

LUST On-Line Calculator Introduction

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The OnSite On-Line Site Evaluation Tools

- Aid to planning site assessment
 - “What is the travel time to the next proposed downgradient receptor well?”
- Review of modeling reports
 - “Should they really have used 10 as the retardation factor for benzene?”
- Enhance contaminant transport knowledge
 - “What ground water concentrations are characteristic of fresh gasoline? Transport from fuel sources?”

The OnSite Calculators

■ Four Types

- **1) formulas (parameters):** hydraulic gradient, moisture content and porosity, retardation factor, dispersivity, Darcy flux, effective solubility, mass distribution
- **2) models:** 1D with constant source or fuel source, 1D plume diving, Two Versions of the Domenico model
- **3) demonstrations:** vertical averaging, unsteady mass balance, simple aquifer flows, lab column
- **4) unit conversions:** day-date, half-life to rate constant, henry's law, hydraulic conductivity, flow rate

OnSite

- Est. 1999, now 30+ calculators
- Steady increase in usage
 - 15000 hits per month
- Uses an Internet Browser
 - M.S. Internet Explorer, Netscape Navigator
- Available on the EPA web site:
<http://www.epa.gov/athens/onsite>
- Listserver for update information
 - Send email to: join-onlncalc@lists.epa.gov

Example Calculators

- **Hydraulic Gradient** from three points
- **Retardation Factor**, given chemical, organic carbon
- **Average Borehole Concentrations**—how much difference does screen length and depth make?
- **Plume Diving**—how deep must a well be in order to sample the plume?
- **Continuing or Pulse Source**—what concentration at the receptor?

Retardation Factor Calculator

$$\text{Retardation Factor } R = 1 + \rho_b k_d / \theta$$

R = retardation factor

ρ_b = bulk density = $\rho_s(1-\theta)$

ρ_s = solids density

θ = porosity

k_d = (soil) distribution coefficient = $f_{oc} K_{oc}$

f_{oc} = fraction organic carbon

K_{oc} = organic carbon/water partition coefficient

Example Data

Calculate

Save Data

Recall Data

[Use of Browser Cookies in Saving Data](#)

