**Section 604.510 Flocculation**

a) For purposes of this Section, flocculation is a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable or filterable particles through gentle stirring by hydraulic or mechanical means.

b) Basin Design − Inlet and outlet design must minimize short-circuiting and destruction of floc. Series compartments are recommended to further minimize short-circuiting and to provide decreasing mixing energy with time. Basins must be designed so that individual basins may be isolated without disrupting plant operation. A drain and/or pumps must be provided to handle dewatering and sludge removal.

c) Detention – The detention time must be adequate for floc formation. A detention time of at least 30 minutes with consideration to using tapered (i.e., diminishing velocity gradient) flocculation is recommended. The flow-through velocity should be not less than 0.5 nor greater than 1.5 feet per minute.

d) Equipment − Agitators must be driven by variable speed drives, with the peripheral speed of paddles ranging from 0.5 to 3.0 feet per second. External, non-submerged motors are preferred.

e) Other Designs − Baffling may be used to provide for flocculation in small plants only after Agency approval. The design should be such that the velocities and flows recommended in subsection (c) will be maintained.

f) Superstructure − A superstructure over the flocculation basins may be required.

g) Piping − Flocculation and sedimentation basins must be as close together as possible. The velocity of flocculated water through pipes or conduits to settling basins must be no less than 0.5 nor greater than 1.5 feet per second. Allowances must be made to minimize turbulence at bends and changes in direction.

h) Consideration should be given to the need for additional chemical feed in the future.