International Journal of Civil, Structural, Environmental and Infrastructure Engineering Research and Development (IJCSEIERD)
ISSN(P): 2249-6866; ISSN(E): 2249-7978
Vol. 5, Issue 2, Apr 2015, 43-56

GIS BASED DECISION SUPPORT SYSTEM FOR EFFICIENT WATER MANAGEMENT IN SONE CANAL COMMAND AREA

MD. MASOOD AHMAD[1], NIRMAL KUMAR[2] & L. B. ROY[3]

[1]Department of Civil Engineering, Maulana Azad College of Engineering and Technology, Patna, Bihar, India

[2]Department of Civil Engineering, M. I. T. Muzaffarpur, Bihar, India

[3]Department of Civil Engineering, N. I. T. Patna, Bihar, India

ABSTRACT

A GIS based Decision Support System (DSS) for efficient water management in Sone Canal Command Area (Bihar, India) is developed to estimate the real time water demand in distributaries. The DSS dynamically links the Water Balance Model with the canal network created in the GIS environment to predict the field irrigation requirements for the irrigated area by a distributary. The system allows the interactive selection of distributary and estimation of water demand for each distributary over the entire network of canal. For the estimation, model uses the historical weather data, weather forecast and distributary level information on crop and soil conditions. Patna Main Canal Command Area which is a part of the Sone Irrigation System is selected for the formulation of problem. The developed DSS provides a powerful tool for the overall management strategy to be adopted in the command area of the irrigation project by water resource planners and manager, particularly in the event of a shortfall in water supplies due to deficient monsoon.

KEYWORDS: Canal Supplies and Demand, Command Areas, Decision Support System, Irrigation Management, Irrigation Requirements, GIS, Water Balance Model, Water Management