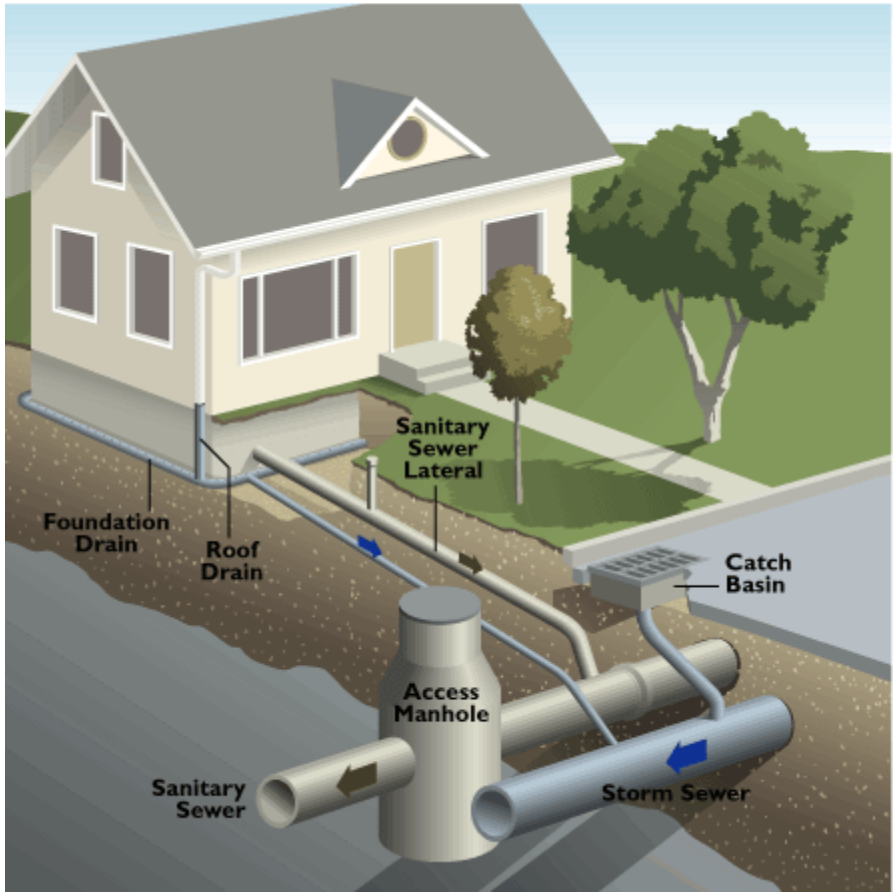
Wastewater Quantity

Sewage

Liquid discharge from domestic sources



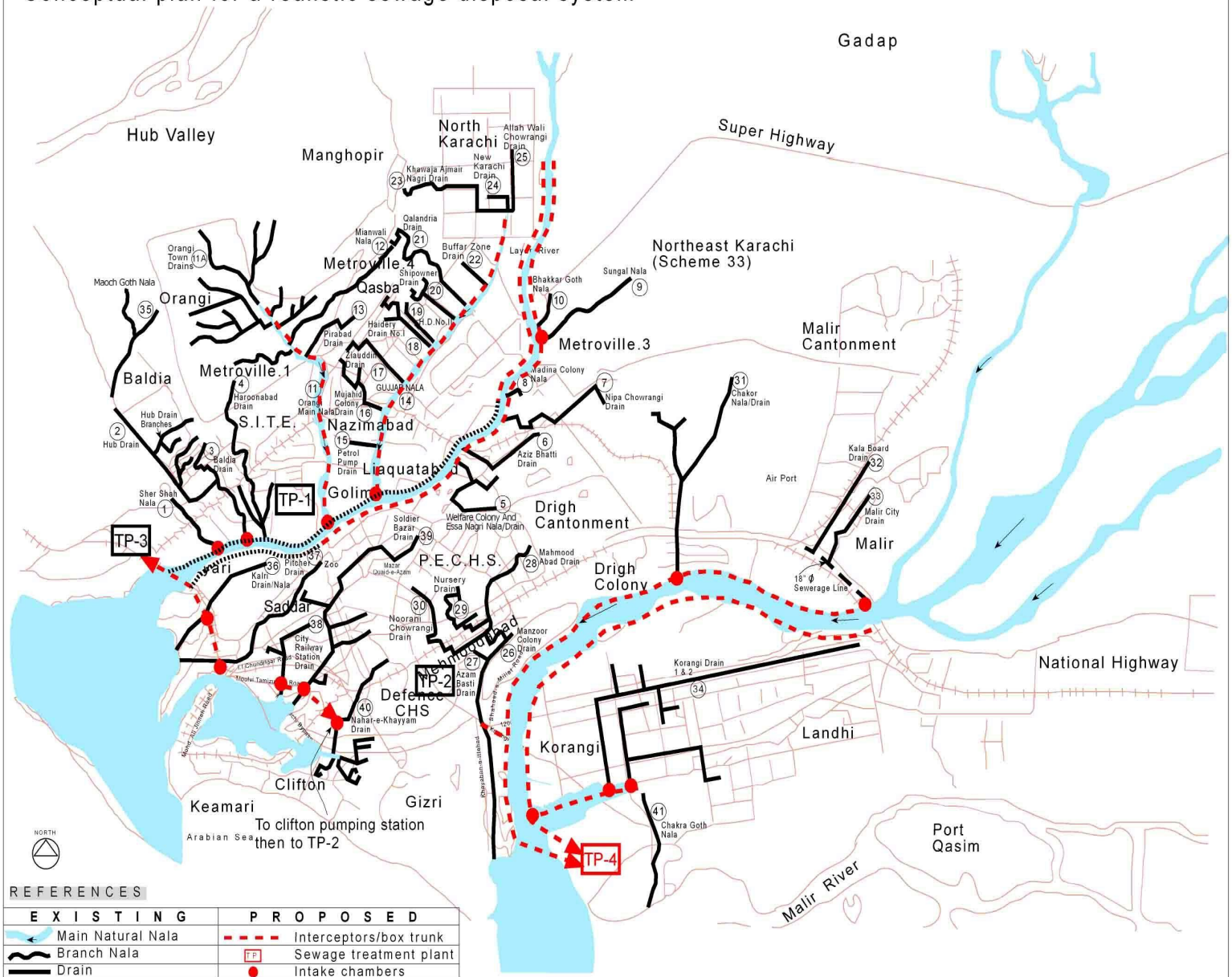
Sewer

Pipes or channels to convey sewage to sewage treatment plant


Sewage Treatment Plant (STP)
Plant designed to treat sewage

Karachi map showing the documented natural nalas & drain (which are the main disposals for sewage and rain water) and the integration of these with the mains & STPs.

Conceptual plan for a realistic sewage disposal system



REFERENCES

EXISTING	PROPOSED
Main Natural Nala	Interceptors/box trunk
Branch Nala	Sewage treatment plant
Drain	Intake chambers
Drain/Nala's Number	
Interceptors/box trunk	
Sewage treatment plant	

S.NO.	NAME OF DRAIN/NALA	LENGTH (rft)
	Nalas/drains no 1 to 25 dispose into the Lyari Nadi and then into the sea.	
1.	Sher Shah Nala	6603
2.	Hub Drain + Branches	36438
3.	Baldia Nala/Drain	15715
4.	Haroonabad Drain	25980
5.	Welfare Colony And Essa Nagri Nala/Drain	16671
6.	Aziz Bhatti Drain	13856
7.	NIPA Chowrangi Drain	15588
8.	Madina Colony Nala	1000
9.	Sungal Nala/Drain	8660
10.	Bhakkar Goth Nala	3565
11.	ORANGI NALA MAIN (Orangi to Lyari River)	38250
