

DOSING CHAMBERS

Dosing chambers are tanks that store re-treated wastewater for periodic discharge to subsequent treatment units or disposal areas. Siphons are mounted in the tank to discharge the accumulated liquid.

Factors that must be considered in design of dosing chambers are (1) the dose volume, (2) the total dynamic head, (3) the desired flow rate and (4) the wastewater characteristics. Siphons are chosen on the basis of the desired flow rate, and their discharge invert elevations determined from the total dynamic head. Only wastewater free from settleable and floatable solids can be discharged by siphons.

A chamber employing siphons consists of only a tank and the siphon. No mechanical or electrical controls are necessary since the siphon procedure is automatic. Two siphons may be placed in a tank and automatically alternate, providing a simple method of dividing the wastewater flow between two treatment or disposal units.

The design of the dosing chamber is determined by the siphon selected and the head against which it must operate. The size of the siphon is determined by the average flow rate desired.

Siphon capacity is rated when discharging into the open atmosphere. Therefore, if the discharge is into a long pipe or pressure distribution network, the head losses must be calculated, and the invert at the siphon discharge set at that distance above the outlet. For high discharge rates, or where the discharge pipe is very long, the discharge pipe should be one nominal size larger than the siphon to facilitate air venting.

MAINTENANCE

Little routine maintenance of dosing chambers is required. The tank should be inspected periodically, and any solids that accumulate on the floor of the tank should be removed. When siphons are used, the water level in the tank should be noted over a period of time to determine if the siphon is operating properly. If the siphon is working properly, the water level will fluctuate from the bottom lip of the siphon bell to several inches above the bell. If the water elevation does not change despite water addition, the siphon is "dribbling", indicating that the vent tube on the bell requires cleaning. A dose counter will detect this "dribbling" condition by not properly incrementing and a filter screen can be used to help prevent the vent tube from plugging.