

SUMMARY

If one studies the ancient Sanskrit literature he observes that it contains valuable references to hydrology. The important concepts of modern hydrology are scattered in various verses of Vedas, Puranas, Meghmala, Mayurchitraka, Urhat Sanhita and various other ancient Indian works. In this document an attempt has been made to compile information pertaining to hydrology in ancient Indian literature.

In Vedic age Indians had developed the concept that water gets divided into minute particles due to the effect of sun rays and wind. In various places in Puranas it is alluded that water can not be created or destroyed, only its state is changed through various phases of hydrological cycle. Evaporation, condensation, cloud formation, precipitation and its measurement were well understood in India in Vedic and Puranic times. Effects of Yajna (यज्ञ), forests, reservoirs etc. on the causation of rainfall, classification of clouds, their colour, rainfall capacity etc. forecasting of rainfall on the basis of natural phenomena like colour of sky, clouds, wind direction, lightening, and the activities of animals was well developed in ancient India well before 10th century B.C. Contrivance to measure rainfall was developed during the time of Kautilya (4th cent. B.C.) which had the same principle as that of modern hydrology except weight measure of Drona, Pala etc. were adopted instead of modern linear measurement of rainfall. Scientific facts like arid region of Tibetan rain shadow area and no rainfall by polar winds are fully advocated in Puranas. The knowledge of monsoon winds and height of clouds alongwith the division of atmosphere was well developed in Vedic age. The technique of knowing the slope of an area by means of a flowing river and dimensions of meandering rivers alongwith velocity of flow were usefully developed. Mountaneous rivers are generally perennial, deposition of fertile soil periodically on flood plains, different types of topography alongwith the

classifications of land and soil as black, yellow, red, gravelly, boulders etc. were well known.

In ancient times when the western knowledge about the occurrence of ground water was based on the wild theories, as they were believing that rainfall being inadequate in quantity, can not be the source of ground water, the Indians had the well developed concepts of ground water occurrence, distribution and utilization. Literature also reveals that hydrologic indicators such as physiographic features, termite mounds, soils, flora, fauna, rocks and minerals were used to detect the presence of ground water. Variation in the height of water table with place, hot and cold springs, ground water utilization by means of wells, well construction methods and equipment are fully described in 54th chapter of Urhat Sanhita named as 'Dakargala'. Sun rays, wind, humidity, vegetation etc. are the measure causes of evapotranspiration was well realized.

It is very interesting to learn that Varahamihira in as early as 550 A.D. presented a simple method for obtaining potable water from a contaminated source of water. Various plant materials alongwith the sun heating, aeration, quenching of water with fire heated stones, gold, silver, iron or sand were used. The change in the quality of water with the months of year and suitability of water from different sources for various uses were described.

Efficient water use, lining of canals, construction of dams, tanks, essential requirments for the construction of good tanks, bank protection methods, spillways and other minor aspects were given due consideration in ancient times in India. Well organized water pricing system was prevalent during the time of Kautilya. Various references are available in Vedas even, alluding the importance of efficient water use so as to reduce the intensity of water scarcity and drought etc.

In present study the knowledge of various aspects of water resources and hydrology as contained in ancient Indian literature and summarized above have been analysed. The report

has been divided into nine chapters dealing with different aspects of hydrology.