11A.	Orangi Town Drain/Nala 16 Branches	94234
12.	Mianwali Colony Nala	11256
13.	Pirabad/Muslimabad Drain	5550
14.	GUJJAR NALA	40000
15.	Petrol Pump Drain	3350
16.	Mujahid Colony Drain	12500
17.	Ziauddin Hospital Drain	7000
18.	Haidary Drain - I	8000
19.	Haidary Drain - II	7600
20.	Shipowner College Drain	6570
21.	Qalandaria Drain	17200
22.	Buffar Zone Drain	1500
23.	Khawaja Ajmair Nagri Drain	19000
24.	New Karachi Drain	2500
25.	Allah Wali Chowrangi Drain	10500
	Nalas/drains no 26 to 34 dispose into the Malir Nadi and then into the sea.	
26.	Manzoor Colony Drain	11700
27.	Azam Basti Drain	1750
28.	Mahmoodabad Drain Main	13480
29.	Nursery Drain (Branch M.D.)	6975
30.	Noorani Chowrangi Drain (Branch M.D.)	15950
31.	Chakor Nala/Drain	23080
32.	Kala Board Drain	9310
33.	Malir City Drain	9959
34.	Korangi Drain 1 & 2	48496
	Nalas/drains no 35 to 41 dispose into the back water and then into the sea.	
35.	Maoch Goth Nala	23500
36.	Kalri Drain / Nala	94234
37.	Pitcher Drain	12124
38.	City Railway Station Drain	10825
39.	Solder Bazar Drain + 4 Branches	40000
40.	Nahar-e-Khayyam Drain	5629
41.	Chakra Goth Nala	7000

