

GROUNDWATER BALANCE

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**Problem:** For a canal command area of 12508.938 km<sup>2</sup> in Uttar Pradesh, the following recharge and discharge components were measured/estimated in a year:

|                                    | <u>Monsoon</u> | <u>Non-monsoon</u> |
|------------------------------------|----------------|--------------------|
| 1. Seepage losses:                 |                |                    |
| (a) Main and branch canals =       | 236.22         | 1156.41            |
| (b) Distributories and minors =    | 72.10          | 217.81             |
| (c) Field channels =               | 111.87         | 367.35             |
| 2. Recharge from field irrigation= | 106.27         | 348.98             |
| 3. Net inflow from other areas =   | 27.20          | 45.65              |
| 4. Draft from groundwater =        | 259.87         | 1326.33            |
| 5. Evapotranspiration:             |                |                    |
| (a) Forested areas =               | 235.07         | 235.50             |
| (b) Waterlogged areas =            | 427.61         | 394.99             |
| 6. Net effluent seepage =          | 595.41         | 864.93             |
| 7. Change in groundwater storage=  | +1678.75       | -740.69            |
| 8. Rainfall =                      | 14187.64       | 1414.76            |

Based upon the above data, write down the groundwater balance equation and find out the following:

- Recharge from rainfall in monsoon season (assume zero for non-monsoon season)
- Recharge coefficient (monsoon) and
- Unaccounted water (non-monsoon).

All quantities are in MCM (million cubic metres).