Conventional Activated Sludge
Wastewater Treatment Plant Flow Diagram
Aeration Opportunities in Blue

2 Equalization Tank/Basin

Headworks (Bar Screens, Commutator, Grit Ditch)

Primary Clarifier

3 Aeration Basin

Secondary Clarifier

Wastewater Plant Influent

4 Sludge Digester

Return Activated Sludge

Waste Activated Sludge

Disinfection

1 Sewer Mains/ Lift Stations

Raw Waste Starts Here

5 Post Aeration

Receiving Waters (Rivers, etc.)
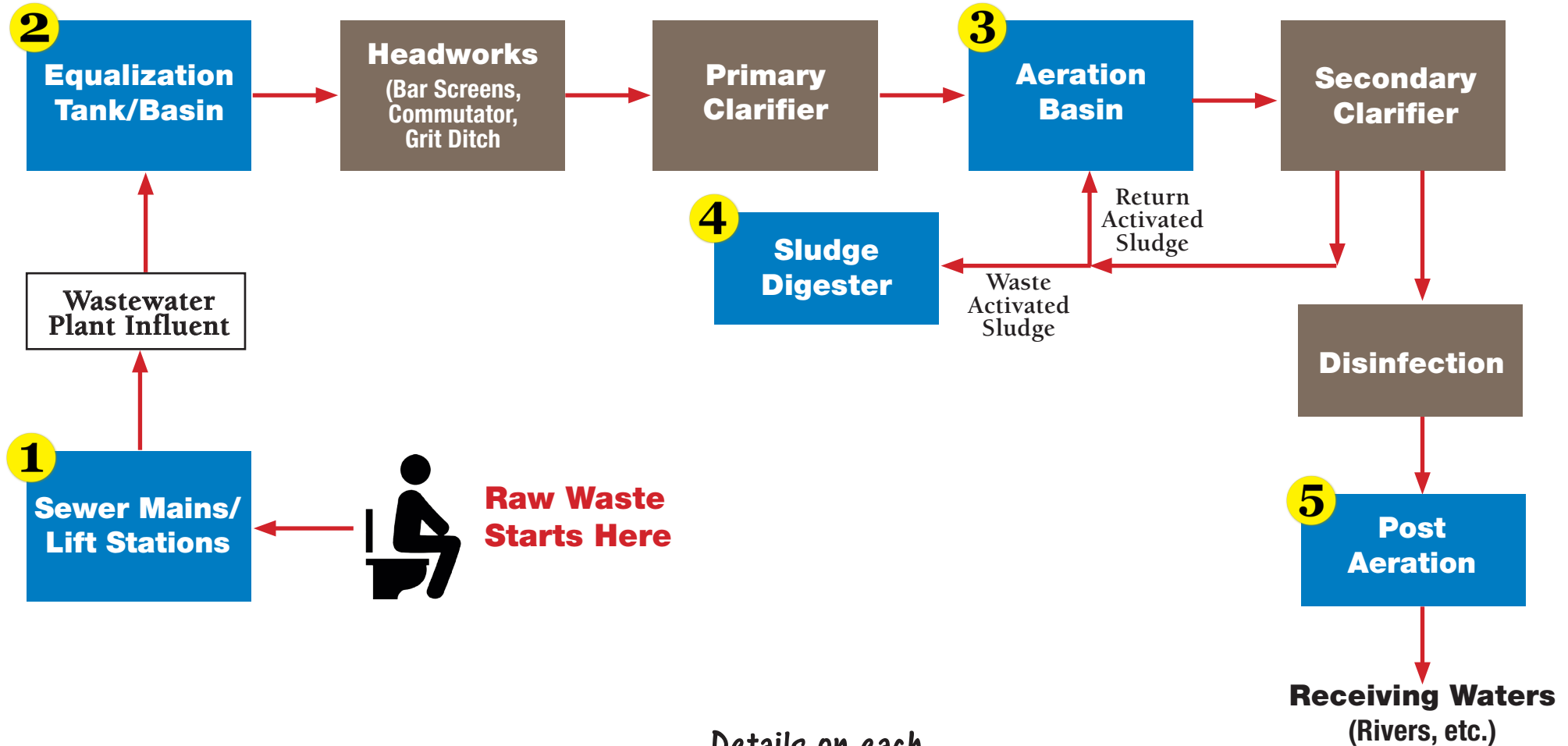
Details on each Aeration Opportunity (1-5) are listed on the next page

Mazzei®

Location	System Name	Purpose for Aeration
1	Lift Stations Sewer Mains Force Mains	Odor Control -- prevent septic conditions Solids Suspension & Oil/Grease Dispersion Corrosion Prevention (H_2S)
2	Equalization Tank or Basin	Odor Control -- prevent septic conditions Solids Suspension & Oil/Grease Dispersion Pretreatment of BOD Removal
3	Aeration Basin Activated Sludge Basin	BOD Removal/Nutrient Removal Supplemental Aeration for Older Facilities Retrofit/Replacement of Old/Existing Aeration Equipment (i.e. blowers/diffusers or surface aerators)
4	Sludge Digester Sludge Holding Tank	BOD Removal/Nutrient Removal Solids Suspension & Odor Control Freshening -- prevent septic conditions
5	Post-Treatment Effluent Aeration	Increase DO Level to Meet Effluent Regulations -- many states have new regulations for minimum effluent DO levels... *fish and plants will die if water with no O_2 is discharged to rivers, lakes, etc.*

DO = Dissolved Oxygen

BOD = Biochemical Oxygen Demand... concentration of the wastewater/nutrient level

Wastewater Treatment 101: Oxygen is required to maintain a biomass (microbio) in the wastewater. The biomass uses oxygen to digest waste nutrients (BOD, etc.). After digestion, the waste particles are settled out, and separated from the water (these concentrated particles, along with the biomass are called "sludge"). The water continues on and is disinfected, aerated, and sent out to a river, lake, etc. The sludge is either de-watered and disposed of or recycled back (RAS -- Return Activated Sludge) to the aeration basin.

Competition Review: 1. Blowers/Diffusers - sub-surface grid of diffusers powered by a blower
2. Surface Aerators - shallow water limits, broadcasts odors, maintenance-intensive

Mazzei Advantages: Low Maintenance; No Fouling; No Blowers (quiet); Equipment is Land Based; Maintains Water Temperature; Energy Efficient (better than competition when water is deeper than 12' - 15').