Dated: September 2006

Population Equivalent (PE)

Calculate no. of population to serve


5
PE per UNIT

3 PE

per 100 m^2 of FLOOR AREA

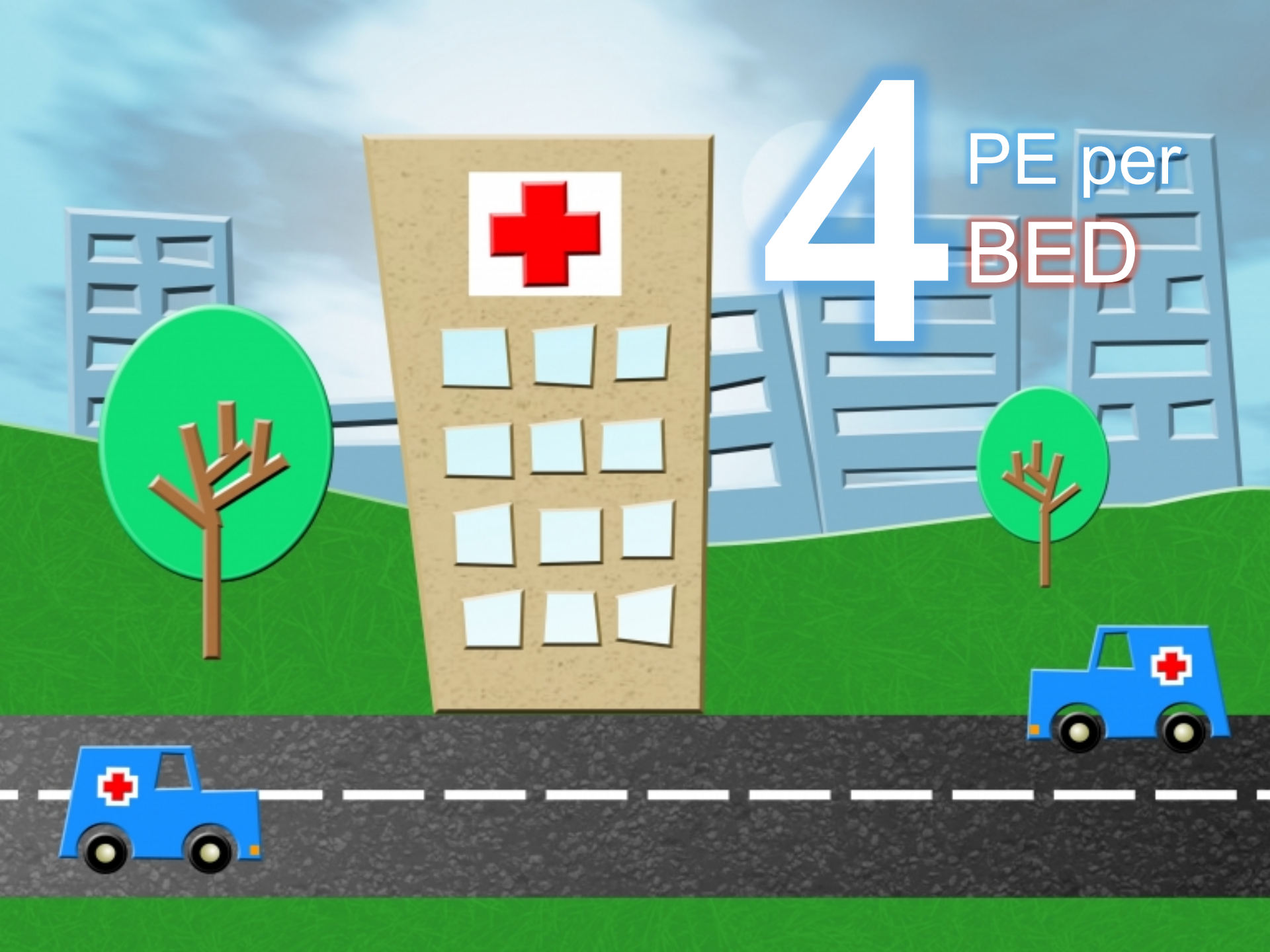
0.2

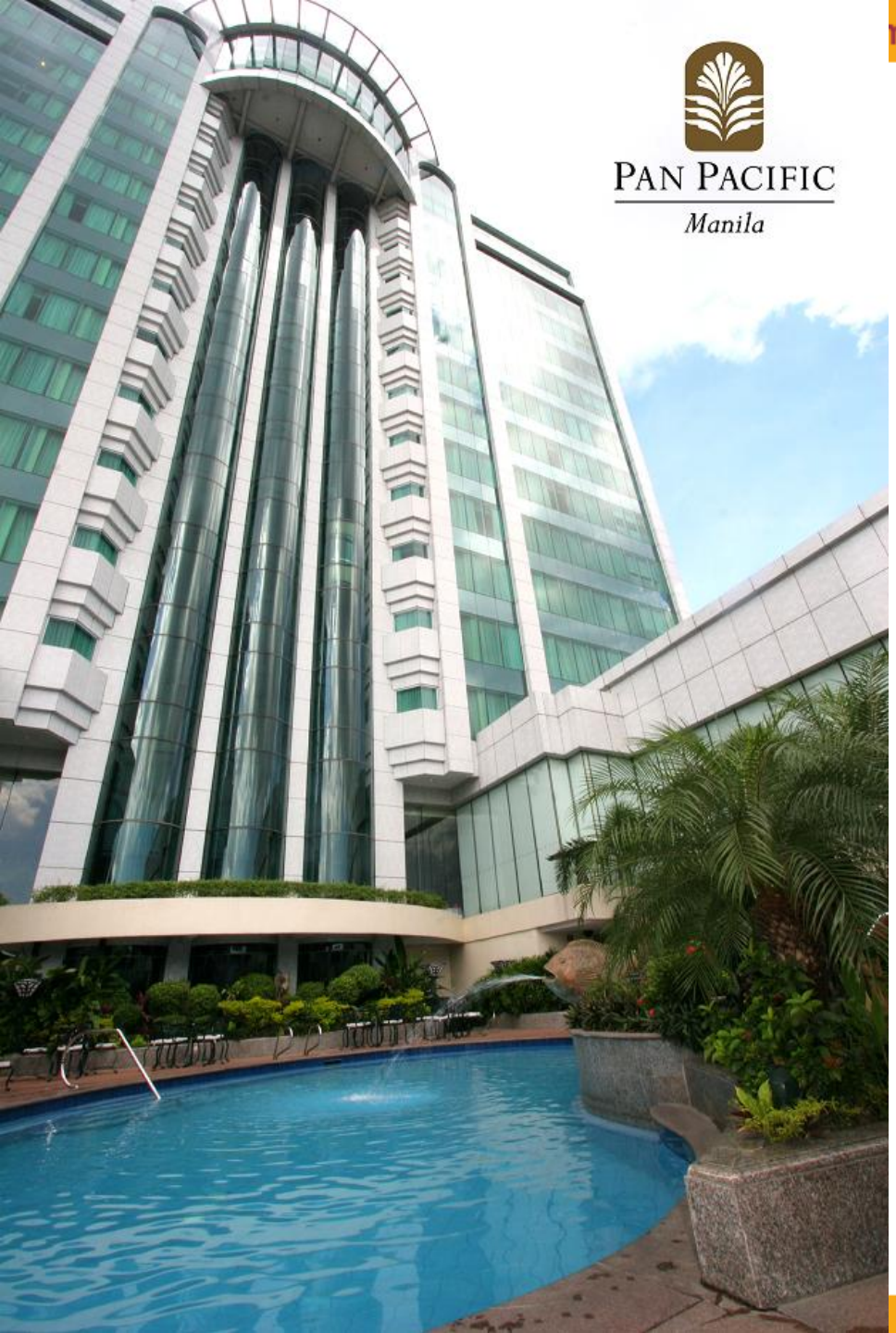
PE per STUDENT

Non-residential school

1 PE per STUDENT

Residential school


4
PE per
BED



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UTM

