

**GROUNDWATER MODEL OF CHEMICAL FATE AND TRANSPORT - DECAYING PULSE SOURCE**

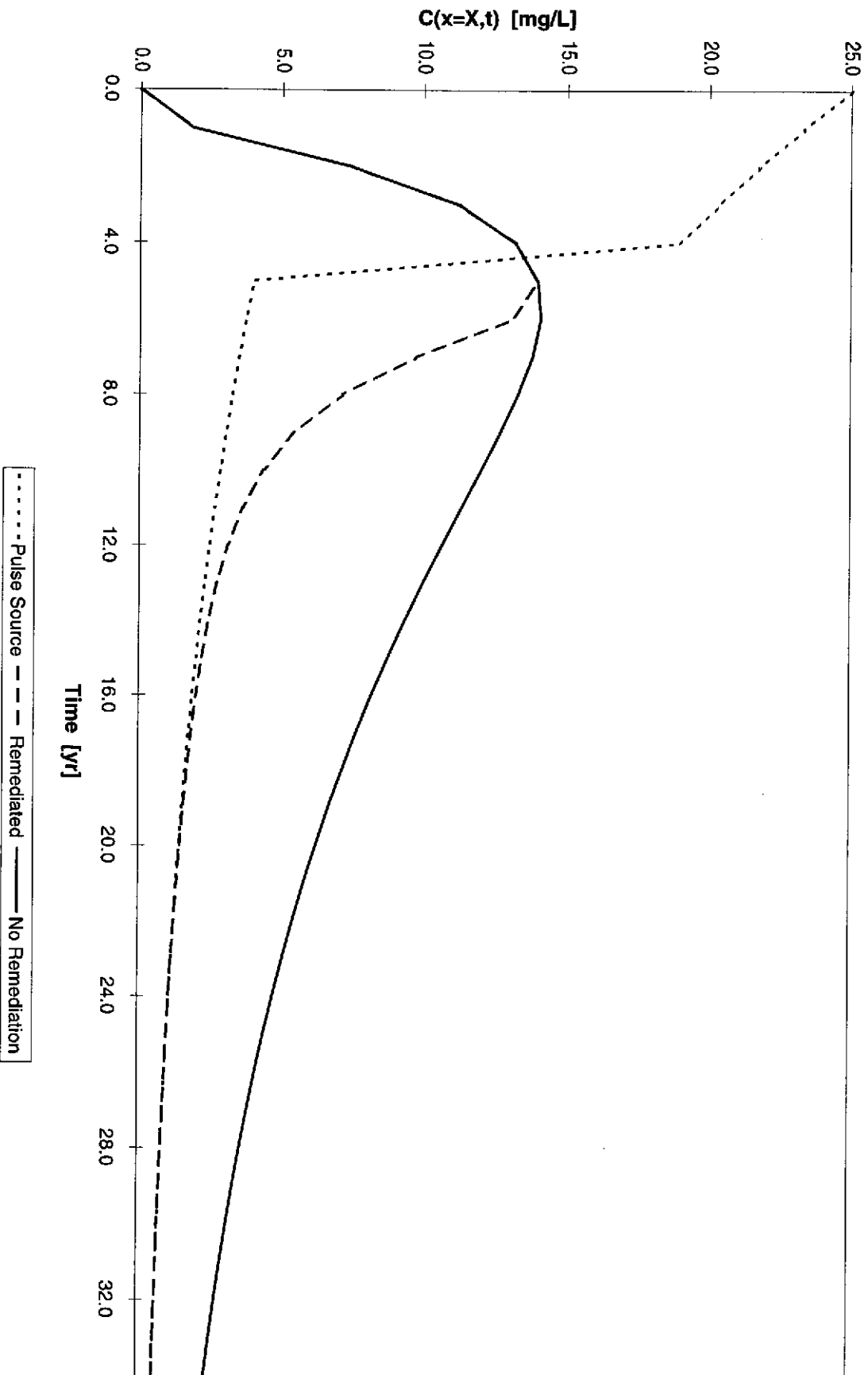
*Model Input Parameters*

<i>Parameter</i>	<i>Units</i>	<i>Name</i>	<i>Value</i>	<i>Remarks</i>
Initial Source Concentration	[mg/L]	C <sub>0</sub>	25	represents the source before remediation
Residual Concentration Post Remediation	[mg/L]	C <sub>1</sub>	4	assumed equal to the maximum detected residual soil concentration
Distance From Source to Receptor	[m]	X	50	350 feet distance from the source to the bay
Retarded Groundwater Seepage Velocity	[m/yr]	u	14	Darcy's law, no retardation: $u = k^*/h = 350 * 0.01 / 0.25 = 14$
Retarded Dispersion Coefficient	[m <sup>2</sup> /yr]	D	231	$D = \alpha * u = X / 10 * u = 165 / 10 * 14$
Retarded Source Decay Rate Before Remediation	[1/yr]	$\gamma_0$	0.0693	10 years degradation half life
Retarded Source Decay Rate Post Remediation	[1/yr]	$\gamma_1$	0.0693	10 years degradation half life
