	8.88E-02	1.00000
Sr-90	7.89E+02	2.43E+02	5.68E-04	5.46E+02	0.63717
Tc-99	4.04E-01	1.24E-01	2.91E-07	2.80E-01	0.62241
U-235	1.65E-02	5.08E-03	1.19E-08	1.14E-02	0.69287
U-235D	3.36E-02	1.04E-02	2.42E-08	2.33E-02	0.50272

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-132. An Upper-Bound Projected CWTS Closure Inventory for ILV

Parent Radionuclide (31 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Ag-108m	2.62E-04	4.02E-05	1.87E-11	2.22E-04	1.00000
Am-241	4.42E+00	6.78E-01	3.16E-07	3.75E+00	0.61681
Ar-39	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14	3.17E+00	4.86E-01	2.26E-07	2.69E+00	0.72079
Cf-249	1.03E-02	1.58E-03	7.35E-10	8.72E-03	0.85695
Cl-36	4.87E-04	7.47E-05	3.48E-11	4.13E-04	1.00000
Cm-245	1.62E-02	2.48E-03	1.15E-09	1.37E-02	0.85556
Cs-137	2.42E+03	3.71E+02	1.73E-04	2.05E+03	0.67270
H-3	8.98E+06	1.38E+06	6.40E-01	7.60E+06	0.53786
I-129	3.74E-03	5.73E-04	2.67E-10	3.17E-03	0.75779
K-40	3.63E-02	5.57E-03	2.59E-09	3.08E-02	0.50000
Kr-85	1.33E+02	2.03E+01	9.47E-06	1.12E+02	0.50342
Ni-59	6.20E+00	9.50E-01	4.42E-07	5.25E+00	0.99356
Ni-63	7.57E+02	1.16E+02	5.40E-05	6.41E+02	0.99999
Np-237	1.00E-01	1.54E-02	7.17E-09	8.51E-02	0.56975
Pu-239	5.19E+00	7.95E-01	3.70E-07	4.40E+00	0.45989
Pu-241	2.81E+01	4.31E+00	2.00E-06	2.38E+01	0.46062
Ra-226	5.01E+00	7.67E-01	3.57E-07	4.24E+00	0.50000
Sr-90	7.27E+02	1.11E+02	5.18E-05	6.15E+02	0.66969
Tc-99	7.67E-01	1.18E-01	5.47E-08	6.49E-01	0.74291
U-235	1.63E-02	2.50E-03	1.16E-09	1.38E-02	0.94585
U-235D	5.03E-02	7.71E-03	3.59E-09	4.26E-02	0.53542
I-129C	1.40E-02	1.40E-02	0.00E+00	0.00E+00	1.00000
C-14K	9.45E+02	9.45E+02	0.00E+00	0.00E+00	0.52115
I-129K	2.34E-05	2.34E-05	0.00E+00	0.00E+00	0.51938
Tc-99K	3.66E-02	3.66E-02	0.00E+00	0.00E+00	0.50050
H-3R	1.23E+05	1.23E+05	0.00E+00	0.00E+00	0.50000
C-14T	4.31E+01	6.60E+00	3.07E-06	3.65E+01	1.00000
Cs-137T	5.76E+03	8.83E+02	4.11E-04	4.88E+03	1.00000
Ar-39T	1.82E+02	2.79E+01	1.30E-05	1.54E+02	1.00000
H-3T	5.03E+06	7.71E+05	3.59E-01	4.26E+06	1.00000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

H.7.2.3. Naval Reactor Component Disposal Areas

Table H-133. An Upper-Bound Projected CWTS Closure Inventory for NR07E

Parent Radionuclide (22 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Am-241S	3.52E-01	3.52E-01	1.19E-06	0.00E+00	1.00000
Am-243S	2.41E-03	2.41E-03	8.16E-09	0.00E+00	1.00000
Be-10S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
C-14S	1.39E+02	1.39E+02	4.70E-04	0.00E+00	1.00000
Cl-36S	1.80E-05	1.80E-05	6.10E-11	0.00E+00	1.00000
Co-60S	9.85E+04	9.85E+04	3.34E-01	0.00E+00	1.00000
Cs-137S	5.29E+00	5.29E+00	1.79E-05	0.00E+00	1.00000
H-3S	1.34E+02	1.34E+02	4.55E-04	0.00E+00	1.00000
I-129S	1.48E-05	1.48E-05	5.02E-11	0.00E+00	1.00000
Mo-93S	1.43E+00	1.43E+00	4.85E-06	0.00E+00	1.00000
Nb-93mS	7.46E+03	7.46E+03	2.53E-02	0.00E+00	1.00000
Nb-94S	6.54E+00	6.54E+00	2.22E-05	0.00E+00	1.00000
Ni-59S	1.55E+03	1.55E+03	5.27E-03	0.00E+00	1.00000
Ni-63S	1.80E+05	1.80E+05	6.10E-01	0.00E+00	1.00000
Np-237S	4.03E-06	4.03E-06	1.37E-11	0.00E+00	1.00000
Pu-241S	3.40E+01	3.40E+01	1.15E-04	0.00E+00	1.00000
Sn-121mS	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Sn-126S	8.59E-06	8.59E-06	2.91E-11	0.00E+00	1.00000
Sr-90S	5.39E+00	5.39E+00	1.83E-05	0.00E+00	1.00000
Tc-99S	1.46E-01	1.46E-01	4.96E-07	0.00E+00	1.00000
U-235S	2.06E-07	2.06E-07	6.98E-13	0.00E+00	1.00000
Zr-93S	7.46E+03	7.46E+03	2.53E-02	0.00E+00	1.00000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

