

## DATA FORM FOR THE CALCULATION OF BATCH RATES AND THE DETERMINATION OF THE MONOD CONSTANTS

Complete this table with measured liquid concentrations from the batch test. If headspace concentrations were measured and equilibrium has been verified, convert them to liquid concentrations by using  $K_{eq}$ . If the data are scattered, plot the concentration vs. time data, and fit the data with a curve based on Equation Appendix C-4 for the Aerated Batch test or Equation Appendix C-6 for the Sealed Batch test. Complete this form with concentrations obtained from that fitted curve. If the curve fitting approach is used, attach a plot of the data and the associated fitted curve to this form. Note: If the initial results appear to be anomalous, do not use the initial results.

COMPOUND for site specific biorate determination		Methanol
Stripping rate constant (/hr) Form XI, line 11	1	2.1e-5
Enter the batch test Biomass concentration (g/L) on line 2.	2	.258
Headspace correction factor. For a Sealed Batch test use Form X line 10 or 1.00 for an Aerated Batch test.	3	0.999979

A	B	C	D	E	F	G
concentration S (mg/L)	time (hr)	Rate for interval (mg/L-hr) $(a_i - a_{i-1}) /$ $(b_{i+1} - b_i)$	Log Mean S for interval (mg/L) $(a_i - a_{i+1}) /$ $\ln(a_i / a_{i+1})$	Ratio of rate to S (/hr) (C/D)	Adjusted rate (/hr) (E-line 1)	Reciprocal of adj. rate (hr) (1/F)
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						

Continue table on attached sheet as needed. Plot values in column G on y axis, values in column D on x axis. Extrapolate the trend of data points to the y intercept (S=0). Attach the plot to the form.

Slope of line near intercept (hr-L/mg)	4	.4845
Y intercept from plot (hr)	5	1.938
First order rate constant K1 (or $Q_m/K_s$ , L/g-hr). The number 1.00 divided by the products of the values on line 5, line 2, and line 3.	6	2.000026
Zero order rate constant ( $Q_m$ , /hr). The number 1.00 divided by the products of the values on line 4, line 2, and line 3.	7	8.000104
Concentration applicable to full-scale unit. Enter on line 8.	8	5
Effective biorate K1 ESTIMATE (L/g MLVSS-hr)*	9	0.9606

\*Match the concentration on line 8 to the values in Column D and look up the equivalent rate in Column F. Divide the result with both the biomass concentration (line 2) and the headspace correction factor (line 3). Enter this value on line 9. Do not use this method to estimate K1 for line 9 if the data quality is poor in Column F. The number on line 9 is multiplied by the biomass and the system concentration to estimate the full scale biorate. Alternatively, the Monod model parameters may be used.