

**TABLE 4.1** *Average Annual Water Demands of Selected Cities and Districts in the United States*

CITY OR DISTRICT	AVERAGE ANNUAL WATER DEMAND	
	gpd/cap	lpd/cap
Baltimore, Md.	160	606
Berkeley, Calif.	76	288
Boston, Mass.	145	549
Grand Rapids, Mich.	178	674
Greenville County, S.C.	110	416
Hagerstown, Md.	100	378
Jefferson County, Ala.	102	386
Johnson County, Kan.	70	265
Lancaster County, Neb.	167	632
Las Vegas, Nev.	410	1551
Little Rock, Ark.	50	189
Los Angeles, Calif.	185	700
Peoria, Ill.	90	341
Memphis, Tenn.	125	473
Orlando, Fla.	150	568
Rapid City, S.D.	122	462
Santa Monica, Calif.	137	519
Shreveport, La.	125	473
Wyoming, Mich.	150	568
Average Values	153	580

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**TABLE 4.2** *Water Usage for the North American Continent*

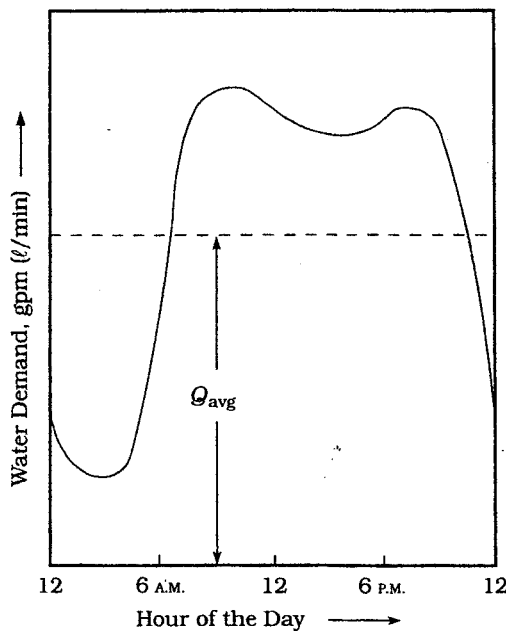
CLASS OF USAGE	QUANTITY, gpd/cap		QUANTITY, lpd/cap	
	Range	Average	Range	Average
Domestic	15-70	50	60-265	189
Commercial and industrial	10-100	65	40-380	246
Public	5-20	10	20-75	38
Leakage and waste	10-40	25	40-150	95
	40-230	150	160-870	568

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**TABLE 4.3** *Water Usage for Selected Industries*

PRODUCT	UNIT OF PRODUCTION	TYPICAL WATER USE gal/unit	TYPICAL WATER USE ℓ/unit
Beet sugar	Ton of beets	25,000	95,000
Beverage alcohol	Gallon	80	300
Beer	Barrel	470	1,800
Meat	2000 lb. live weight	5,000	19,000
Canned vegetables	Case	250	950
Cotton goods	Ton	48,000	182,000
Woolens	Ton	140,000	585,000
Leather (tanned)	Ton	16,000	61,000
Paper	Ton	39,000	148,000
Paper pulp	Ton	110,000	416,000
Oil refining	Barrel of crude oil	770	29,000
Steel	Ton	35,000	132,000
Electricity, steam	KW-hr	80	300

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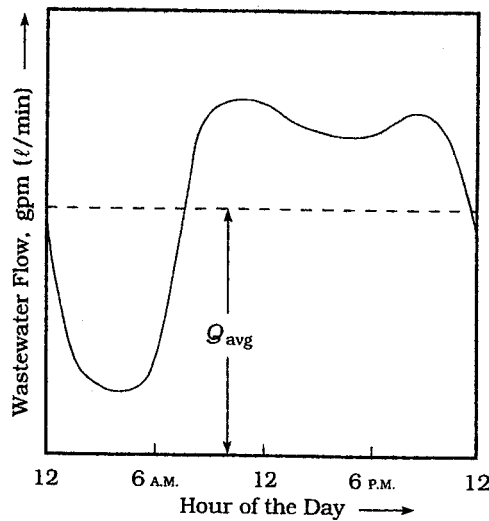
**FIGURE 4.4** *The Daily Variation in Water Demand for a Typical City*

**TABLE 5.1** Average Annual Wastewater Flows of Selected Cities and Districts in the United States

CITY OR DISTRICT	AVERAGE ANNUAL WASTEWATER FLOW		PERCENTAGE OF THE WATER DEMAND
	gal/cap-d	ℓ/cap-d	
Baltimore, Md.	100	379	63
Berkeley, Calif.	68	257	89
Boston, Mass.	140	530	97
Grand Rapids, Mich.	190	719	84
Greenville, S.C.	150	568	73
Hagerstown, Md.	100	379	100
Jefferson County, Ala.	100	379	98
Johnson County, Kan.	60	227	86
Lancaster County, Neb.	92	348	55
Las Vegas, Nev.	209	791	51
Little Rock, Ark.	50	189	100
Los Angeles, Calif.	85	322	46
Peoria, Ill.	75	284	83
Memphis, Tenn.	100	378	80
Orlando, Fla.	70	265	47
Rapid City, S.D.	121	458	99
Santa Monica, Calif.	92	348	67
Wyoming, Mich.	82	310	56
Averages	100	396	76

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SOURCE: Reynolds & Richards, 1996



**FIGURE 5.2** The Daily Variation in Wastewater Flow for a Typical City