Table H-134. An Upper-Bound Projected CWTS Closure Inventory for NR26E

Parent Radionuclide (36 total)	Total Inventory (Ci)	Existing Inventory (Ci)	Composition Fraction (-)	Future Inventory (Ci)	Bias Multiplier (-)
Am-241	7.12E-03	3.29E-05	1.36E-10	7.08E-03	1.00000
C-14	2.04E+01	9.41E-02	3.90E-07	2.03E+01	1.00000
Cl-36	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
H-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
I-129	8.16E-05	3.77E-07	1.57E-12	8.13E-05	1.00000
Ni-59	6.10E+00	2.82E-02	1.17E-07	6.07E+00	1.00000
Ni-63	6.07E+02	2.81E+00	1.16E-05	6.04E+02	1.00000
Np-237	6.10E-08	2.82E-10	1.17E-15	6.07E-08	1.00000
Pu-241	1.99E-01	9.20E-04	3.82E-09	1.98E-01	1.00000
Sr-90	8.07E-01	3.73E-03	1.55E-08	8.03E-01	1.00000
Tc-99	2.04E-02	9.41E-05	3.90E-10	2.03E-02	1.00000
U-235	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00000
Am-241S	2.88E+01	1.33E-01	5.53E-07	2.87E+01	1.00000
Am-243S	6.00E-01	2.78E-03	1.15E-08	5.98E-01	1.00000
Be-10S	4.67E-03	2.16E-05	8.96E-11	4.65E-03	1.00000
C-14S	1.90E+04	8.77E+01	3.64E-04	1.89E+04	1.00000
Cl-36S	2.75E+00	1.27E-02	5.27E-08	2.73E+00	1.00000
Co-60S	1.42E+07	6.57E+04	2.72E-01	1.41E+07	1.00000
Cs-137S	1.54E+03	7.13E+00	2.96E-05	1.54E+03	1.00000
H-3S	9.73E+03	4.50E+01	1.87E+04	9.68E+03	1.00000
I-129S	2.42E-03	1.12E-05	4.64E-11	2.41E-03	1.00000
Mo-93S	1.34E+02	6.20E-01	2.57E-06	1.33E+02	1.00000
Nb-93mS	1.71E+04	7.92E+01	3.29E-04	1.71E+04	1.00000
Nb-94S	1.17E+03	5.41E+00	2.25E-05	1.17E+03	1.00000
Ni-59S	3.23E+05	1.49E+03	6.19E-03	3.21E+05	1.00000
Ni-63S	3.76E+07	1.74E+05	7.20E-01	3.74E+07	1.00000
Np-237S	6.93E-04	3.20E-06	1.33E-11	6.89E-04	1.00000
Pu-241S	3.48E+03	1.61E+01	6.67E-05	3.46E+03	1.00000
Ra-226S	4.38E-11	2.02E-13	8.39E-19	4.36E-11	1.00000
Sn-121mS	3.70E+03	1.71E+01	7.10E-05	3.68E+03	1.00000
Sn-126S	1.78E-02	8.25E-05	3.42E-10	1.78E-02	1.00000
Sr-90S	7.22E+02	3.34E+00	1.38E-05	7.18E+02	1.00000
Tc-99S	3.62E+01	1.67E-01	6.94E-07	3.60E+01	1.00000
Th-230S	4.62E-09	2.14E-11	8.86E-17	4.60E-09	1.00000
U-235S	1.59E-03	7.33E-06	3.04E-11	1.58E-03	1.00000
Zr-93S	2.58E+03	1.19E+01	4.95E-05	2.57E+03	1.00000

Notes:

All shaded entries are associated with SWFs where the specific highlighting color reflects how they are addressed (see Table H-8).

H.8 CWTS EMULATOR

This section describes the Microsoft-Excel-based CWTS emulator developed and employed to determine GW PIFs and projected future CWTS inventories. The CWTS emulator serves three main roles:

1. Emulate the calculational sequence performed within CWTS for every existing and open DU. Future DUs are also emulated to establish a complete set of GW PIFs.

2. Assist in assigning GW PIFs for the 27 ELLWF DUs. The term assignment implies that GW PIFs are not unique and cannot be explicitly calculated. Instead, values are employed and then their impacts on the 100-meter POA are assessed against operational objectives.
3. Determine the projected inventories in all DUs at facility closure in calendar year 2065. Here it is assumed that each DU is operated such that its activity capacity is limiting.

Within the Microsoft Excel model, the 33 ELLWF DUs are each assigned their own worksheet where the pathway-dependent total SOF values are computed. From this list of pathway and time-window total SOF values, the maximum total SOF for each DU is computed. The types of DUs (33 in total) addressed are as follows:

- **Open**: Currently operating DUs (11 in total) where both existing and future inventory is considered.
- **Closed**: Closed DUs (7 in total) for which only existing inventory is considered.
- **Future**: DUs with an assigned footprint within the ELLWF that are planned for future operations (15 in total); only future inventory is considered. Six of the 15 future DUs are excluded from future operations in this PA, are not assigned GW PIFs, and do not contribute to projected doses and concentrations at the 100-meter POA.

For each DU, the same CWTS inventory limits are applicable to both existing and future inventories; therefore, SOFs are computed using total inventory values only. This is a conservative (pessimistically leaning) approach because there is a time span (typically in years) between when existing and future disposals are modeled.

Table H-135 provides a listing of the total existing activity (inventory) within each existing DU (i.e., open plus closed) as of March 31, 2021. CWTS projected future and total closure inventories are also listed in Table H-135 upon completion of GW PIF assignments and the activity allocation process.

Table H-135. CWTS Existing (as of March 31, 2021) and Projected Closure Inventories

PIF Aquifer Cutout	DU	DU Status	Total Existing Inventory (Ci)	Total Future Inventory (Ci)	Total Inventory (Ci)
West	ET07	Future	--	286.66	286.66
	ET08	Future	--	379.60	379.60
	ET09	Future	--	414.06	414.06
	ET03	Open	114.35	210.44	324.78
	ET04	Future	--	544.11	544.11
	NR26E	Open	2.41E+05	5.19E+07	5.22E+07
	ST08	Open	45.79	77.84	123.63
	ST09	Open	271.97	73.96	345.93
	ST10	Future	--	416.52	416.52
	ILV	Open	2.27E+06	1.19E+07	1.41E+07
	ST11	Future	--	399.82	399.82
Center	ST01	Closed	17.12	--	17.12
	ST02	Closed	40.74	--	40.74
	ST03	Closed	63.46	--	63.46
	ST04	Closed	76.38	--	76.38
	ST23	Open	7,451.10	686.14	8,137.23
	ST24	Future	--	362.82	362.82
	ST05	Closed	96.77	--	96.77
	ST06	Open	63.32	379.10	442.41
	ST07	Open	51.56	61.32	112.88
East1	ET02	Open	212.18	70.53	282.71
	ET01	Closed	102.46	--	102.46
	ST14	Open	3,453.25	82.55	3,535.81
	ET05	Future	--	48.88	48.88
	LAWV	Open	4.28E+05	9.62E+05	1.39E+06
	ST18	Future	--	89.58	89.58
East2	NR07E	Closed	2.95E+05	--	2.95E+05

