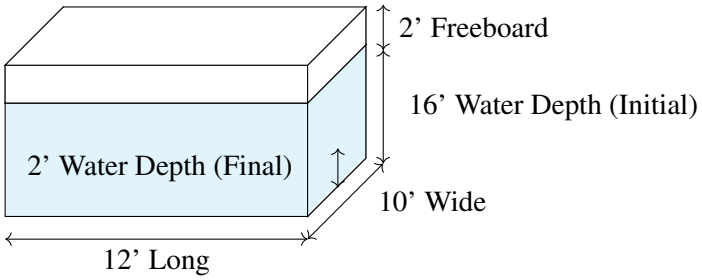
4.9 Example Problems

1. A sludge pump is set to pump 5 minutes each hour. It pumps at the rate of 35 gpm. How many gallons of sludge are pumped each day?
   Solution:
   $$\frac{35\ gal\ sludge}{\cancel{min}} * \frac{5\ \cancel{min}}{\cancel{hr}} * \frac{24\ \cancel{hr}}{day} = \boxed{\frac{4,200\ gallons}{day}}$$

2. A sludge pump operates 5 minutes each 15 minute interval. If the pump capacity is 60 gpm, how many gallons of sludge are pumped daily?
   $$\frac{60\ gal\ sludge}{\cancel{min}} * \frac{5\ \cancel{min}}{15\ \cancel{min}} * 1440\frac{\cancel{min}}{day} = \boxed{\frac{28,800\ gal\ sludge}{day}}$$

3. Given the tank is 10ft wide, 12 ft long and 18 ft deep tank including 2 ft of freeboard when filled to capacity. How much time (minutes) will be required to pump down this tank to a depth of 2 ft when the tank is at maximum capacity using a 600 GPM pump
   Solution:



   Volume to be pumped=$12\ \ ft * 10\ \ ft * (16-2)\ \ ft = 1,680 ft^3$

   $$\Longrightarrow \frac{1,680\cancel{ft^3} * 7.48\frac{\cancel{gal}}{\cancel{ft^3}}}{600\frac{\cancel{gal}}{min}} = \boxed{21 min}$$