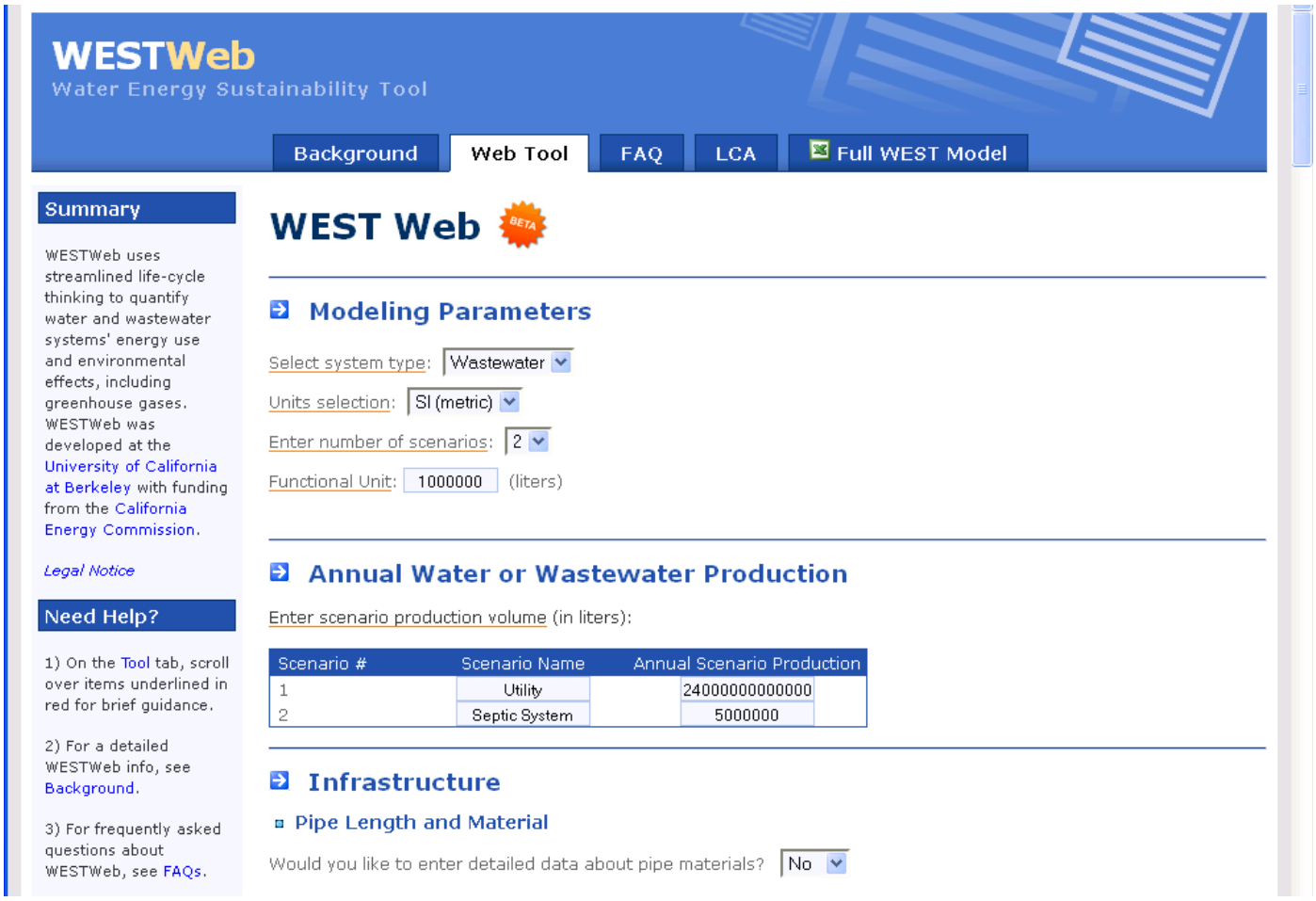
SAMPLE DATA ENTRY for TWO HYPOTHETICAL WATERWATER SYSTEMS:

- Scenario 1 is a utility system; Scenario 2 is a neighborhood septic system
- Metric units in entry; scientific unit notation for results
- Basic entry selections and results (only energy and GHG categories; no subtotals shown)
- Created: 7/18/2011

Note: Data and results are hypothetical and may not be representative of actual systems.



