**Table 1** The kinetic rate expressions of all processes in ASM3-ON

| No. | Processes | Kinetic rate expressions () |
| --- | --- | --- |
| 1 | Hydrolysis |  |
| 2 | Aerobic storage on *SS* |  |
| 3 | Aerobic storage on UAP |  |
| 4 | Aerobic storage on BAP |  |
| 5 | Anoxic storage on *SS* |  |
| 6 | Anoxic storage on UAP |  |
| 7 | Anoxic storage on BAP |  |
| 8 | Aerobic growth of *XH* |  |
| 9 | Anoxic growth of *XH* |  |
| 10 | Aerobic endogenous respiration of *XH* |  |
| 11 | Anoxic endogenous respiration  of *XH* |  |
| 12 | Aerobic growth of *XSTO* |  |
| 13 | Anoxic growth on *XSTO* |  |
| 14 | Aerobic growth of *XA* |  |
| 15 | Aerobic endogenous respiration of *XA* |  |
| 16 | Anoxic endogenous respiration of *XA* |  |
| 17 | Ammonification of DON |  |
| 18 | Hydrolysis of entrapped organic nitrogen |  |