All existing, future, and total inventories provided in Table H-135 represent CWTS inventories and do not include biases or uncertainties. The impact of biases and uncertainties in parent radionuclides is addressed in the closure analyses (Chapter 9, Section 9.1.2)

H.8.1 Maximum Total Sum-of-Fractions by Disposal Unit

A key result of the CWTS limits system is the maximum total SOF of an existing DU (i.e., both closed and open). No waste disposals are allowed that result in this metric exceeding 1.0. For each DU worksheet in the CWTS emulator, there are key input and output parameter value linkages to a Summary worksheet. The key inputs to a DU worksheet are as follows:

- DU-specific value for GW PIF (an assignment value)
- Existing inventory vector (varying parent radionuclide lists specific to reference DU-type)
- Total future inventory activity
- Future inventory composition vector (generic waste form and SWF parent radionuclide lists)

- Preliminary inventory limits for the GW pathways by pathway and time window (e.g., for STs and ETs, inventory limits are provided for three beta-gamma, one gross-alpha, one radium, one uranium, and two all-pathways time windows)
- Final inventory limits for IHI pathways (one acute and one chronic time window)
- Final inventory limits for air pathway (one air time window)
- Final inventory limits for radon pathway (one radon time window)

The key outputs from a DU worksheet are as follows:

- Total SOF by pathway and time window (beta-gamma, gross-alpha, radium, uranium, all-pathways, IHI, air, and radon)
- Maximum total SOF by pathway (maximum value across all time widows employed)
- Overall maximum total SOF (maximum value across all pathway and time-window combinations)

The GW pathway and time-window SOF contributions for every parent radionuclide requiring an inventory limit are computed as follows:

$$SOF_{DU,i}^{GW-TW,j} = I_{DU,i}^{total}\left[\frac{1}{L_{DU,i}^{GW-TW,j-final}}\right] = I_{DU,i}^{total}\left[\frac{\eta_{DU}^{GW}}{L_{DU,i}^{GW-TW,j-prelim}}\right] \qquad \text{Eq. (H-11)}$$

where:

$SOF_{DU,i}^{GW-TW,j}$ GW pathway j^{th} time window SOF contribution for i^{th} parent radionuclide in DU (unitless)

$I_{DU,i}^{total}$ Total inventory of the i^{th} parent radionuclide in DU (Ci)

$L_{DU,i}^{GW-TW,j-final}$ Final inventory limit for GW pathways for j^{th} time window and i^{th} parent radionuclide in DU (Ci)

$L_{DU,i}^{GW-TW,j-prelim}$ Preliminary inventory limit for GW pathways for j^{th} time window for i^{th} parent radionuclide in DU (Ci)

η_{DU}^{GW} GW aquifer PIF for DU (unitless)

The non-GW pathway SOF contributions are computed using:

$$SOF_{DU,i}^{non-GW,j} = I_{DU,i}^{total}\left[\frac{1}{L_{DU,i}^{non-GW,j-final}}\right] \qquad \text{Eq. (H-12)}$$

where:

$SOF_{DU,i}^{non-GW,j}$ Non-GW j^{th} pathway SOF contribution for i^{th} parent radionuclide in DU (unitless)

$L_{DU,i}^{non-GW,j-final}$ Final inventory limit for non-GW j^{th} pathway for i^{th} parent radionuclide in *DU* (Ci)

Note that only certain GW pathways are parsed into multiple time windows. All non-GW pathways encompass their entire compliance period. In addition, only parent radionuclides are required because the dose and concentration contributions of their progeny at the 100-meter POA are accounted for in the parent's inventory limits.

Total SOF values represent the arithmetic sum of all SOF contributions for a specific pathway and time-window combination, where the sum is over all generic waste form and SWF parent radionuclides within a specific DU. Specifically,

$$SOF_{DU}^{GW-TW,j} = \sum_{i=1}^{N_{Nucs}} SOF_{DU,i}^{GW-TW,j} \quad \text{Eq. (H-13)}$$

$$SOF_{DU}^{non-GW,j} = \sum_{i=1}^{N_{Nucs}} SOF_{DU,i}^{non-GW,j} \quad \text{Eq. (H-14)}$$

where:

$SOF_{DU}^{GW-TW,j}$ GW pathway/time window *j* total SOF for *DU* (unitless)

$SOF_{DU}^{non-GW,j}$ Non-GW pathway *j* total SOF for *DU* (unitless)

N_{Nucs} List of parent radionuclides requiring inventory limits for *DU* (unitless)

For each GW pathway containing time windows, a maximum value for that pathway is computed by:

$$SOF_{DU}^{GW-PW} = Max\left[SOF_{DU}^{GW-TW,j}\right] \quad \text{Eq. (H-15)}$$

for all time windows in a GW pathway, where:

$SOF_{DU}^{GW-PW,j}$ Maximum total SOF for GW pathway for *DU* (unitless)

For the IHI pathways, the maximum total SOFs are computed by:

$$SOF_{DU}^{IHI} = Max\left[SOF_{DU}^{IHI-Acute}, SOF_{DU}^{IHI-Chronic}\right] \quad \text{Eq. (H-16)}$$

where:

SOF_{DU}^{IHI} Maximum total SOF contribution for IHI pathways for *DU* (unitless)

The air and radon pathways are each represented by a single pathway and time-window combination, where the time windows span the entire compliance period.

An overall, maximum total SOF is computed from the various, pathway-specific, total SOF values as follows:

$$SOF_{DU}^{max} = Max\left[SOF_{DU}^{BG}, SOF_{DU}^{GA}, SOF_{DU}^{Rad}, SOF_{DU}^{Uran}, SOF_{DU}^{IHI}, SOF_{DU}^{Air}, SOF_{DU}^{Radon} \right] \quad \text{Eq. (H-17)}$$

where:

SOF_{DU}^{max} Overall maximum total SOF for DU (unitless)

This CWTS-based SOF value represents the constraint imposed on a DU's activity capacity and is not to exceed the administrative value (0.95 or 1.0) imposed by SWM during operations.

