Basic Waterworks Technology

ft^2 = square foot

ft^3 = cubic foot

lbs = pounds

head = vertical height of water

psi = pounds per square inch

mg/L = milligrams per liter

ppm = parts per million

ug/L = micrograms per liter

ppb = parts per billion

RPM = revolutions per minute

ng/L = nanograms per liter

ppt = parts per trillion

gmp= gallons per minute

gpd = gallons per day

cfs = cubic feet per second

mgd = million gallons per day

ccf = hundred cubic feet

hp = horsepower

Conversions

π = 3.14

1 cu ft = 7.48 gal

1 gal = 8.34 lbs

1 cfs = 448.8 gpm (449)

1 day = 1,440 min

1 acre = 43,560 sq ft

1 acre ft = 43,560 cu ft

1 acre ft = 325,829 gal

1 psi = 2.31 ft head

1 ft head = .433 psi

1 mile = 5,280 ft

1 ton = 2,000 lbs

1 ppm = 1 mg/L

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1 grain/gal = 17.12 mg/L

Water HP = $\frac{(TDH)(GPM)}{3960}$

1 hp = 746 watts = 0.746 kw = 3960 gal/min/ft

Metrics

1 gallon (gal) = 3.785 liters (L)

1 inch = 2.54 centimeters (cm)

1 foot (ft) = .305 meters (m)

1 yard (yd) = .914 meters

1 mile (mi) = 1.609 kilometers (km)

Residual = Dose – Demand

Formulas

Perimeter = L1 + L2 + L3 + L4 + ……

Circumference = π x diameter in feet

Area of a Rectangle = L x H

Area of a Triangle = (Base x H) / 2

Area of a Circle = 0.785 x dia^2 (in feet)

Volume of a Rectangle = L x H x W = ft^3 x 7.48 = gal

Volume of a Cylinder = dia^3 x 0.785 x H = ft^3 x 7.48 = gal

Volume of a Cylinder under 1 ft = $(\frac{(dia^2)(0.785)}{144})(L)$ = ft^3 x 7.48 = gal

Feet of Head (ft hd) x .433 = PSI

psi x 2.31 = feet of head

Q = A x V

Q is flow, A is Area, V is velocity

Detention time = $\frac{Volume\ of\ tank\ (in\ gal)}{Flow\ Rate\ (in\ gal\backslash time)}$

Average = $\frac{Sum\ of\ all\ terms}{Number\ of\ terms}$

Percent = $\frac{Part}{Whole}$ x 100

Celsius = Fahrenheit - 32 / 1.8

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