Enclosure

Model Parameter Changes from Case A to Implement Sensitivity Case K

Modeling Parameter	Change from Case A (associated RAI)
Saltstone and clean cap physical degradation	Complete degradation occurs within 10,000 years with degraded saltstone having a saturated hydraulic conductivity of 1E-06 cm/sec and an effective diffusion coefficient of 5E-06 cm^2/sec using a semi-log relationship. Final degradation values based on soil properties. (SP-1, SP-2, SP-7 and SP-17)
Moisture Characteristic Curves (MCCs)	MCCs will not be used for fractured cementitious material. Relative permeability and saturation are set equal to 1 for all suction levels for saltstone, clean cap, and disposal unit concrete. (SP-3)
Saturated hydraulic conductivity for intact saltstone and clean cap	Assumed to be 1E-8 cm/sec – largest value reported using simulants with a minimum of 90 day curing time and nominal curing temperature. (SP-5)
Effective diffusivity of saltstone and clean cap	For intact saltstone and clean cap the value is unchanged but increases to 5E-06 cm^2/sec (soil property) as the saltstone and clean cap degrade within 10,000 years using a semi-log relationship. (SP-6)
Saltstone pore volumes required to initiate Eh and pH transitions	Eh transition volume changes to 18% of the Case A value based on reducing by a factor of four the reduction capacity of saltstone and a porosity correction. pH transition volume changes to 73% of the Case A value based on a porosity correction. (SP-12)
Tc release via shrinking core model	Modified using a single porosity model utilizing a fracture growth model based on the Smith and Walton (1993) approach and using a semi-log fracture growth relationship with a final fracture spacing of 10 cm. Pertinent parameters are: • Constant diffusion coefficient of intact matrix of 1E-07 cm^2/sec • Reduction capacity of 0.206 meq e-/g (one-fourth of Case A value) • Dissolved oxygen concentration at fracture face is 1.06 meq e-/L (SP-13)
Drainage layer performance	No Change (IEC-8) Time periods refined to capture significant changes to model parameters (C-22)
Physical degradation of disposal unit concrete	Using a semi-log relationship, concrete fully degrades to soil properties with a saturated hydraulic conductivity of 1E-06 cm/sec and an effective diffusion coefficient of 5E-06 cm^2/sec • Initially for walls of Vaults 1 and 4 (VP-6) • Within 3,500 years for the roof of Vault 4 • Within 10,000 years for other disposal unit concrete (VP-2 and VP-3) Undegraded properties provided in PA Table 4.2-16
Dose to the chronic intruder in vicinity of disposal units	Dose estimated based on water concentrations below Vault 4 and an FDC for this alternative sensitivity case (II-2)
Radionuclides analyzed	No change - all radionuclides
Inventory	Key radionuclides being investigated (Ra-226, I-129, Tc-99). Th-230, U-234, and Pu-238 inventory being investigated for in-growth of Ra-226. (IN-5)
K_d values for saltstone, disposal unit concrete, and soil	Based on latest issued reports (SP-10, SP-14, SP-15, FFT-2 and FFT-3)
Dose methodology	Biotic transfer factors based on latest report (B-1) Inclusion of poultry and egg pathway (B-2) 25 year buildup of radionuclides in irrigated soil (B-3) Inclusion of leafy portion in plant transfer factor (B-4)