

POLLUTEv10

Version 10.00
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Case 9: Freundlich Non-linear sorption

THE DARCY VELOCITY (Flux) THROUGH THE LAYERS $V_a = 0$ m/a

Layer Properties

Layer	Thickness	Number of Sublayers	Coefficient of Hydrodynamic Dispersion	Matrix Porosity	Distribution Coefficient	Dry Density
Clay	7 cm	14	0.019 cm ² /hr	0.46	0 cm ³ /g	1.47 g/cm ³

Non-Linear Sorption

Maximum Number of Iterations = 10
Minimum Reference Concentration = 0.1 mg/L

Freundlich Sorption Isotherm $S = K_f * c^E$

Layer	Kf	E
Clay	2	0.628

Boundary Conditions

Finite Mass Top Boundary

Initial Concentration	50 mg/L
Rate of increase	0 mg/L/yr
Volume of Leachate Collected	0 m/a
Reference height of Leachate	6.5 cm

Zero Flux Bottom Boundary

Laplace Transform Parameters

TAU	7
N	20
SIG	0
RNU	2

Calculated Concentrations at Selected Times and Depths

Time hr	Depth cm	Concentration mg/L
200	0.000000E+00	3.91542E+01

	5.000000E-01	3.02182E+01
	1.000000E+00	2.14258E+01
	1.500000E+00	1.36746E+01
	2.000000E+00	7.61751E+00
	2.500000E+00	3.52128E+00
	3.000000E+00	1.23334E+00
	3.500000E+00	2.72773E-01
	4.000000E+00	3.00239E-02
	4.500000E+00	1.80063E-03
	5.000000E+00	6.51076E-05
	5.500000E+00	1.41246E-06
	6.000000E+00	1.83431E-08
	6.500000E+00	1.49919E-10
	7.000000E+00	5.53861E-12
400	0.000000E+00	3.56230E+01
	5.000000E-01	3.00928E+01
	1.000000E+00	2.43852E+01
	1.500000E+00	1.88383E+01
	2.000000E+00	1.37624E+01
	2.500000E+00	9.40379E+00
	3.000000E+00	5.91675E+00
	3.500000E+00	3.34934E+00
	4.000000E+00	1.64475E+00
	4.500000E+00	6.59079E-01
	5.000000E+00	1.93485E-01
	5.500000E+00	3.82846E-02
	6.000000E+00	5.74844E-03
	6.500000E+00	6.74744E-04
	7.000000E+00	1.21285E-04
600	0.000000E+00	3.32129E+01
	5.000000E-01	2.91399E+01
	1.000000E+00	2.48630E+01
	1.500000E+00	2.05656E+01
	2.000000E+00	1.64271E+01
	2.500000E+00	1.26084E+01
	3.000000E+00	9.23917E+00
	3.500000E+00	6.40787E+00
	4.000000E+00	4.15616E+00
	4.500000E+00	2.47798E+00

	5.000000E+00	1.32360E+00
	5.500000E+00	6.08528E-01
	6.000000E+00	2.26696E-01
	6.500000E+00	6.79547E-02
	7.000000E+00	3.01153E-02
800	0.000000E+00	3.13599E+01
	5.000000E-01	2.81238E+01
	1.000000E+00	2.46937E+01
	1.500000E+00	2.11868E+01
	2.000000E+00	1.77212E+01
	2.500000E+00	1.44086E+01
	3.000000E+00	1.13474E+01
	3.500000E+00	8.61707E+00
	4.000000E+00	6.27343E+00
	4.500000E+00	4.34658E+00
	5.000000E+00	2.84065E+00
	5.500000E+00	1.73648E+00
	6.000000E+00	9.97429E-01
	6.500000E+00	5.79412E-01
	7.000000E+00	4.45115E-01

Convergence Check for Non-linear Sorption

Time hr	Iterations	Maximum Change
200	0	8.89825E-43
400	0	NAN
600	0	0
800	0	2.47194E-39

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