4) For more on the life-cycle assessment (LCA) methodology, see LCA.

5) For a more complete LCA tool for water/wastewater, see WEST model.

6) If necessary, contact the developers. **Note: customer service for this tool is not guaranteed.**

Updates

Site launch:
May 31, 2011

Last update:
May 31, 2011

Update log

Enter total length (in meters):

	Scenario #1 (meters)	Scenario #2 (meters)
Collection	65000	5500
Treatment	1500	
Discharge	5000	1600

Reinforced Concrete Materials

Would you like to enter detailed data about buildings and pre-cast structures? No

Enter total volume of reinforced concrete (in cubic meters):

	Life (years)	Scenario #1 (cubic meters)	Scenario #2 (cubic meters)
Collection			30000
Treatment	75	10	60000
Discharge			

Process Equipment

Would you like to enter detailed data about process equipment? No

Operation

Electricity Mix

Electricity Mix Location: CA (PG&E)

Enter percentages for each scenario's electricity primary fuel/energy source:

	CA (PG&E) Mix
Coal	1.53%
Oil	1.42%
Natural Gas	40.8%
Nuclear	23.58%
Hydro	15.33%
Biomass	5.11%
Wind	3.79%
Solar	3.4%
Geothermal	5.04%
Total	100%

Energy Use

Enter quantities of energy consumed for each scenario:

Annual Consumption of:	Scenario 1			Scenario 2		
Electricity (MWh)	550	25000		15	20	10
Natural Gas (MMBTU)		7500				
Gasoline (liters)						
Diesel (liters)		55000				

Treatment Chemical Consumption

Enter quantities of chemicals used in each scenario:

	Units	Scenario #1	Scenario #2
pH Adjustment			
Hydrochloric Acid	kg/yr		
Sulphuric Acid	kg/yr		
Lime	kg/yr		
Coagulants & Flocculants			
Aluminum Sulfate	kg/yr		
Aluminum Hydroxide	kg/yr		
Caustic Soda	kg/yr		
Ferric Chloride	kg/yr	700000	
Polymers	kg/yr	710000	
Disinfectants			
Chlorine	kg/yr		
Calcium Hypochlorite	kg/yr		
Ozone	kg/yr		
Aqueous Ammonia	kg/yr		
Others			
Fluorosilicic Acid	kg/yr		
Other Chemicals	$/yr	18000000	

Process Emissions

	Scenario #1	Scenario #2
Number of People Served	250000	150
Influent BOD Concentration (mg/L)	65	200
Effluent BOD Concentration in Sludge (mg/kg)		
Annual Dry Sludge Disposed (kg)	7400000	40000
System Process	WMCAT	SS
Percentage of Methane Captured (%)	99	

For system processes: PMCAT=Poorly-managed centralized aerobic treatment, WMCAT=Well-managed centralized aerobic treatment, AR=Anaerobic reactor, ASL=Anaerobic shallow lagoon, ADL=Anaerobic deep lagoon, SS=Septic System, AD=Anaerobic digester.

SCENARIO 1 - ch4 mult: 0 - GHG: 12

SCENARIO 2 - ch4 mult: 300,000 - GHG: 1,415,520

Waste Management

Sludge Disposal

Scenario	Sludge Disposal Process	Ash Disposal Process
#1	Landfill	
#2	Landfill	

Run Analysis

Results include: greenhouse gases (in CO_2 equivalents), energy, carcinogens (chloroethylene [C_2H_3Cl] equivalents), non-carcinogens (C_2H_3Cl equivalents), respiratory inorganics ($PM_{2.5}$ equivalents), ozone depletion (CFC-11 equivalents), respiratory organics (ethylene [C_2H_4] equivalents), aquatic ecotoxicity (triethylene glycol [TEG] water), terrestrial ecotoxicity (TEG soil), aquatic acidification (SO_2 equivalents), and aquatic eutrophication (PO_4^{3-} in a P-limited environment). For more info on the impact categories listed here, see the Glossary.

