

EXERCISES CHAPTER 3

QUESTION 1

A wastewater treatment plant consists of primary treatment units followed by an activated sludge secondary system. The primary and secondary sludge are mixed, thickened in a gravity thickener, and sent to the digester. The wastewater, treatment plant, and sludge characteristics of interest are given in **Figure 1** below:

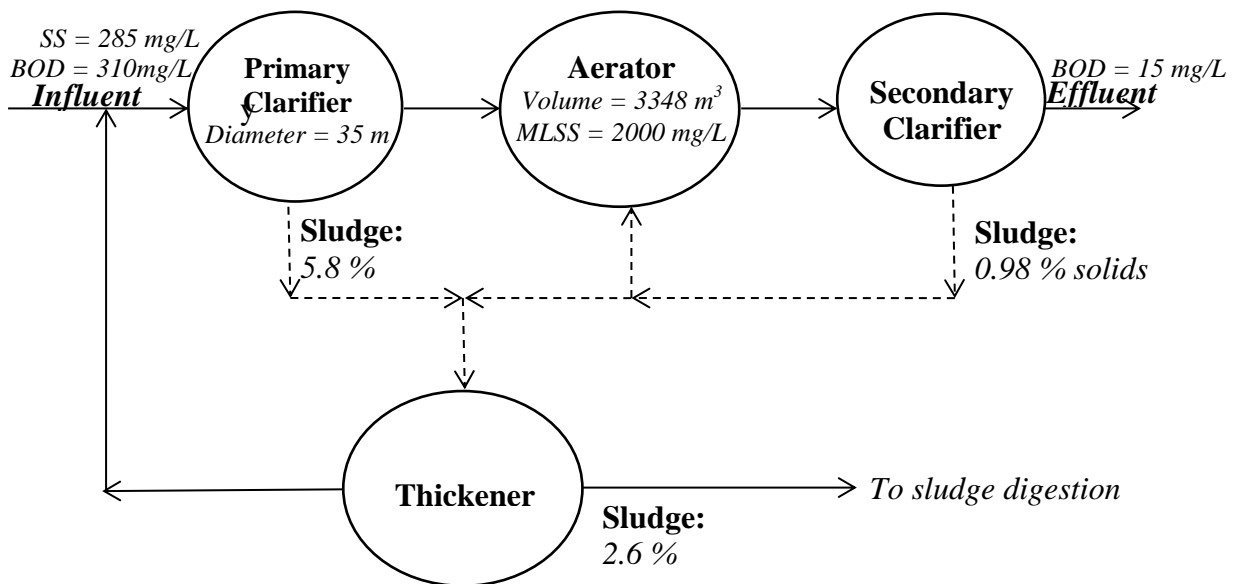


Figure 1: Wastewater treatment system.

With a wastewater flow rate of 15130 m³/d, calculate:

- The mass and volume loading to the thickener in kg/d and m³/d, respectively.
- The percent of volume reduction in the thickener.
- The volume of sludge returned (in m³/d) to the primary clarifier from the thickener.