

*Lesson 20: Reservoir
Sedimentation*

53:171

Water Resources Engineering

Reservoir Sedimentation Process

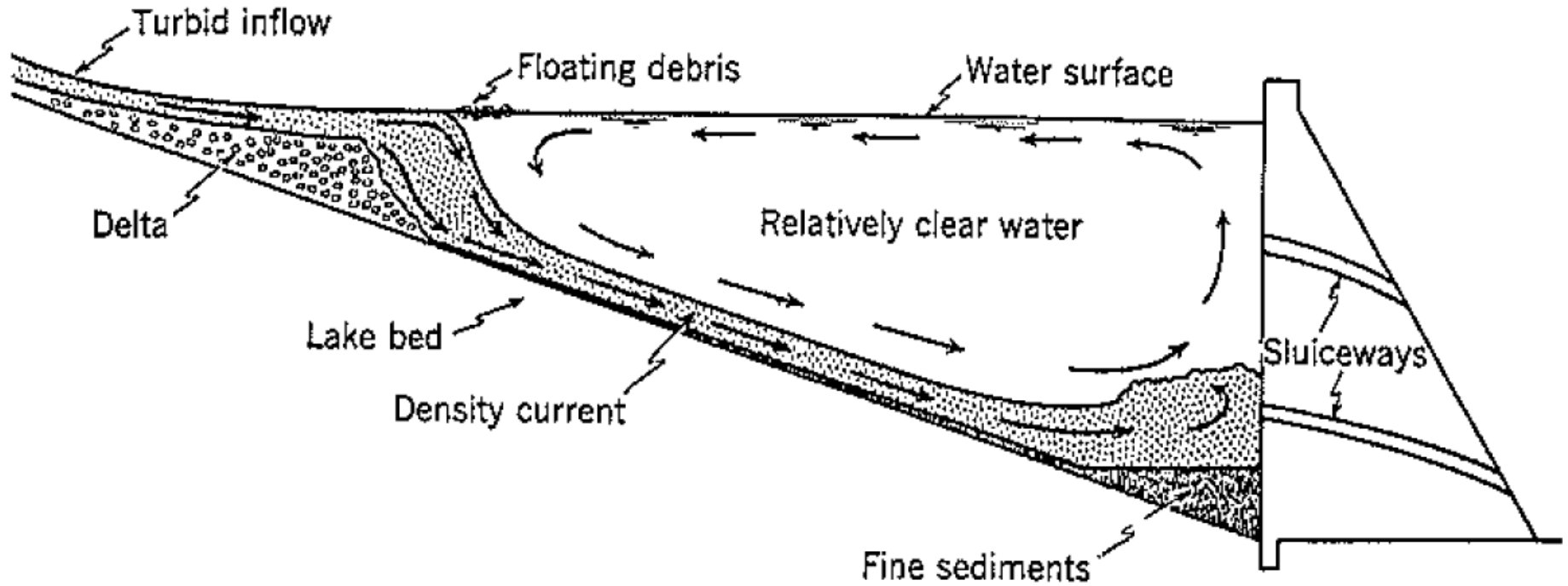


FIGURE 7.9

Schematic drawing of the sediment accumulation in a typical reservoir.