H.8.2 Maximum Total Sum-of-Fractions Profiles along the 100-Meter Point of Assessment

The red-dashed curves in Figure H-30 through Figure H-56 represent the PIPs across the North and South curtains for all 33 ELLWF DUs. The PIPs are composited, smoothed, and DU specific. As such, they implicitly capture the variabilities associated with differences among a DU's parent radionuclide list and the aquifer flow field changes that occur over time. The PIPs associated with a specific curtain are expressed as follows:

$$P_k^{North}(x) \quad \text{Eq. (H-18)}$$

(k arranging over all DUs within West, Center, East1, and East2 PIF aquifer cutouts)

$$P_k^{South}(x) \quad \text{Eq. (H-19)}$$

(k arranging over all DUs within Center, East1, and East2 PIF aquifer cutouts)

where:

$P_k^{Curtain}$ Relative concentration from k^{th} DU contributing to curtain along 100-meter POA (-)
x Distance along curtain starting at its uppermost northwest location (-)

Geometric details associated with the North and South curtains are provided in Appendix C, Section C.1. There are no DU contributions to the South curtain from DUs in the West PIF aquifer cutout because upstream diffusion is greatly overwhelmed by aquifer flow advection. The distance along a curtain is an "effective" arc-length computed using the PORFLOW grid *i-j* nodal indexing for each cutout.

The PIPs are normalized profiles that peak at a value of 1.0 somewhere along either the North or South curtain (i.e., see red-dashed curves in Figure H-30 through Figure H-56).

For each DU, its total SOF profile for either the North or South curtain along the 100-meter POA is computed using:

$$S_k^{Curtain}(x) = \left[\frac{SOF_k^{max}}{\eta_k^{GW}}\right]\left[P_k^{Curtain}(x)\right] \qquad \text{Eq. (H-20)}$$

where:

$S_k^{Curtain}$ Total SOF profile resulting from the k^{th} DU along the curtain (unitless)
$P_k^{Curtain}$ PIP along the curtain for k^{th} DU (unitless)
SOF_k^{max} Maximum total SOF for k^{th} DU (unitless) [see Eq. (H-17)]
η_k^{GW} GW PIF for k^{th} DU (unitless)

The total SOF profile (i.e., sum from all contributing DUs) for either the North or South curtain along the 100-meter POA is computed using:

$$S^{Curtain}(x) = \sum_{k=1}^{N_{DU}} S_k^{Curtain}(x) \qquad \text{Eq. (H-21)}$$

where:

N_{DU} Number of DUs contributing to the curtain along the 100-meter POA (unitless)
$S^{Curtain}$ Total SOF profile along the curtain (unitless)
$S_k^{Curtain}$ Total SOF profile for k^{th} DU (unitless)

Eq. (H-21) is employed to address the following two aspects:

- **GW PIF Evaluation**: Assignment of GW PIF values by DU is independent of a DU's composition/inventory and the maximum total SOF for every DU is set to 1.0. The maximum SOF along either the North or South curtain is constrained to not exceed 1.0 at any location along these curtains.
- **Activity Capacity Assessment**: For specified DU inventories, computed maximum total SOF values for each DU are considered to assess activity capacity objectives for certain DUs (e.g., maintaining closed units within PO constraints and future disposal objectives for certain open units, such as projected TPBAR casks needs within the ILV).

Both aspects above are considered in arriving at the final GW PIFs.

All PIPs for the North and South curtains (key inputs) are entered in the CWTS emulator in a separate, single Microsoft Excel worksheet. Total SOF profiles (i.e., Eq. (H-21)) for each curtain and its DU contributors (i.e., Eq. (H-20)) are computed in another separate worksheet. The

computed maximum total SOF values for each DU are also key inputs in creating these SOF profiles (i.e., Eq. (H-17)).

The computed SOF profiles are also linked back to the Summary worksheet where graphical display of each DU profile and their sum are provided for assessing either GW PIF assignments or activity capacity aspects. The Summary worksheet acts like a dashboard where control parameters are employed to assist in the ultimate assignment of GW PIFs. All other worksheets contain either fixed key input parameters and settings or intermediate calculations. Only parameter values contained within the Summary (Dashboard) worksheet can be altered.

H.8.3 Summary of Key Results from CWTS Emulator

The CWTS emulator Microsoft Excel worksheet described above is used to assign GW PIFs in consideration of operating constraints and objectives. A high-level summary of the final results is shown in Table H-136, where the following results are provided for the 27 DUs included for use in this PA analysis:

- Assigned GW PIFs
- Total future inventory (Ci) required to reach a maximum total SOF of 1.0 along the 100-meter POA (i.e., except for most closed units with a SOF of 0.95 and NR07E with a SOF of 0.138)
- Maximum total SOF by pathway (i.e., maximum value over all time windows for each pathway)

The most limiting pathway tally is as follows:

- **Beta-Gamma**: 21 DUs (78%)
- **Gross-Alpha**: 6 DUs (22%)
- **All Other Pathways**: 0 DUs (0%)

For open and future DUs, the future inventory is increased until a maximum total SOF of 1.0 is reached. For closed DUs, the GW PIFs are decreased until either a maximum total SOF of 1.0 or 0.95 is achieved. As Table H-136 indicates, ETs are limited by gross-alpha, except for ET02, while STs, LAWV, ILV, NR07E, and NR26E are limited by beta-gamma.

Table H-136. Pathway-Specific Maximum Total Sum-of-Fractions Based on Projected CWTS Closure Inventories for Each E-Area Low-Level Waste Facility Disposal Unit

