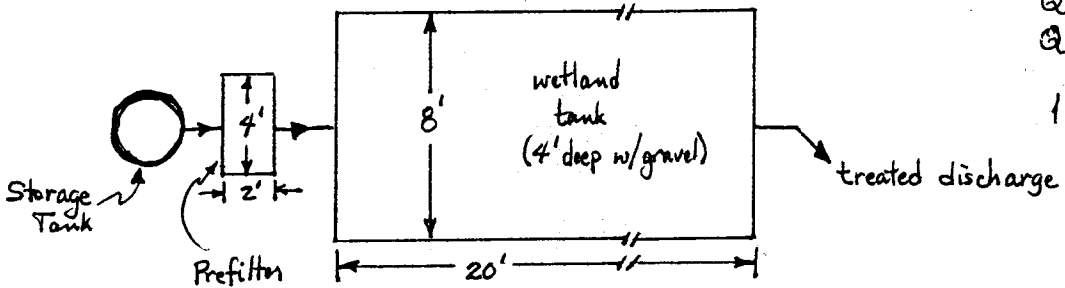


QUIZ I

1. A pilot-scale wetland tank that is 8' wide x 20' long by 4' deep and filled with pea gravel is used to treat winery wastewater. The winery wastewater enters the tank through a small 4' wide x 2' long by 2' deep prefilter so as to maintain the tank water level just above the gravel surface. Last month the average flowrate into the tank was 75 gpd, while the outflow of treated water was 8 gpd for a 3-day period. Given the average hourly pan evaporation rates shown in the graph below, estimate the leakage rate (gpd) from the wetland tank for the 3-day period.

Wetland Tank System - Plan View

1.



$Q_{in} = 75 \text{ gpd}$   
 $Q_{out} = 8 \text{ gpd}$   
 $1 \text{ gal} = 0.1337 \text{ ft}^3$

2. A water sampling port located 1/2 ft above the base of the wetland tank is connected to an oil manometer as shown below. Determine the pore-water pressure (psi) at the port location. What is the fluid density (gm/cm<sup>3</sup>) of the oil?

2.

Wetland tank system - End View