Run Analysis for Energy and Greenhouse Gas Emissions

Run Analysis for Energy, Greenhouse Gas Emissions, and Human/Environmental Impact Potentials

Display detailed calculations: Hide

Analysis output notation: Scientific

Analysis Output

Scenario 1 Results
Utility

				GHG	EN
				g CO2e	MJ
INFRASTRUCTURE	Piping	Pipe	⇦	1.8E+1	1.7E-1
			⇄	4.9E-2	8.2E-4
			⇨	2.4E-1	3.1E-3
	Concrete and Buildings	Concrete and Buildings	⇦	-	-
			⇄	2.5E-3	2.6E-5
			⇨	-	-

OPERATION	Energy Use	Electricity	⇐	7.4E+0	1.6E-1
			⇄	3.3E+2	7.1E+0
			⇒	-	-
		Natural Gas	⇐	-	-
			⇄	1.9E+1	3.3E-1
			⇒	-	-
		Equipment Fuels	⇐	-	-
			⇄	7.7E+0	1.5E-2
			⇒	-	-
	Chemicals	pH Adjustment	⇄	-	-
		Flocculants / Coagulants	⇄	1.7E+2	4.8E+0
		Disinfectants	⇄	-	-
		Other	⇄	1.5E+3	2.3E+1
	Direct Wastewater Process		⇄	1.2E+1	-
EOL	Waste Management	Sludge Disposal	⇒	1.9E+2	1.2E-1
Σ	Infrastructure		⇐	1.8E+1	1.7E-1
			⇄	5.2E-2	8.5E-4
			⇒	2.4E-1	3.1E-3
	Operation		⇐	7.4E+0	1.6E-1
			⇄	2.1E+3	3.5E+1
			⇒	-	-
	End-of-Life		⇒	1.9E+2	1.2E-1
	Scenario 1 Grand Total			2.3E+3	3.6E+1

Scenario 2 Results
Septic System

				GHG	EN
				g CO2e	MJ
INFRASTRUCTURE	Piping	Pipe	⇐	7.2E+6	6.8E+4
			⇄	-	-
			⇒	3.8E+5	4.7E+3
	Concrete and Buildings	Concrete and Buildings	⇐	3.6E+7	3.8E+5
			⇄	7.2E+7	7.5E+5
			⇒	-	-
OPERATION	Energy Use	Electricity	⇐	9.6E+5	2.1E+4
			⇄	1.3E+6	2.7E+4
			⇒	6.4E+5	1.4E+4
		Natural Gas	⇐	-	-
			⇄	-	-
			⇒	-	-
		Equipment Fuels	⇐	-	-
			⇄	-	-
			⇒	-	-
	Chemicals	pH Adjustment	⇄	-	-
		Flocculants / Coagulants	⇄	-	-
		Disinfectants	⇄	-	-
		Other	⇄	-	-
	Direct Wastewater Process		⇄	1.4E+6	-
EOL	Waste Management	Sludge Disposal	⇒	5.0E+6	3.1E+3
Σ	Infrastructure		⇐	4.3E+7	4.4E+5
			⇄	7.2E+7	7.5E+5
			⇒	3.8E+5	4.7E+3
	Operation		⇐	9.6E+5	2.1E+4
			⇄	2.7E+6	2.7E+4
			⇒	6.4E+5	1.4E+4
	End-of-Life		⇒	5.0E+6	3.1E+3
	Scenario 2 Grand Total			1.2E+8	1.3E+6