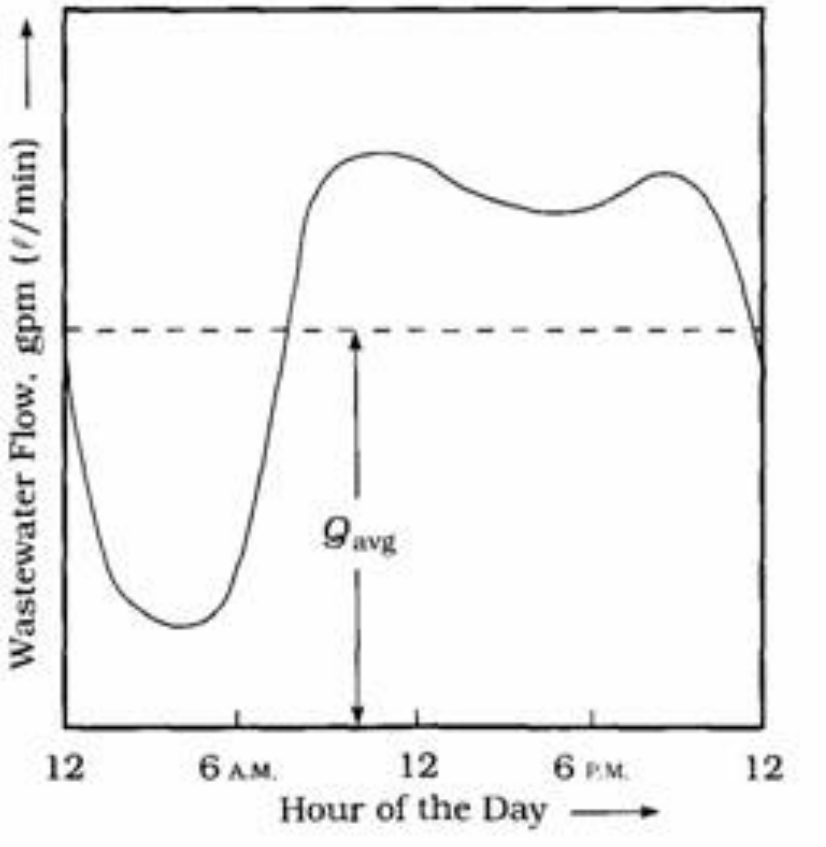
4 PE
per ROOM


0.3
PE per
STAFF

0.5 PE per PERSON

Type of Premise	PE
Residential	5 per unit
Commercial e.g. recreational centers, theatres, restaurants etc.	3 per 100 m^2 of floor area
Schools : Non-residential Residential	0.2 per student 1 per student
Hospital	4 per bed
Hotels (with dining and laundry facilities)	4 per room
Factories (domestic)	0.3 per staff
Mosque/Prayer hall	0.2 per person

Flow rate (L/min)



Varies hourly, daily and weekly

Peak flow occurs at maximum flow for the day

Design flow rate

225

Litres/capita/day (lpcd)

Average daily flow = Design flow rate x PE

$$\text{Peak Flow Factor (PFF)} = 4.7\ p^{-0.11}$$

where p is population equivalent (PE) in thousand

Peak Flow = PFF x average daily flow