Reservoir Delta Formation

Lake Mills
Glines Canyon Dam



Delta

Sedimentation Example

San
Clemente
Dam,
California



Dam Removal



Sturgeon Dam,
Michigan

Phase I Removal



The Sediment Left Behind

Phase I Removal



Sturgeon Dam,
Michigan



Suspended sediment discharge in metric tons per day

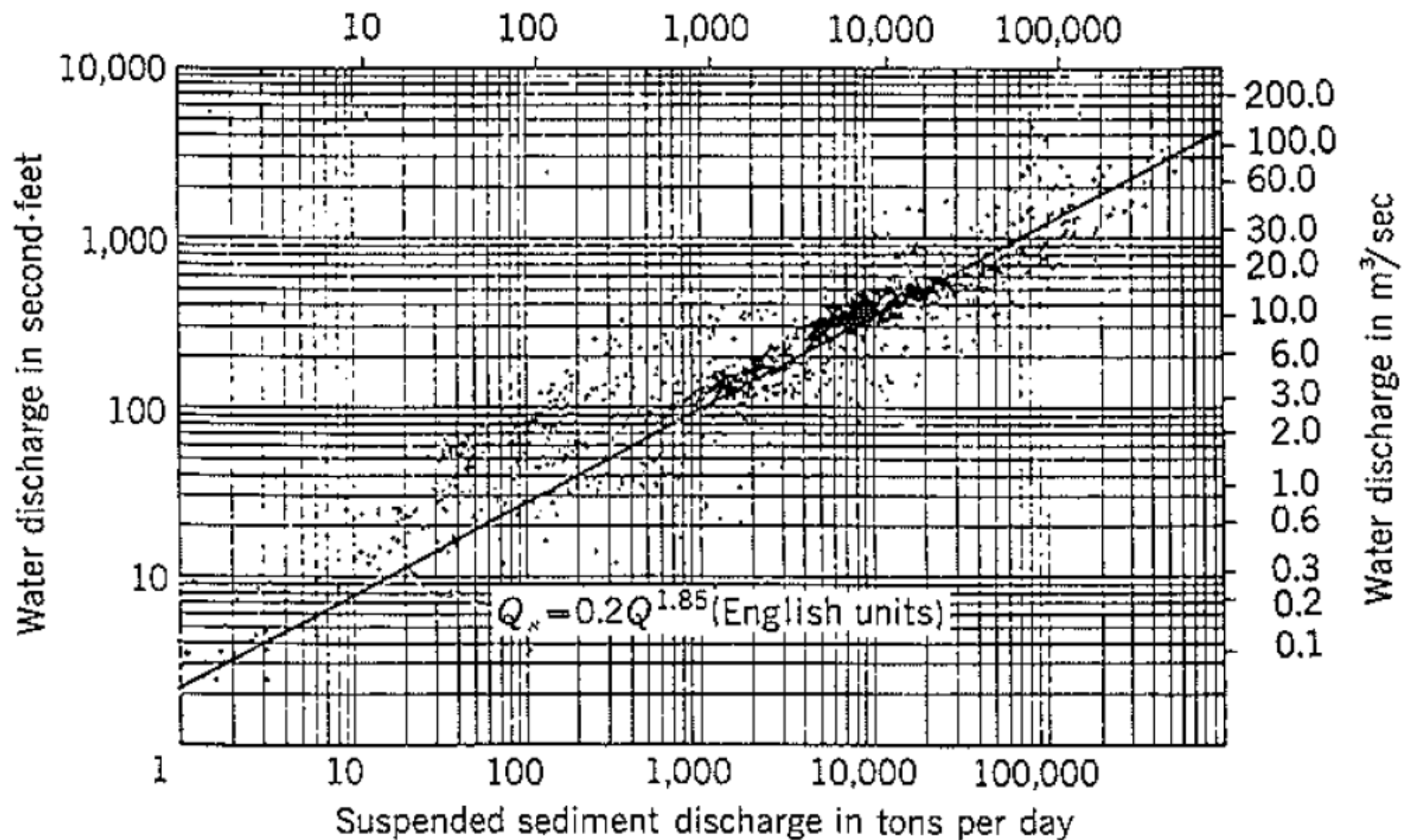


FIGURE 7.11

TABLE 7.1

Rates of sediment accumulation in selected reservoirs in the United States*

Name and location	English units				Metric units		
	Net drainage area, mi ²	Original capacity, 1000 acre-ft	Sediment production rate, tons/mi ² yr	Annual loss of storage, %	Net drainage area, km ²	Original capacity, 10 ⁶ m ³	Sediment production rate, t/km ² y
Schoharie (Prattville, N.Y.)	312	63.8	217	0.07	800	78.5	77
Roxboro (Roxboro, N.C.)	8	0.5	447	0.69	19	0.6	159
Norris (Norris, Tenn.)	2,823	2,050.0	450	0.05	7,238	2,520.0	160
Bloomington (Bloomington, Ill.)	60	6.7	514	0.50	155	8.2	182
Crab Orchard (Carbondale, Ill.)	160	67.3	1980	0.45	410	82.7	701
Abilene (Abilene, Tex.)	98	10.3	274	0.19	250	12.7	97
Dallas (Denton, Tex.)	1,157	181.0	1300	0.72	2,967	222.0	463
Mission (Horton, Kan.)	8	1.8	3870	1.20	20	2.3	1380
Morena (San Diego, Calif.)	109	66.8	2440	0.31	279	82.1	868
Roosevelt (Globe, Ariz.)	5,760	1,520.0	1110	0.25	14,770	1,870.0	395
Mead (Boulder City, Nev.)	167,600	31,250.0	877	0.33	404,100	38,440.0	311
Arrowrock (Boise, Idaho)	2,170	279.0	173	0.09	5,560	343.0	61

* Extracted from Louis C. Gottschalk, Reservoir Sedimentation, chap. 17-I of Ven Te Chow (Ed.), "Handbook of Applied Hydrology," pp. 17-28 to 17-29, McGraw-Hill, New York, 1964.