Retarded Chemical Degradation Coefficient	[1/yr]	$\lambda$	0.0693	10 years degradation half life
Time at Which Remediation Took Place	[yr]	T <sub>pulse</sub>	5	age of the source when remediation took place
Calculation Time Step	[yr]	$\Delta t$	1	concentration will be calculated at distance X every $\Delta t$ years
Time of Breakthrough Calculation	[yr]	t*	20	concentration vs. distance will be calculated at time t*
Distance Step for Calculation	[m]	$\Delta x$	25.0	concentration will be calculated at time t* every $\Delta x$ meters

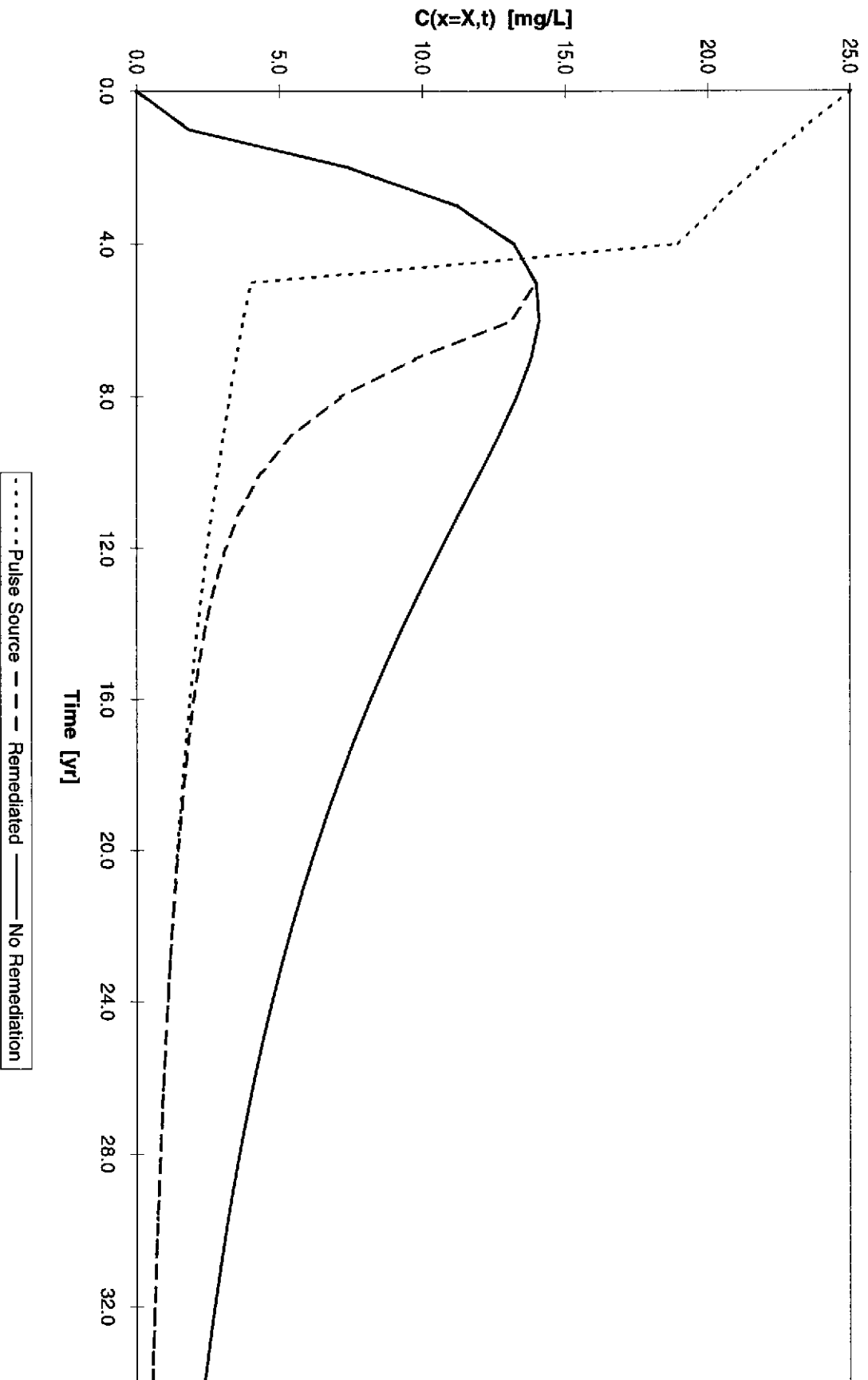
This model is based on the solution of the groundwater transport equation given by Marino (1974), adapted to a decaying pulse source to assess the effect of remediation on receptor concentration. 1-D advection and dispersion, retardation and first-order decay are considered.  
*Marco Lobascio, San Francisco, California, August 1996.*