Go Back

Clear

Input Parameters

Identifier

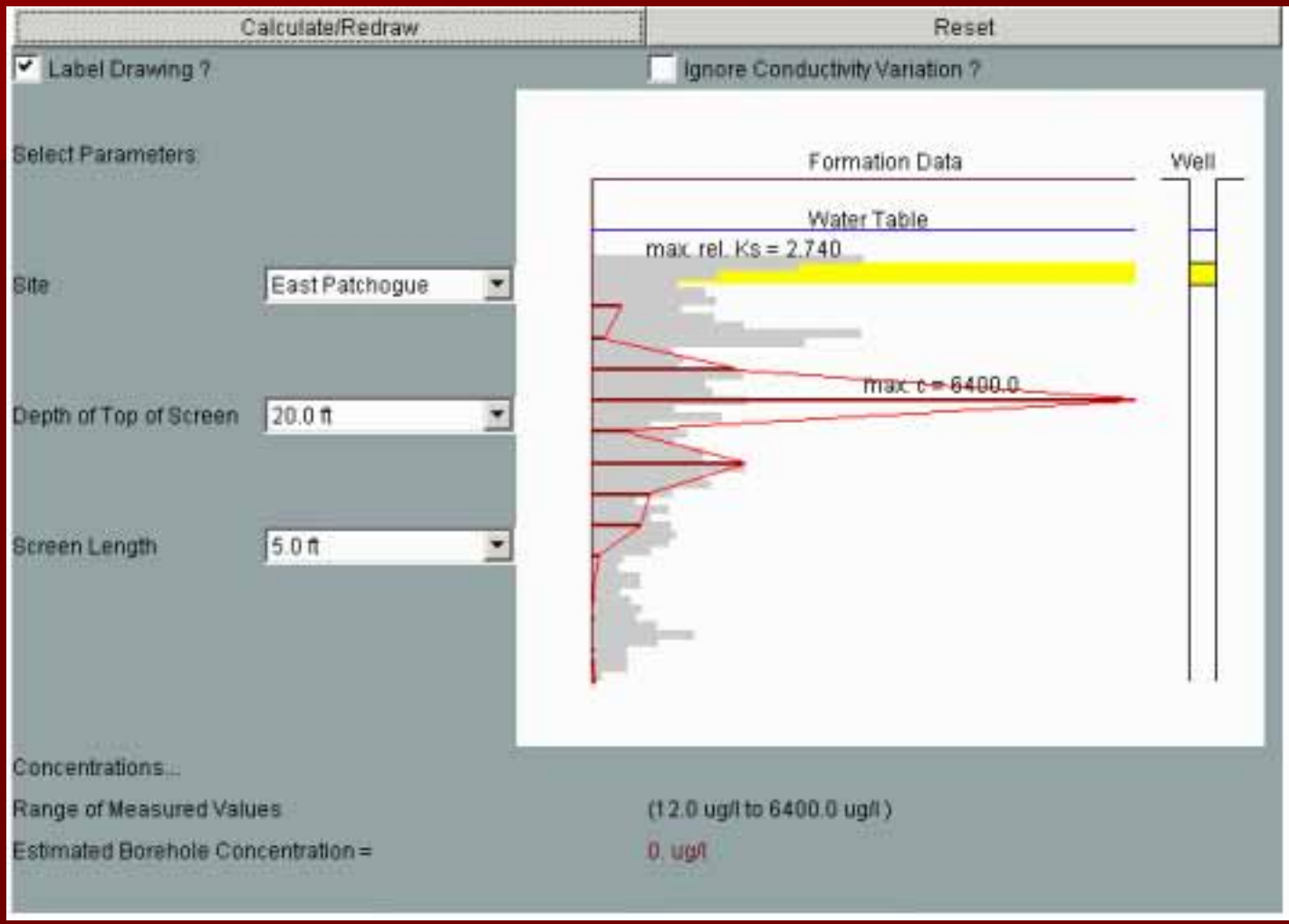
Date

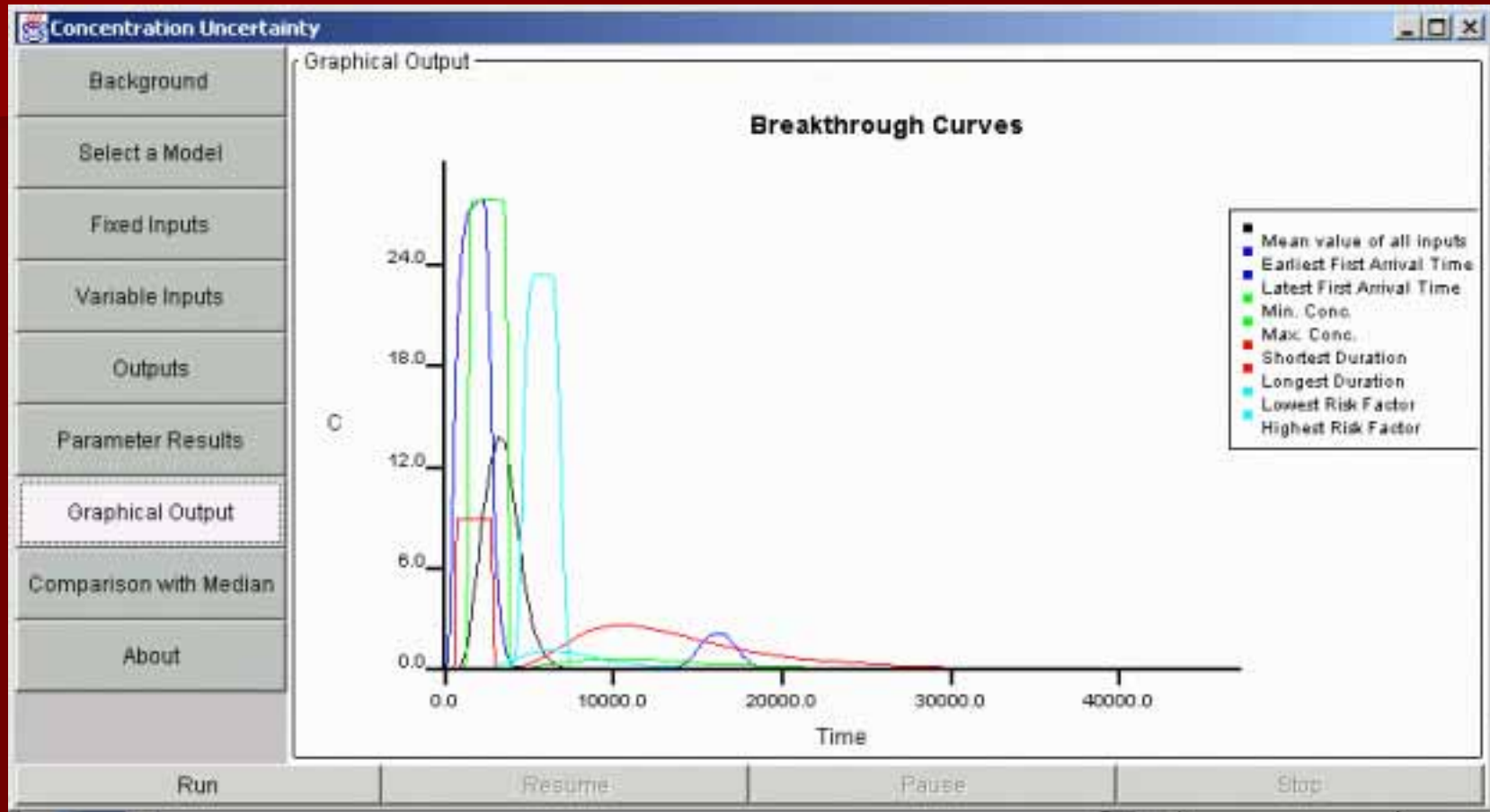
Porosity
(θ)

(Try 0.25)

Fraction
Organic
Carbon
(f_{oc})

(Try 0.0001)





Calculators for Other Brownfield Applications

- Additional Chemicals being added to databases
 - State and Federal Agency Data Sets
- Ground water flow with multiple pumping wells
- Chlorinated Solvent Modeling