Process $j\downarrow$	Component $i\rightarrow$	1	2	3	4	5	6	7	8	9	10	
		S_S	S_{AC}	S_{IC}	S_{H2}	S_{IN}	S_{IP}	S_I	X_{PB}	X_S	X_I	Rate $\mathfrak{R}_j$
1	Hydrolysis, Fermentation	$f_{SS,XS}$	$f_{SAC,XS}$	$f_{SIC,XS}$	$f_{SH2,XS}$	$f_{SIN,XS}$	$f_{SIP,XS}$	$f_{SI,XS}$	0	-1	$f_{XI,XS}$	$k_{hyd}XS$
2	Acetate uptake	0	-1	$f_{SIC,PH,SAC}$	0	$-Y_{PB,ph}N_{bac}$	$-Y_{PB,ph}P_{bac}$	0	$Y_{PB,ph}$	0	0	$k_{m,ac}\frac{S_{AC}}{S_{AC}+K_{S,SAC}}X_{PB}I_{FA}I_{IN}I_{IP}I_EC_{ph}$
3	Photoheterotrophic uptake	-1	0	$-f_{SIC,PH,SS}$	0	$-Y_{PB,ph}N_{bac}$	$-Y_{PB,ph}P_{bac}$	0	$Y_{PB,ph}$	0	0	$k_{m,ph}\frac{S_S}{S_S+K_{S,SS}}X_{PB}I_{FA}I_{IN}I_{IP}I_EC_{ac}$
4	Chemoheterotrophic uptake	-1	$(1-Y_{PB,ch})$ $f_{SAC,ch}$	0	$(1-Y_{PB,ch})$ $f_{SH2,ch}$	$-Y_{PB,ch}N_{bac}$	$-Y_{PB,ch}P_{bac}$	0	$Y_{PB,ch}$	0	0	$k_{m,ch}\frac{S_S}{S_S+K_{S,S_S}}X_{PB}I_{FA}I_{IN}I_{IP}$
5	Photoautotrophic uptake	0	0	$-f_{SIC,au}$	$-f_{SH2,au}$	$-Y_{PB,au}N_{bac}$	$-Y_{PB,au}P_{bac}$	0	$Y_{PB,au}$	0	0	$k_{m,au}\frac{S_{IC}}{S_{IC}+K_{S,S_{IC}}}X_{PB}I_{FA}I_{IN}I_{IP}I_E$
6	Decay of PPB	0	0	f_SIC_dec	0	$-f_{SIN,dec}$	$-f_{SIP,dec}$	0	-1	1	0	$k_{dec}X_{PB}$
		Soluble substrates $\mathrm{gCODm^{-3}}$	Soluble acetate $\mathrm{gCODm^{-3}}$	Soluble inorganic carbon $molCm^{-3}$	Soluble hydrogen $\mathrm{gCODm^{-3}}$	Soluble inorganic nitrogen $\mathrm{gNH_4^+ - Nm^{-3}}$	Soluble inorganic phosphorus $\mathrm{gPO_4^{3-} - Pm^{-4}}$	Soluble inerts $\mathrm{gCODm^{-3}}$	Purple phototrophic bacteria $\mathrm{gCODm^{-3}}$	Biodegradable particulates $\mathrm{gCODm^{-3}}$	Inert particulates $\mathrm{gCODm^{-3}}$	

Competitive inhibition photohet: $C_{ph} = \frac{S_{AC}}{S_S+S_{AC}}$

Competitive inhibition acetate: $C_{ac} = \frac{S_S}{S_S+S_{AC}}$

Inhibition free ammonia: $I_{FA} = \frac{K_{I_{FA}}}{S_{IN}+K_{I_{FA}}}$

Limitation inorganic nitrogen: $I_{IN} = \frac{S_{IN}}{S_{IN}+K_{S,S_{IN}}}$

Limitation inoranic phosphorus: $I_{IP} = \frac{S_{IP}}{S_{IP}+K_{S,S_{IP}}}$

Limitation radiation: $I_{E_{850}} = \frac{E_{850}}{E_{850}+K_{E_{850}}}$