

### Activated Sludge

Parameter	Conventional	Extended Aeration	Oxidation Ditch	Contact Stabilization
Detention Time	4 – 8 hours	12 – 24 hours	3 – 24 hours	0.3 – 3 hours/4 – 8 hours
MLSS Concentration	1,000 – 4,000 mg/L	2,000 – 5,000 mg/L	2,000 – 6,000 mg/L	1,000 – 3,000 mg/L (2-6X greater in stabilization tank)
F:M Ratio	0.25 – 0.5	0.05 – 0.15	0.05 – 0.1	0.5 - >1.0
SRT	3.5 – 10 days	>10 days	20 – 35 days	<3.5 days
MCRT	< 15 days	>15days	>15 days	<5 days
RAS Pumping Rate	15 % - 75%	50% - 150%		25% - 100%
SVI Index	80 – 120	80 – 120	80 – 120	80 – 120
Dissolved Oxygen	1 – 3 mg/L	1 – 3 mg/L	0.5 – 3 mg/L	1 – 3 mg/L

### Clarifiers

Parameter	Primary Clarifier	Secondary Clarifier
Detention Time	2.0 – 3.0	2.0 – 3.0
Weir Overflow Rate	10,000 – 20,000 gpd/ft.	5,000 – 15,000 gpd/ft.
Surface Overflow Rate	300 – 1,200 gpd/sq.ft.	800 – 1,200 gpd/sq.ft.
Solids Loading	-	24 – 30 lbs/day/sq.ft.
Sludge Blanket		1/4 – 1/3 depth of clarifier

### Trickling Filters

Parameter	Standard-Rate	High-Rate	Roughing Precedes another biological process
Media Depth	6 – 8 feet (rock)	3 – 5 feet (rock) 15 – 30 feet (synthetic)	3 – 5 feet (rock) 15 – 30 feet (synthetic)
Hydraulic Loading	25 – 100 gpd/sq.ft.	100 – 1000 gpd/sq.ft. (rock) 350 – 2100 gpd/sq.ft. (synthetic)	Similar to high-rate since this is a high-rate filter receiving high organic loading
Organic Loading	5 – 25 lbs BOD/day/ 1000 cu.ft.	25 – 100 lbs BOD/day/ 1000 cu.ft. (rock) 50 – 300 lbs BOD/day/ 1000 cu.ft. (synthetic)	100 to over 300 lbs BOD/day/ 1000 cu.ft.

### RBCs

Parameter	BOD Removal	Nitrification
Hydraulic Loading	1.5 – 6 gpd/sq.ft.	1.5 – 1.8 gpd/sq.ft.
Organic Loading (soluble BOD)	2.5 – 4 lbs BOD/day/1000 sq.ft.	2.5 – 4 lbs BOD/day/1000 sq.ft.
Organic Loading (Total BOD)	6 – 8 lbs BOD/day/1000 sq.ft.	6 – 8 lbs BOD/day/1000 sq.ft.

### Anaerobic Digestion

Parameter	Values
Detention Time	50 – 180 days (Psychrophilic) 25 – 30 days (Mesophilic) 5 – 12 days (Thermophilic)
Organic Loading	0.15 – 0.35 lbs. VS/day/cu. ft.
Temperature range	Psychrophilic 50°F (10°C) – 68°F (20°C)
	Mesophilic 68°F (20°C) – 113° F (45°C) Optimum 85°F (30°C) – 100°F (38°C) 95° F or 35° C being considered ideal
	Thermophilic Greater 113° F Optimum 120°F (49°C) – 135°F (57°C)
Gas Production	8 – 12 cu. ft. of gas per pound of volatile solid added 12 – 18 cu. ft. of gas per pound of volatile solid destroyed
pH for methane formers	6.6 – 7.6