PIF Aquifer Cutout	DU	DU Status	PIF (-)	Total Future Inventory (Ci)	Maximum Total SOF by Pathway [b]							
					Beta-Gamma	Gross-Alpha	Radium	Uranium	All-Pathways	IHI	Air	Radon
West	ET07	Future	2.000	286.66	0.4256	1.0000	0.0006	0.0000	0.1221	0.0004	0.0000	0.0000
	ET08	Future	2.000	379.60	0.5162	1.0000	0.0006	0.0000	0.1222	0.0005	0.0000	0.0000
	ET09	Future	2.150	414.06	0.5502	1.0000	0.0006	0.0000	0.1222	0.0006	0.0000	0.0000
	ET03	Open	6.000	210.44	0.3163	1.0000	0.0000	0.0000	0.1234	0.0005	0.0000	0.0000
	ET04	Future	6.800	544.11	1.0000	0.0920	0.0000	0.0000	0.0608	0.0007	0.0000	0.0000
	NR26E	Open	6.000	5.19E+07	1.0000	0.0000	0.0000	0.0000	0.0960	0.6833	0.0718	0.0000
	ST08	Open	7.050	77.84	1.0000	0.0109	0.0000	0.0000	0.0164	0.0003	0.0000	0.0000
	ST09	Open	2.253	73.96	1.0000	0.0265	0.0000	0.0000	0.0627	0.0004	0.0001	0.0000
	ST10	Future	5.200	416.52	1.0000	0.1298	0.0001	0.0000	0.0739	0.0012	0.0000	0.0000
	ILV	Open	2.561	1.19E+07	1.0000	0.0000	0.0000	0.0000	0.0095	0.0077	0.0000	0.0000
	ST11	Future	4.000	399.82	1.0000	0.0657	0.0000	0.0000	0.0557	0.0007	0.0000	0.0000
Center	ST01	Closed	1.825	0.00	0.9500	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0001
	ST02	Closed	18.985	0.00	0.9500	0.0218	0.0000	0.0000	0.0354	0.0000	0.0000	0.0000
	ST03	Closed	15.352	0.00	0.9500	0.4411	0.0000	0.0000	0.1017	0.0001	0.0000	0.0000
	ST04	Closed	16.270	0.00	0.9500	0.1405	0.0000	0.0000	0.0830	0.0001	0.0000	0.0000
	ST23	Open	1.800	654.26	1.0000	0.0861	0.0000	0.0000	0.0482	0.0467	0.0000	0.0001
	ST24	Future	1.550	362.82	1.0000	0.2634	0.0000	0.0000	0.0346	0.0009	0.0000	0.0000
	ST05	Closed	14.680	0.00	0.9500	0.4101	0.0000	0.0000	0.0577	0.0001	0.0000	0.0000
	ST06	Open	3.000	379.10	1.0000	0.7519	0.0000	0.0000	0.0944	0.0006	0.0000	0.0008
	ST07	Open	7.000	61.32	1.0000	0.4740	0.0000	0.0000	0.0588	0.0002	0.0000	0.0000
East1	ET02	Open	6.380	70.53	0.9716	1.0000	0.0001	0.0000	0.1216	0.0005	0.0000	0.0000
	ET01	Closed	4.684	0.00	1.0000	0.0471	0.0000	0.0000	0.0068	0.0001	0.0000	0.0001
	ST14	Open	13.040	82.55	1.0000	0.0596	0.0000	0.0000	0.0201	0.0005	0.0007	0.0000
	ET05	Future	14.000	48.88	0.6974	1.0000	0.0001	0.0000	0.1209	0.0001	0.0000	0.0000
	LAWV	Open	3.970	9.62E+05	1.0000	0.0000	0.0000	0.0000	0.0094	0.0535	0.0000	0.0000
	ET06 [a]	--	--	--	--	--	--	--	--	--	--	--
	ST17 [a]	--	--	--	--	--	--	--	--	--	--	--
	ST18	Future	8.354	89.58	1.0000	0.0700	0.0000	0.0000	0.0115	0.0002	0.0000	0.0000
	ST19 [a]	--	--	--	--	--	--	--	--	--	--	--
	ST20 [a]	--	--	--	--	--	--	--	--	--	--	--
	ST21 [a]	--	--	--	--	--	--	--	--	--	--	--
	ST22 [a]	--	--	--	--	--	--	--	--	--	--	--
East2	NR07E	Closed	20.000	0.00	0.1380	0.0000	0.0000	0.0000	0.0145	0.0183	0.0005	0.0000

Notes:

The overall maximum SOF for each of the 27 DUs included for use in this PA is shaded in red.

[a] DU excluded from use in this PA.

[b] Entries of "0.0000" indicate that the actual SOF is less than 5.0E-05.

An example for ET03 is discussed below to highlight key aspects and CWTS emulator results.

H.8.4 ET03

By way of example, the worksheet for ET03 is chosen because it has one of the shortest lists of parent radionuclides (i.e., 38 generic waste form radionuclides and only one SWF radionuclide) and is an existing DU with both existing and future inventories. The actual parameter values presented below correspond to the final settings and the projected CWTS inventories listed in Table H-125.

Key inputs to the ET03 worksheet include:

- DU-specific GW PIF (6.000)
- Existing inventory vector (39 parent radionuclides: 38 generic waste form and one SWF)
- Total future inventory activity (210.44 Ci)
- Future inventory composition vector (39 parent radionuclides: 38 generic waste form and one SWF)
- Preliminary inventory limits for the GW pathways by pathway and time window (three beta-gamma, one gross-alpha, one radium, one uranium, and two all-pathways)
- Final inventory limits for IHI pathways (one acute and one chronic)
- Final inventory limits for air pathway (one air)
- Final inventory limits for radon pathway (one radon)

The key outputs from this ET03 worksheet are:

- Total SOF by pathway (beta-gamma, gross-alpha, radium, uranium, all-pathways, IHI, air, and radon)
- Maximum total SOF (maximum value over all 12 pathway and time-window combinations)

At closure, the estimated total activity within ET03 is projected to be:

- Total existing activity = 114.35 Ci (as of March 31, 2021)
- Total future activity = 210.44 Ci (value that yields a maximum total SOF of 1.0)
- Total activity = 324.78 Ci (no decay corrections are applied)

Table H-137 summarizes the inventory limits provided earlier in this appendix or in Chapter 7 and Chapter 8. The GW inventory limits are the preliminary values because GW PIFs are entered in the CWTS emulator as inputs. The preliminary inventory limits for the GW pathways are computed assuming all disposals (i.e., both existing and future) occur at the start of ET03 operations (see Chapter 5 for details).

Table H-138 contains the computed SOF contributions for each parent radionuclide by pathway and time window. The total inventory values presented in Table H-138 are the projected CWTS

inventories (i.e., without biases or uncertainties applied). The SOF contributions for the GW and non-GW pathways are computed using Eq. (H-11) and Eq. (H-12), respectively. The parent radionuclides listed in Table H-137 and Table H-138 represent the composited list for GW, IHI, air, and radon.

As mentioned earlier for ET03, future inventories are set such that the maximum total SOF equals 1.0. As Table H-138 indicates, the gross-alpha GW pathway dominates, with Np-237 contributing 99.7% of the dose.

To easily see the status of ET03 when considering its existing inventory (as of March 31, 2021) only, the inputted future inventory is set to zero. The results provided in Table H-138 then reduce to the results shown in Table H-139. The resulting existing maximum total SOF drops to 0.352. Under the prior inventory limits (i.e., PA2008 and subsequent SAs), the existing maximum total SOF was 0.743. The new PA limits, therefore, provide more activity capacity for ET03 operations.

