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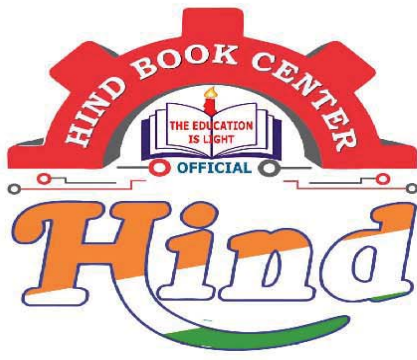
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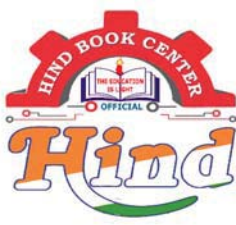
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ENVIRONMENTAL
ENGG.
VOL-I

By:- Jaspal Sir

Topic	Page No.
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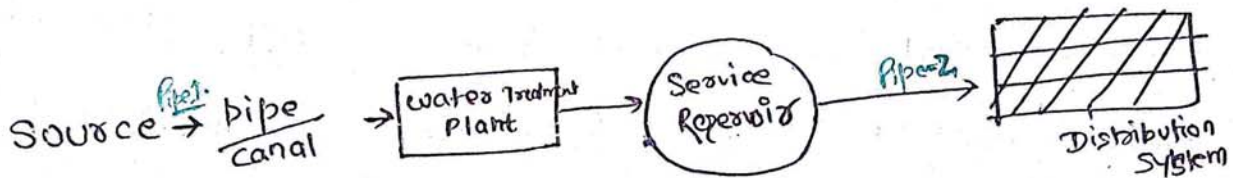
Water Demand

Raw water: The water which is derived from nature.

river-sedimentation.

rain-aeration.

ground water-filtration



- (i) Water Demand
- (ii) Source of Water
- ~~***~~ (iii) Quality of Water
- ~~***~~ (iv) Treatment of Water
- (v) Pipes.
- (vi) Service reservoir
- (vii) Distribution System.

Water Demand/draft:

(i) Annual draft = V

(ii) Annual avg. daily draft = $\frac{V}{365}$

(iii) Annual avg. per capita daily draft = $\frac{V}{365 \cdot P} = \frac{\text{present population.}}{365 \cdot P}$

- ✓ Discharge of valves.
- Total Demand $Q/c/d$
- (i) Domestic Water demand = 135-225 (200) (50-60)% flushing system.
 - (ii) Industrial water demand = 50-450
 - (iii) Institution water demand = 20-50 $Q/c/d$
 - (iv) Water for public use = (5-6)% of Total demand = (10-20)
 - (v) Fire demand = 1 or empirical. IS code = $100\sqrt{P}$ (K.L) ← (K.L)

Volume me aaayega - India

Kuchling method = $Q = 3182\sqrt{P}$ Q/min $P =$ Population in thousand

Freeman method = $Q = 1136\left(\frac{P}{10} + 10\right)$ Q/min $P =$ Pop. in thousand

National Board of fire under stress method = $Q = 4637\sqrt{P}(1 - 0.01\sqrt{P})$ Q/min

Boston = $Q = 5663\sqrt{P}$ Q/min

~~Losses~~
 (vi) Losses and theft - (10-15)% of total demand.

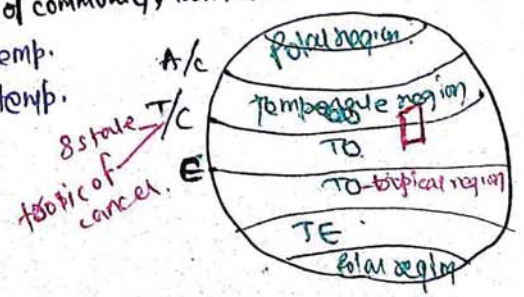
Total demand = 250-350 (335) $Q/c/d$

Factors Influencing demand of water: -

Demand remain constant but consumption may vary

- (i) Size of the city.
- (ii) Extent of industrialisation.
- (iii) Type of sewerage system. (flush system)
- (iv) Standard of living/gentry.
- (v) Climatic condition.

(depend on location of community, latitude
 higher latitude - less temp.
 lower latitude - high temp.)

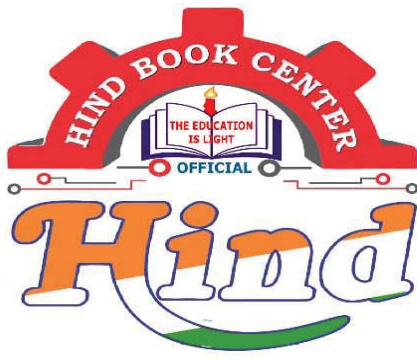


(vi) Cost of water: *

(vii) Quality of water

(viii) Pressure in distribution system.

(ix) Type of distribution system. (Continuous and ~~intermittent~~ intermittent)



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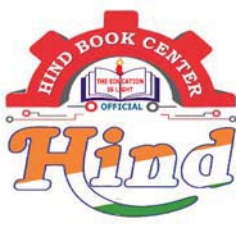
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ENVIRONMENT

ENGG.

VOL-II

(Waste Water Engg.)

By :- Jaspal Singh

Ashish Raj Gupta

ENVIRONMENT

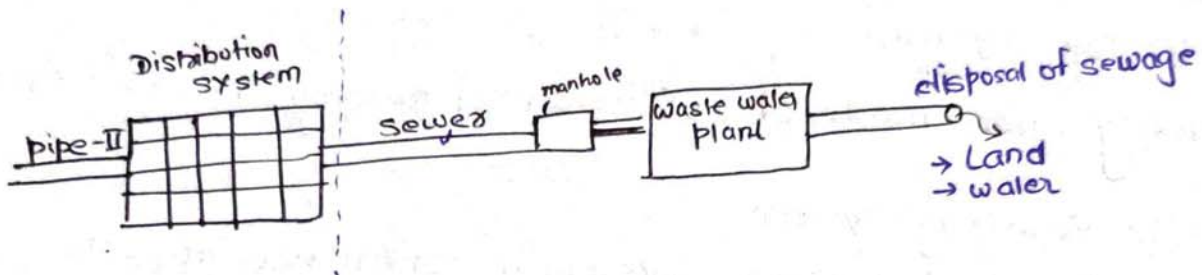
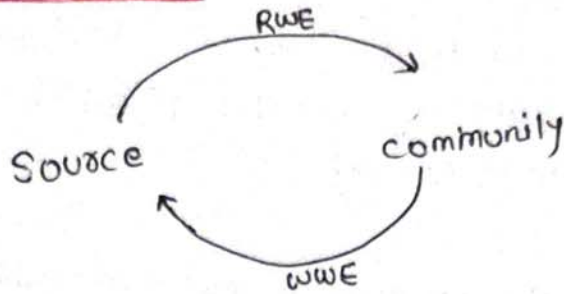
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(1991-1992)

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Waste-Water Engineering.

Quality of Wastewater



Sewage/waste water: It is a mixture of water and liquid waste generated due to different activities in the community.

→ Depending upon mode of generation it is further classified as:-

(i) Domestic Sewage: It is a mixture and liquid waste generated due to domestic activity.

eg.

(ii) Industrial sewage: If it is produced after industrial activity it is termed as industrial sewage.

(iii) Drainage or runoff: It is a mixture of water and liquid waste produced after heavy rainfall.

Note: → Kitchen and bathroom waste termed as "Sullage".

→ Domestic sewage and Industrial sewage taken together is called "Sanitary Sewage".