2. Calculate the lbs of solids in the primary sludge if the sludge flow is 7500 gallons and the solids concentration is 4.5%.

   Solution

   Applying lbs formula:

   $lbs\ \ solids = \frac{7500\ \ MG}{1,000,000} * 4.5 * 10,000 * 8.34 = \boxed{2,815\ \ lbs\ \ solids}$

   Note:

   1) 7500 gallons was converted to MG by dividing by 1,000,000

   $7500\ \ gallons * \frac{1MG}{1,000,000\ \ gallons}$

   2) 4.5% was converted to mg/l by multiplying by 10,000 as 1%=10,000mg/l

4.4 Pounds Formula

Pounds formula is used for:

- Calculating the quantity in pounds of a particular wastewater constituent entering or leaving a wastewater treatment process
- Calculating the pounds of chemicals to be added

So if the concentration of a particular constituent (in mg/liter) and the volume or flow of wastewater is given, one can calculate the amount of that constituent in pounds using the following – Pounds Formula:

$$lbs\ \ \textbf{or}\ \ \frac{lbs}{day} = concentration(\frac{mg}{l}) * 8.34 * volume(MG)\ \ \textbf{or}\ \ flow(\frac{MG}{day}(MGD)$$

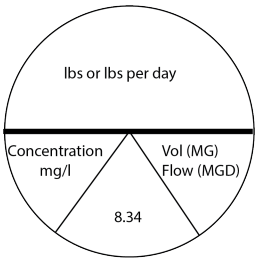

Figure 4.1: Pounds formula "nomograph"

There are three variables – (lbs, concentration and volume) and one constant (8.34) in the pounds formula. Knowing any of the two variables in the formula, one can calculate the third (unknown) variable by rearranging the equation.

4.4.1 Example Problems

1. If the influent wastewater flow is 5 MGD and the BOD concentration is 240 mg/l what is the daily BOD loading in lbs/day?

   Solution:

   $\frac{lbs\ \ BOD}{day} = 5MGD * 240mg/l * 8.34 = \boxed{\frac{10,000lbs}{day}}$