TECHNICAL SESSION - VII

GROUND WATER AND SPRINGS

General Report
by

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Four papers have been presented in this Technical Session on Groundwater and Springs. All the four papers deal with four different aspects of Groundwater Hydrology of Mountainous areas.

The paper 'Aquifer characteristics in Karst Topography' by Y.V.Somasundram et al. deals with evaluation of hydraulic parameters, Transmissivity and Storage co-efficient of the aquifers of the Madura Island in Indonesia. The results indicate that the aquifer are highly heterogeneous and it was not possible to arrive at reliable values of the aquifer parameters through pump test analysis methods of Jacobs Straight line approximation method, Theis single well recovery method and Logan's approximation method, even though the well losses were taken into consideration. However. the paper do not throw any light on how to derive reliable values of the aquifer parameters. The paper on 'Groundwater in mountainous areas and forest vegetation' by R.M.Singhal et al. presents the results of a very interesting study on the relation of the water table & its seasonal fluctuations and the depth of the tree rootings in a mountainous area. The results of the investigations indicate that the tap roots of the trees are not the major absorber of water from water table in low lying area. However, where the superficial root system comes in contact with the capillary fringe of water table direct absorption could be possible. The tap rooted hybrid eucalyptus trees had difficulty in reaching the water table in most of the areas and the tap root of eucatyptus was not a major absorber of water from the water table but if the capillary fringe of the water table had been shallower than 1.5m then the water absorption could have been possible in the roots.

The third paper on 'Hydrologic study of Springs' by A.K.Bhar et al. reviews the existing spring flow models with assumes that the outflow from a spring is linearly proportional to the dynamic storage and suggests that a recasted equation of $Q_t = KQ_{t-1}$ where parameter K is known as recession constant or depletion factor can be used for time series analysis of springflow. The paper presents a groundwater flow model for spring developed by NIH which assumes that an unsteady state is a succession of steady state. Keeping in view that in reality there is a gap between the onset of recharge and its appearance as spring flow discharge specially if the transition zone of the spring is long and the hydraulic diffusivity of the zone is low, the authors recommend a rigorous mathematical model for predicting spring flow.

The fourth paper 'Ground Water Prospecting in Sikkim using Remotely sensed data' by A.S.Arya et al., presents the results of their studies based on the interpretation of IRS-IA, LiSS 2 and Landsat TM data, which resulted in preparation of four district wise hydrogeomorphological maps at 1:50.000 Scale and found that lineaments were the prospective groundwater features in this terrain. Intersection of lineaments in the topographic laws were identified as ground water prospective zones to be taken up for subsequent geophysical surveys and exploration of potential groundwater zones. The paper bringsout the usefulness of Remote Sensing Studies in prospecting groundwater in the mountainous areas.

As stated earlier, the four papers presented in this technical session, dealt with four different aspects of the groundwater hydrology of the mountainous areas.