a total of 32.4 million acre feet of surface storage would be provided, and 41.0 - 32.4 = 8.6 million acre feet of ground water storage would be required. In this calculation it is assumed that loss of capacity due to silting of dams during the first level of development will be offset during the second level by augmented bank storage below the rim as a consequence of reduced silt load.

If the ground water were to be stored in the non-saline area of 23 million acres, a depth of 8.6/(0.25) (23) = 1.5 feet in the aquifer would provide the necessary capacity; that is, a rise and fall of the water table each year of about 2 feet would occur in regulating the irrigation water supply. One advantage of ground water storage is that evaporation losses will be small. On the other hand, additional tubewell pumping capacity would be needed to exploit the aquifer for river regulation. Part of this could be furnished by the tubewells of the first level of development, since these would no longer mine water at the original rate; the remaining pumping capacity would have to be provided by new tubewell construction.

Increased recharge can be obtained by construction of additional canal capacity and using the increment of Kharif diversion in rice culture near the banks of canals, or in over-irrigation of crops in regions where the infiltration rate of the soil is high. Moreover, it is not unlikely that the reduction in the silt load will bring about a substantial increase in recharge from the distribution system as a whole.

1. River and reservoir losses are assumed to be 15 percent larger than losses in the first level of development. 1.15 (11.5 + 6.6) = 20.8 maf/yr.

2. Return flows, 6.7 maf/yr.

3. The total column escaping to the sea would average 136 - 108.1 - 20.8 + 6.7 = 13.8 maf/yr.

D. The total water supply for West Pakistan at the second level of development is computed as follows:

1. In the Former Punjab and Former Bahawalpur it is assumed that the rate of mining would be reduced 50 percent to avoid excessive pumping costs. It may be expected that the quality of water will deteriorate as the pumping depth is increased. When this takes place the amount of tubewell effluent that can be used in agriculture will be reduced. The supply of water of suitable quality available from mining would thus be reduced by (19.2 + 2.9)/2 = 11 maf/yr.

2. With increased upstream diversions, underground storage in the zone near the Indus in Former Sind would be reduced, but this could be offset by reduction in field losses through better water management (I-E and I-F).