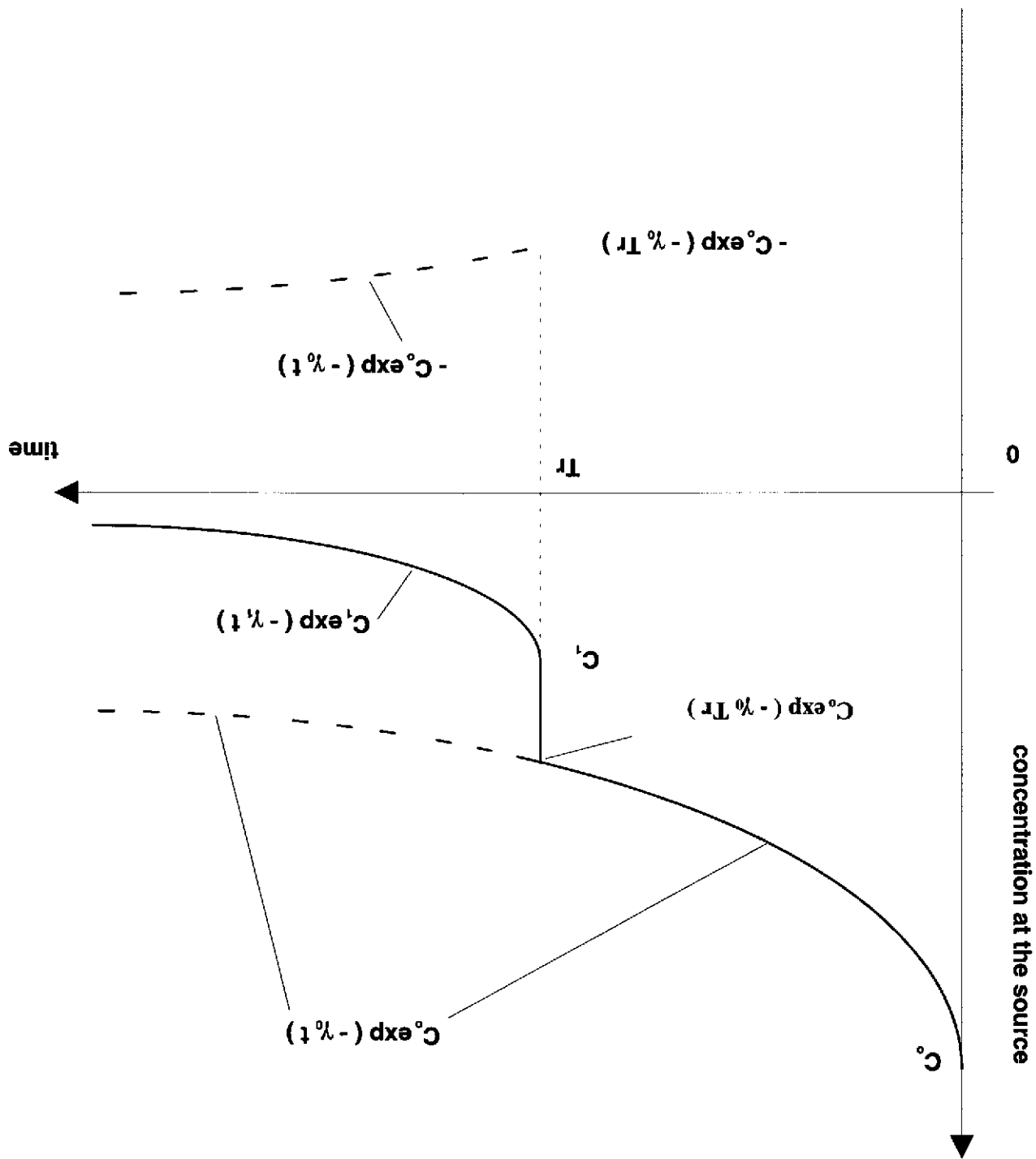
*Retarded for assumed  
 Decay coefficient  
 Retardation*

# Receptor Concentration $C(x=X,t)$ Vs. Time [mg/L]



# Receptor Concentration C(x=X,t) Vs. Time [mg/L]





SCHMATIC REPRESENTATION OF THE PULSE SOURCE