



Figure 5-10

Typical wastewater-treatment plant flow diagram incorporating flow equalization: (a) in-line equalization and (b) off-line equalization. Flow equalization can be applied after grit removal, after primary sedimentation, and after secondary treatment where advanced treatment is used.

equalization of (1) dry-weather flows to reduce peak flows and loads, (2) wet-weather flows in sanitary collection systems experiencing inflow and infiltration, or (3) combined stormwater and sanitary system flows.

The application of flow equalization in wastewater treatment is illustrated in the two flow diagrams given on Fig. 5-10. In the in-line arrangement (Fig. 5-10a), all of the flow passes through the equalization basin. This arrangement can be used to achieve a considerable amount of constituent concentration and flowrate damping. In the off-line arrangement (Fig. 5-10b), only the flow above some predetermined flow limit is diverted into the equalization basin. Although pumping requirements are minimized in this arrangement, the amount of constituent concentration damping is considerably reduced. Off-line equalization is sometimes used to capture the "first flush" from combined collection systems.

The principal benefits that are cited as deriving from application of flow equalization are: (1) biological treatment is enhanced, because shock loadings are eliminated or can be minimized, inhibiting substances can be diluted, and pH can be stabilized; (2) the effluent quality and thickening performance of secondary sedimentation tanks following biological treatment is improved through improved consistency in solids loading; (3) effluent filtration surface area requirements are reduced, filter performance