

Important Estimating the Design Sewage Discharge Formulas PDF



Formulas Examples with Units

List of 15 Important Estimating the Design Sewage Discharge Formulas

1) Average Daily Flow given Maximum Daily Flow for Areas of Moderate Sizes Formula

Formula

$$Q_{av} = \left(\frac{Q_d}{2} \right)$$

Example with Units

$$6 \text{ m}^3/\text{s} = \left(\frac{12 \text{ m}^3/\text{s}}{2} \right)$$

Evaluate Formula 

2) Average Daily Flow given Maximum Hourly Flow Formula

Formula

$$Q_{av} = \left(\frac{Q_h}{3} \right)$$

Example with Units

$$6 \text{ m}^3/\text{s} = \left(\frac{18 \text{ m}^3/\text{s}}{3} \right)$$

Evaluate Formula 

3) Average Daily Flow given Minimum Daily Flow for Areas of Moderate Sizes Formula

Formula

$$Q_{av} = \left(\frac{3}{2} \right) \cdot Q_{\min}$$

Example with Units

$$6 \text{ m}^3/\text{s} = \left(\frac{3}{2} \right) \cdot 4 \text{ m}^3/\text{s}$$

Evaluate Formula 

4) Average Daily Sewage Flow given Minimum Hourly Flow Formula

Formula

$$Q_{av} = 3 \cdot Q_{\min h}$$

Example with Units

$$6 \text{ m}^3/\text{s} = 3 \cdot 2 \text{ m}^3/\text{s}$$

Evaluate Formula 

5) Average Daily Sewage Flow given Peak Sewage Flow Formula

Formula

$$Q_{av} = \frac{Q_{\max}}{\frac{18 + \sqrt{P}}{4 + \sqrt{P}}}$$

Example with Units

$$6 \text{ m}^3/\text{s} = \frac{11.17 \text{ m}^3/\text{s}}{\frac{18 + \sqrt{150}}{4 + \sqrt{150}}}$$

Evaluate Formula 

6) Maximum Daily Flow for Areas of Moderate Sizes Formula

Formula

$$Q_d = (2 \cdot Q_{av})$$

Example with Units

$$12 \text{ m}^3/\text{s} = (2 \cdot 6 \text{ m}^3/\text{s})$$

Evaluate Formula 



7) Maximum Daily Flow given Maximum Hourly Flow Formula

Formula

$$Q_d = \frac{Q_h}{1.5}$$

Example with Units

$$12 \text{ m}^3/\text{s} = \frac{18 \text{ m}^3/\text{s}}{1.5}$$

Evaluate Formula 

8) Maximum Hourly Flow given Average Daily Flow Formula

Formula

$$Q_h = (3 \cdot Q_{av})$$

Example with Units

$$18 \text{ m}^3/\text{s} = (3 \cdot 6 \text{ m}^3/\text{s})$$

Evaluate Formula 

9) Maximum Hourly Flow given Maximum Daily Flow for Areas of Moderate Sizes Formula

Formula

$$Q_h = (1.5 \cdot Q_d)$$

Example with Units

$$18 \text{ m}^3/\text{s} = (1.5 \cdot 12 \text{ m}^3/\text{s})$$

Evaluate Formula 

10) Minimum Daily Flow for Areas of Moderate Sizes Formula

Formula

$$Q_{\min} = \left(\frac{2}{3}\right) \cdot Q_{av}$$

Example with Units

$$4 \text{ m}^3/\text{s} = \left(\frac{2}{3}\right) \cdot 6 \text{ m}^3/\text{s}$$

Evaluate Formula 

11) Minimum Daily Sewage Flow given Minimum Hourly Flow Formula

Formula

$$Q_{\min} = (2 \cdot Q_{\min h})$$

Example with Units

$$4 \text{ m}^3/\text{s} = (2 \cdot 2 \text{ m}^3/\text{s})$$

Evaluate Formula 

12) Minimum Hourly Flow given Minimum Daily Flow for Areas of Moderate Sizes Formula

Formula

$$Q_{\min h} = (0.5 \cdot Q_{\min})$$

Example with Units

$$2 \text{ m}^3/\text{s} = (0.5 \cdot 4 \text{ m}^3/\text{s})$$

Evaluate Formula 

13) Minimum Hourly Sewage Flow given Average Daily Flow Formula

Formula

$$Q_{\min h} = \left(\frac{1}{3}\right) \cdot Q_{av}$$

Example with Units

$$2 \text{ m}^3/\text{s} = \left(\frac{1}{3}\right) \cdot 6 \text{ m}^3/\text{s}$$

Evaluate Formula 

14) Peak Sewage Flow given Population in Thousands Formula

Formula

$$Q_{\max} = Q_{av} \cdot \left(\frac{18 + \sqrt{P}}{4 + \sqrt{P}} \right)$$

Example with Units

$$11.17 \text{ m}^3/\text{s} = 6 \text{ m}^3/\text{s} \cdot \left(\frac{18 + \sqrt{150}}{4 + \sqrt{150}} \right)$$

Evaluate Formula 



15) Population in Thousands given Peak Sewage Flow Formula

Formula

$$P = \left(\frac{18 \cdot Q_{av} - 4 \cdot Q_{max}}{Q_{max} - Q_{av}} \right)^2$$

Example with Units

$$150.0033 = \left(\frac{18 \cdot 6 \text{ m}^3/\text{s} - 4 \cdot 11.17 \text{ m}^3/\text{s}}{11.17 \text{ m}^3/\text{s} - 6 \text{ m}^3/\text{s}} \right)^2$$

Evaluate Formula 



Variables used in list of Estimating the Design Sewage Discharge Formulas above

- **P** Population in Thousands
- **Q_{av}** Average Daily Flow (Cubic Meter per Second)
- **Q_d** Maximum Daily Flow (Cubic Meter per Second)
- **Q_h** Maximum Hourly Flow (Cubic Meter per Second)
- **Q_{max}** Peak Sewage Flow (Cubic Meter per Second)
- **Q_{min}** Minimum Daily Flow (Cubic Meter per Second)
- **Q_{minh}** Minimum Hourly Flow (Cubic Meter per Second)

Constants, Functions, Measurements used in list of Estimating the Design Sewage Discharge Formulas above

- **Functions:** **sqrt**, sqrt(Number)
A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.
- **Measurement:** **Volumetric Flow Rate** in Cubic Meter per Second (m³/s)
Volumetric Flow Rate Unit Conversion 



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