Table H-137. Pathway- and Time-Window-Specific CWTS Inventory Limits for ET03

Parent Radionuclide (39 total)	Inventory Limit by Pathway (Ci)											
	BG1	BG2	BG3	GA	Rad	Uran	AP1	AP2	IHI Acute	IHI Chronic	Air	Radon
	Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171	Years 171-1,171		Years 71-1,171	
Ag-108m	---	1.05E+18	4.87E+12	---	---	---	8.73E+18	4.07E+13	1.21E+04	3.66E+04	---	---
Am-241	3.80E+18	2.65E+07	7.11E+04	3.55E+03	---	3.87E+13	1.10E+07	2.95E+04	5.53E+05	5.25E+06	---	---
Am-242m	---	---	---	---	---	---	---	---	4.82E+05	2.82E+06	---	---
Am-243	---	---	---	---	---	---	---	---	8.85E+04	1.25E+06	---	---
Be-10	---	3.03E+07	9.26E+03	---	---	---	3.22E+08	9.84E+04	---	---	---	---
C-14	5.49E+08	2.41E+02	4.36E+01	---	---	---	1.50E+03	2.72E+02	9.55E+08	1.53E+06	7.74E+03	---
Cf-249	---	2.73E+10	1.29E+07	6.47E+05	---	8.32E+15	1.14E+10	5.38E+06	5.73E+04	8.95E+05	---	---
Cf-251	---	---	---	---	---	---	---	---	1.31E+05	1.68E+06	---	---
Cl-36	1.37E+05	4.51E+00	5.12E+00	---	---	---	3.14E+01	3.56E+01	---	---	---	---
Cm-245	---	2.52E+08	1.62E+05	8.09E+03	---	1.00E+14	1.05E+08	6.73E+04	---	---	---	---
Cm-247	---	---	---	---	---	---	---	---	4.48E+04	6.80E+05	---	---
Cm-248	---	---	---	---	---	---	---	---	1.01E+04	1.73E+05	---	---
Cs-135	---	8.48E+18	2.56E+13	---	---	---	3.98E+19	1.20E+14	---	---	---	---
Cs-137	---	---	---	---	---	---	---	---	4.88E+05	1.24E+06	---	---
H-3	2.13E+01	1.42E+06	---	---	---	---	3.89E+07	---	---	---	6.73E+13	---
I-129	5.60E+00	4.70E-03	2.99E-02	---	---	---	5.02E-01	3.19E+00	3.42E+06	8.20E+04	---	---
K-40	---	4.36E+07	9.76E+03	---	---	---	2.83E+08	6.34E+04	8.62E+04	1.03E+04	---	---
Nb-94	---	---	---	---	---	---	---	---	9.81E+03	1.18E+04	---	---
Ni-59	---	1.18E+12	2.88E+07	---	---	---	7.10E+14	1.73E+10	9.19E+08	7.50E+07	---	---
Ni-63	---	1.82E+14	1.43E+10	---	---	---	2.64E+17	2.08E+13	7.62E+09	7.21E+07	---	---
Np-237	2.92E+12	1.28E+02	3.41E+00	1.71E-01	---	1.16E+09	5.34E+01	1.42E+00	7.54E+04	2.22E+05	---	---
Pa-231	8.17E+15	1.37E+03	2.18E+01	1.73E-01	---	---	1.45E+01	3.29E-01	---	---	---	---
Pd-107	---	1.09E+14	2.67E+09	---	---	---	8.88E+14	2.16E+10	---	---	---	---
Pu-239	---	5.52E+13	2.30E+10	1.39E+08	---	---	4.07E+11	2.65E+08	4.67E+05	7.61E+06	---	---
Pu-240	---	---	---	---	---	---	---	---	4.72E+05	7.69E+06	---	---
Pu-241	---	1.46E+09	2.28E+06	1.14E+05	---	1.29E+15	6.07E+08	9.47E+05	1.61E+07	1.53E+08	---	---
Ra-226	---	---	---	---	---	---	---	---	8.45E+03	9.39E+02	---	6.85E+01
Rb-87	---	2.83E+18	8.54E+12	---	---	---	4.54E+19	1.37E+14	---	---	---	---
Sn-126	---	---	---	---	---	---	---	---	7.99E+03	1.91E+04	---	---
Sr-90	---	4.38E+15	7.84E+13	---	---	---	2.34E+17	4.19E+15	3.53E+07	4.22E+05	---	---
Tc-99	7.61E+01	4.04E+00	3.99E+01	---	---	---	3.82E+01	3.78E+02	3.66E+08	8.14E+03	---	---
Th-229	---	---	---	---	---	---	---	---	4.85E+04	2.20E+04	---	---
Th-230	---	---	---	---	---	---	---	---	2.01E+04	2.27E+03	---	9.32E+02
Th-231	---	1.29E+10	2.44E+08	1.95E+06	---	---	1.40E+08	3.71E+06	---	---	---	---
U-232	---	---	---	---	---	---	---	---	2.85E+04	8.93E+02	---	---
U-233	---	---	---	---	---	---	---	---	4.21E+05	1.28E+05	---	---
U-234	---	---	---	---	---	---	---	---	1.97E+06	1.82E+05	---	1.17E+06
U-236	---	---	---	---	---	---	---	---	4.95E+06	3.57E+05	---	---
U-233D [a]	---	---	---	---	---	---	---	---	4.21E+05	1.28E+05	---	---

Notes:

Numerical values exceeding 1.0E20 are indicated by "---".

The most limiting pathway for each parent radionuclide is shaded in red.

Beta-gamma (BG); gross-alpha (GA); radium (Rad); uranium (Uran); AP (all-pathways)

[a] SWF parent radionuclide. All others are generic waste form parent radionuclides.

Table H-138. Pathway- and Time-Window-Specific Computed Sum-of-Fractions Based on Projected CWTS Closure Inventories for ET03

