

4. Wastewater Math Review

4.1 Units

To measure any quantity or compare two physical quantities we need a universally accepted standard called Unit. The most common measurements involve measuring - length, weight and time. International System of Units (SI), the modern form of the metric system is the globally accepted standard. In the United States, it is customary to measure the physical quantities in English Engineering Units.

Fundamental Units		
Dimension	English Engineering Units	SI
time	second (s)	second (s)
length	foot (ft)	meter (m)
mass	pound mass (lb)	kilogram

The measurement of any physical quantity is expressed in terms of a number - which is the quantity and a specific unit. Thus, a measurement of 5000 ft is basically 5000 of the of length as measured in ft.

Using the fundamental physical measurements, mathematical calculations can be made to measure other physical quantities such as area (ft²), volume (ft³), velocity (ft/s), flow (ft³/s), density (lbs/ft³).

Depending on the what is being measured or quantified, there are appropriate and customary units of measure - for example - miles and inches for length, gallons and acre-ft for volume and milligrams and tons for mass.