Slide#13

$$BOD = \frac{50\ g/capita/d}{60\ L/capita/d} \times 10^3\ mg/g = 833\ mg/L$$

$$TSS = \frac{62\ g/capita/d}{60\ L/capita/d} \times 10^3\ mg/g = 1033\ mg/L$$

$$NH_3 - N = \frac{4\ g/capita/d}{60\ L/capita/d} \times 10^3\ mg/g = 66.7\ mg/L$$

Note the difference between the U.S. value (BOD 199-399 mg/L; TSS 195-391 mg/L; NH_3-N 20-40 mg/L) and the calculated Gaza Strip value..

Per capita waste discharge cannot be substantially reduced under water-shortage conditions, while per capita water usage can be quite smaller.

Therefore, waste concentration is generally higher at water-shortage conditions.

Slide#30

$$Average\ daily\ sewage\ flowrate = 250{,}000\ capita\ \times 250\ L/capita/d \times 10^{-3}\ m^3/L$$

$$= 6.25 \times 10^4\ m^3/d$$

$$Maximum\ hourly\ sewage\ flowrate$$

$$= Average\ daily\ sewage\ flowrate \times PF_{season} \times PF_{day}$$

$$= 6.25 \times 10^4\ m^3/d \times 1.4 \times 1.6$$

$$= 1.4 \times 10^5\ m^3/d$$

$$BOD\ mass\ loading = 250{,}000\ capita\ \times 85\ g/capita/d \times 10^{-3}\ kg/g$$

$$= 2.13 \times 10^4\ kg/d$$

$$BOD\ concentration = BOD\ mass\ loading/Average\ daily\ sewage\ flowrate$$

$$= (2.13 \times 10^4\ kg/d)/(6.25 \times 10^4\ m^3/d\ )$$

$$= 0.34\ kg/m^3 = 340\ mg/L$$