Parent Radionuclide (39 total)	Projected CWTS Total Inventory at Closure (Ci)	SOF Value (unitless)[a]											
		BG1	BG2	BG3	GA	Rad	Uran	AP1	AP2	IHI Acute	IHI Chronic	Air	Radon
		Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171	Years 171-1,171		Years 71-1,171	
Ag-108m	1.99E-05	--	1.14E-22	2.45E-17	--	--	--	1.37E-23	2.93E-18	1.65E-09	5.44E-10	--	--
Am-241	1.28E+00	2.02E-18	2.90E-07	1.08E-04	2.16E-03	--	1.99E-13	6.97E-07	2.60E-04	2.32E-06	2.44E-07	--	--
Am-242m	2.27E-01	--	--	--	--	--	--	--	--	4.71E-07	8.05E-08	--	--
Am-243	1.15E-02	--	--	--	--	--	--	--	--	1.30E-07	9.24E-09	--	--
Be-10	8.59E-10	--	1.70E-16	5.57E-13	--	--	--	1.60E-17	5.24E-14	--	--	--	--
C-14	7.43E-02	8.12E-10	1.85E-03	1.02E-02	--	--	--	2.97E-04	1.64E-03	7.78E-11	4.84E-08	9.60E-06	--
Cf-249	1.39E-05	--	3.05E-15	6.45E-12	1.29E-10	--	1.00E-20	7.34E-15	1.55E-11	2.42E-10	1.55E-11	--	--
Cf-251	2.54E-05	--	--	--	--	--	--	--	--	1.94E-10	1.51E-11	--	--
Cl-36	5.96E-07	2.62E-11	7.93E-07	6.99E-07	--	--	--	1.14E-07	1.01E-07	--	--	--	--
Cm-245	1.26E-05	--	3.00E-13	4.66E-10	9.32E-09	--	7.54E-19	7.21E-13	1.12E-09	--	--	--	--
Cm-247	5.13E-06	--	--	--	--	--	--	--	--	1.15E-10	7.55E-12	--	--
Cm-248	1.13E-07	--	--	--	--	--	--	--	--	1.12E-11	6.53E-13	--	--
Cs-135	1.42E-10	--	1.00E-28	3.32E-23	--	--	--	2.14E-29	7.08E-24	--	--	--	--
Cs-137	2.32E+02	--	--	--	--	--	--	--	--	4.76E-04	1.87E-04	--	--
H-3	1.10E+00	3.11E-01	4.64E-06	--	--	--	--	1.70E-07	--	--	--	1.64E-14	--
I-129	1.58E-04	1.69E-04	2.01E-01	3.16E-02	--	--	--	1.88E-03	2.96E-04	4.61E-11	1.92E-09	--	--
K-40	2.54E-04	--	3.50E-11	1.56E-07	--	--	--	5.38E-12	2.40E-08	2.95E-09	2.47E-08	--	--
Nb-94	1.13E-03	--	--	--	--	--	--	--	--	1.15E-07	9.58E-08	--	--
Ni-59	5.47E-02	--	2.78E-13	1.14E-08	--	--	--	4.63E-16	1.89E-11	5.96E-11	7.30E-10	--	--
Ni-63	4.65E+00	--	1.54E-13	1.95E-09	--	--	--	1.06E-16	1.34E-12	6.11E-10	6.45E-08	--	--
Np-237	2.84E-02	5.83E-14	1.33E-03	4.98E-02	9.97E-01	--	1.47E-10	3.19E-03	1.20E-01	3.76E-07	1.28E-07	--	--
Pa-231	3.07E-06	2.26E-21	1.35E-08	8.45E-07	1.07E-04	--	--	1.28E-06	5.60E-05	--	--	--	--
Pd-107	1.73E-13	--	9.51E-27	3.90E-22	--	--	--	1.17E-27	4.80E-23	--	--	--	--
Pu-239	3.77E+00	--	4.10E-13	9.85E-10	1.62E-07	--	--	5.56E-11	8.55E-08	8.07E-06	4.96E-07	--	--
Pu-240	1.25E+00	--	--	--	--	--	--	--	--	2.65E-06	1.63E-07	--	--
Pu-241	1.50E+01	--	6.15E-08	3.94E-05	7.88E-04	--	6.98E-14	1.48E-07	9.48E-05	9.28E-07	9.77E-08	--	--
Ra-226	1.67E-04	--	--	--	--	--	--	--	--	1.98E-08	1.78E-07	--	2.44E-06
Rb-87	3.18E-05	--	6.75E-23	2.23E-17	--	--	--	4.20E-24	1.39E-18	--	--	--	--
Sn-126	9.39E-09	--	--	--	--	--	--	--	--	1.17E-12	4.92E-13	--	--
Sr-90	6.25E+01	--	8.57E-14	4.78E-12	--	--	--	1.60E-15	8.96E-14	1.77E-06	1.48E-04	--	--
Tc-99	6.89E-02	5.43E-03	1.02E-01	1.03E-02	--	--	--	1.08E-02	1.09E-03	1.88E-10	8.46E-06	--	--
Th-229	2.75E-06	--	--	--	--	--	--	--	--	5.67E-11	1.25E-10	--	--
Th-230	7.16E-04	--	--	--	--	--	--	--	--	3.56E-08	3.15E-07	--	7.69E-07
Th-231	1.03E-03	--	4.81E-13	2.54E-11	3.17E-09	--	--	4.44E-11	1.67E-09	--	--	--	--
U-232	5.98E-05	--	--	--	--	--	--	--	--	2.10E-09	6.70E-08	--	--
U-233	9.67E-01	--	--	--	--	--	--	--	--	2.30E-06	7.54E-06	--	--
U-234	1.46E+00	--	--	--	--	--	--	--	--	7.44E-07	8.03E-06	--	1.25E-06
U-236	7.91E-05	--	--	--	--	--	--	--	--	1.60E-11	2.22E-10	--	--
U-233D[b]	1.32E-09	--	--	--	--	--	--	--	--	3.13E-15	1.03E-14	--	--
Total SOF[c]		3.16E-01	3.07E-01	1.02E-01	1.00E+00	0.00E+00	1.47E-10	1.62E-02	1.23E-01	4.96E-04	3.61E-04	9.60E-06	4.46E-06

Notes:

Beta-gamma (BG); gross-alpha (GA); radium (Rad); uranium (Uran); AP (all-pathways).

The largest SOF contributor for every pathway and time window is shaded in red.

[a] SOF contributions are not computed for limits with numerical values exceeding 1.0E20.

[b] SWF parent radionuclide. All others are generic waste form parent radionuclides.

[c] The bottom row lists the total SOF for each pathway and time window; the maximum total SOF is highlighted in yellow.