Trap efficiency and Brune Curve

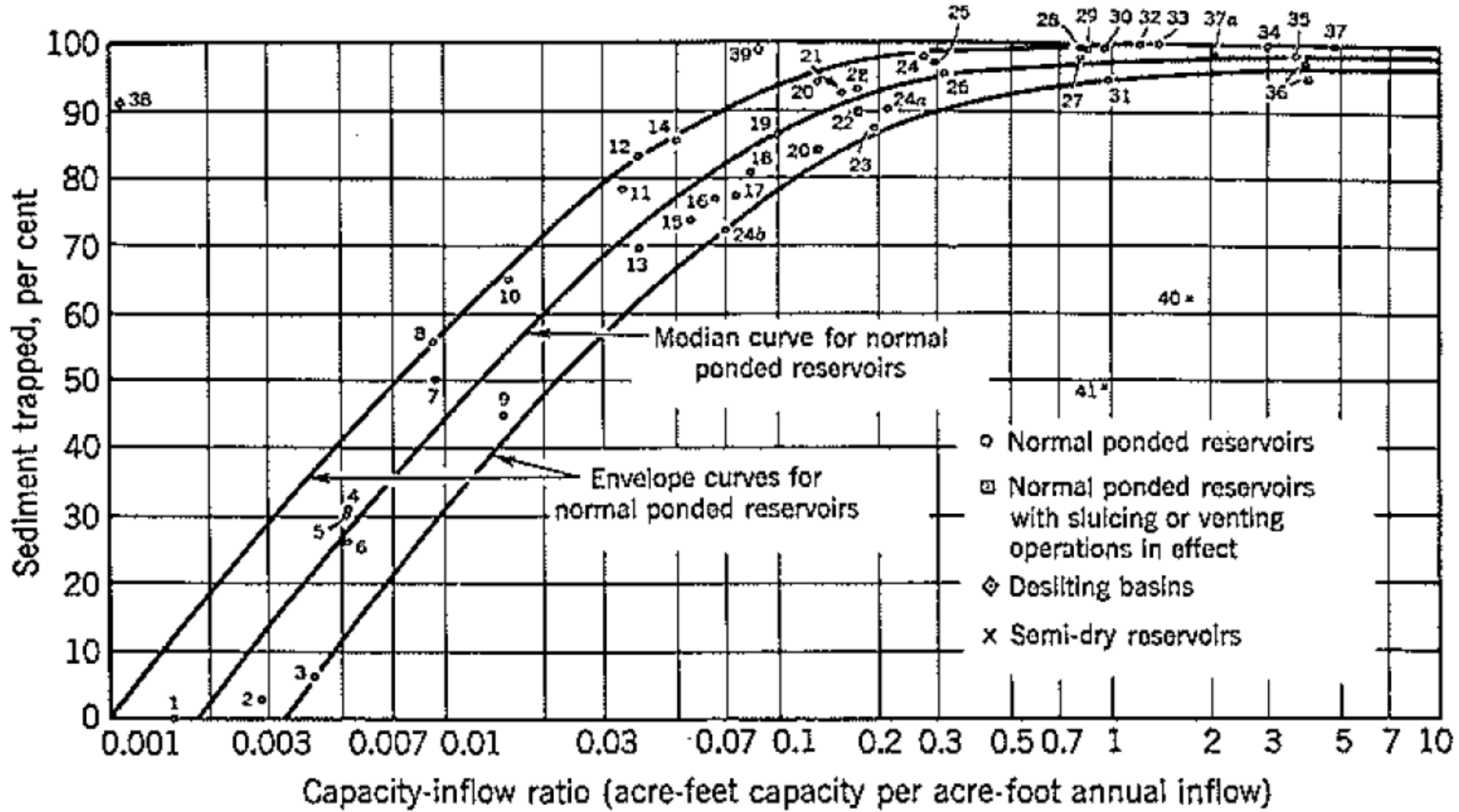


FIGURE 7.12