Table H-139. Pathway- and Time-Window-Specific Computed Sum-of-Fractions Based on Existing Inventories (as of March 31, 2021) Only for ET03

Parent Radionuclide (39 total)	Projected CWTS Total Inventory at Closure (Ci)	SOF Value (unitless)[a]											
		BG1	BG2	BG3	GA	Rad	Uran	AP1	AP2	IHI Acute	IHI Chronic	Air	Radon
		Years 0-171	Years 171-1,000	Years 1,000-1,171	Years 0-1,171			Years 171-1,000	Years 1,000-1,171	Years 171-1,171		Years 71-1,171	
Ag-108m	1.99E-05	--	4.01E-23	8.62E-18	--	--	--	4.81E-24	1.03E-18	5.80E-10	1.91E-10	--	--
Am-241	1.28E+00	7.12E-19	1.02E-07	3.81E-05	7.61E-04	--	6.99E-14	2.46E-07	9.16E-05	8.15E-07	8.58E-08	--	--
Am-242m	2.27E-01	--	--	--	--	--	--	--	--	1.66E-07	2.83E-08	--	--
Am-243	1.15E-02	--	--	--	--	--	--	--	--	4.58E-08	3.25E-09	--	--
Be-10	8.59E-10	--	6.00E-17	1.96E-13	--	--	--	5.64E-18	1.84E-14	--	--	--	--
C-14	7.43E-02	2.86E-10	6.51E-04	3.60E-03	--	--	--	1.04E-04	5.78E-04	2.74E-11	1.70E-08	3.38E-06	--
Cf-249	1.39E-05	--	1.07E-15	2.27E-12	4.54E-11	--	3.53E-21	2.58E-15	5.46E-12	8.53E-11	5.47E-12	--	--
Cf-251	2.54E-05	--	--	--	--	--	--	--	--	6.83E-11	5.33E-12	--	--
Cl-36	5.96E-07	9.21E-12	2.79E-07	2.46E-07	--	--	--	4.02E-08	3.54E-08	--	--	--	--
Cm-245	1.26E-05	--	1.05E-13	1.64E-10	3.28E-09	--	2.65E-19	2.54E-13	3.95E-10	--	--	--	--
Cm-247	5.13E-06	--	--	--	--	--	--	--	--	4.04E-11	2.66E-12	--	--
Cm-248	1.13E-07	--	--	--	--	--	--	--	--	3.94E-12	2.30E-13	--	--
Cs-135	1.42E-10	--	3.54E-29	1.17E-23	--	--	--	7.53E-30	2.49E-24	--	--	--	--
Cs-137	2.32E+02	--	--	--	--	--	--	--	--	1.68E-04	6.59E-05	--	--
H-3	1.10E+00	1.09E-01	1.63E-06	--	--	--	--	5.98E-08	--	--	--	5.76E-15	--
I-129	1.58E-04	5.94E-05	7.09E-02	1.11E-02	--	--	--	6.63E-04	1.04E-04	1.62E-11	6.77E-10	--	--
K-40	2.54E-04	--	1.23E-11	5.50E-08	--	--	--	1.90E-12	8.46E-09	1.04E-09	8.70E-09	--	--
Nb-94	1.13E-03	--	--	--	--	--	--	--	--	4.04E-08	3.37E-08	--	--
Ni-59	5.47E-02	--	9.80E-14	4.02E-09	--	--	--	1.63E-16	6.67E-12	2.10E-11	2.57E-10	--	--
Ni-63	4.65E+00	--	5.41E-14	6.86E-10	--	--	--	3.72E-17	4.72E-13	2.15E-10	2.27E-08	--	--
Np-237	2.84E-02	2.05E-14	4.67E-04	1.75E-02	3.51E-01	--	5.16E-11	1.12E-03	4.22E-02	1.32E-07	4.50E-08	--	--
Pa-231	3.07E-06	7.95E-22	4.74E-09	2.97E-07	3.75E-05	--	--	4.49E-07	1.97E-05	--	--	--	--
Pd-107	1.73E-13	--	3.35E-27	1.37E-22	--	--	--	4.12E-28	1.69E-23	--	--	--	--
Pu-239	3.77E+00	--	1.44E-13	3.47E-10	5.72E-08	--	--	1.96E-11	3.01E-08	2.84E-06	1.75E-07	--	--
Pu-240	1.25E+00	--	--	--	--	--	--	--	--	9.33E-07	5.73E-08	--	--
Pu-241	1.50E+01	--	2.16E-08	1.39E-05	2.77E-04	--	2.46E-14	5.21E-08	3.34E-05	3.27E-07	3.44E-08	--	--
Ra-226	1.67E-04	--	--	--	--	--	--	--	--	6.96E-09	6.27E-08	--	8.59E-07
Rb-87	3.18E-05	--	2.38E-23	7.87E-18	--	--	--	1.48E-24	4.89E-19	--	--	--	--
Sn-126	9.39E-09	--	--	--	--	--	--	--	--	4.13E-13	1.73E-13	--	--
Sr-90	6.25E+01	--	3.02E-14	1.68E-12	--	--	--	5.65E-16	3.15E-14	6.24E-07	5.22E-05	--	--
Tc-99	6.89E-02	1.91E-03	3.60E-02	3.64E-03	--	--	--	3.80E-03	3.85E-04	6.63E-11	2.98E-06	--	--
Th-229	2.75E-06	--	--	--	--	--	--	--	--	2.00E-11	4.41E-11	--	--
Th-230	7.16E-04	--	--	--	--	--	--	--	--	1.25E-08	1.11E-07	--	2.71E-07
Th-231	1.03E-03	--	1.69E-13	8.95E-12	1.12E-09	--	--	1.56E-11	5.87E-10	--	--	--	--
U-232	5.98E-05	--	--	--	--	--	--	--	--	7.39E-10	2.36E-08	--	--
U-233	9.67E-01	--	--	--	--	--	--	--	--	8.08E-07	2.66E-06	--	--
U-234	1.46E+00	--	--	--	--	--	--	--	--	2.62E-07	2.83E-06	--	4.40E-07
U-236	7.91E-05	--	--	--	--	--	--	--	--	5.63E-12	7.80E-11	--	--
U-233D[b]	1.32E-09	--	--	--	--	--	--	--	--	1.10E-15	3.62E-15	--	--
Total SOF[c]		1.11E-01	1.08E-01	3.60E-02	3.52E-01	0.00E+00	5.17E-11	5.69E-03	4.34E-02	1.75E-04	1.27E-04	3.38E-06	1.57E-06

Notes:

Beta-gamma (BG); gross-alpha (GA); radium (Rad); uranium (Uran); AP (all-pathways).

The largest SOF contributor for every pathway and time window is shaded in red.

[a] SOF contributions are not computed for limits with numerical values exceeding 1.0E20.

[b] SWF parent radionuclide. All others are generic waste form parent radionuclides.

[c] The bottom row lists the total SOF for each pathway and time window; the maximum total SOF is highlighted in yellow.

H.9 REFERENCES

ICRP (2008). Nuclear Decay Data for Dosimetric Calculations. ICRP Publication 107. *Ann. ICRP* **38**(3).

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