Intl. J. River Basin Management Vol. 3, No. 3 (2005), p. 143-144

Guest editorial

This special issue of the *Journal* contains technical papers that were presented at the first conference in the series of triennial International Conference on Managing Rivers in the 21st Century or *Rivers'04* held in Penang, Malaysia, 21st–23rd September, 2004. The ten papers address three of the main topics of the conference, i.e. integrated river basin management, river restoration and conservation, and sustainable urban drainage system.

The issue begins with three papers on integrated river basin management. The first of these papers, "Sustainable Management of Rivers in Malaysia: Involving All Stakeholders" by Chan Ngai Weng, discusses the advancement of integrated river basin management via smart-partnerships among industry, government, NGOs and the public for the case of Malaysia. Chan proposes "PEOPLE" as the ingredients that are necessary for river management to work most effectively, in general for most countries and in particular for Malaysia: P (Public Participation – NGOs, Statutory Bodies, Semi-Government Agencies), E (Environmental Conservation), O (Ordeals – Management of Floods and Droughts), P (Politics and Pollution Management), L (Learning, Education and Awareness), E (Equity and Economics). Numerous examples of existing problems and examples of on-going project on sustainable river management are given. In the second paper, "An Innovative Flood Forecasting System for the Demer Basin: A Case Study", Tate and Cauwenberghs describe the development and operation of the new flood forecasting system for the Demer Basin, Belgium. The accurate flood forecasts and warnings were achieved through the Flood Works Configuration Manager interface, consisting of 1000 forecasting points, and over 1100 data streams making this one of the largest operational flood forecasting systems in the world. In the third paper "Environmental Modeling in River Basin Management", Falconer *et al.* describe the general details of the computational or numerical models used for flow, water quality, sediment transport, and toxic contaminant concentration predictions in river and estuarine basins. Three example studies are described including Cardiff Bay and River Basin using SWMM, FASTER and TRIVAST models, Ribble River Basin Estuary using FASTER and DIVAST models, and Mekong River Basin using iSIS model.

The next group of papers addresses issues and challenges on river restoration and conservation. The paper "What Will it Take to Bring Our Rivers Back to Life?" discusses the present problems in maintaining healthy conditions of rivers in Malaysia. Some of the pressing issues are flash floods, sediment loads from earthworks, riverine squatters, food waste from eateries, and wastewater from wet markets, animal husbandry and sanitary sewerage systems. The Department of Irrigation and Drainage Malaysia has taken proactive steps by introducing the new Urban Storm water Management Manual (MSMA) effective in 2001 to address the above mentioned problems. In the paper "Stream Restoration and Environmental River Mechanics" Julien *et al.* present a case study on the Middle Rio Grande, which includes river regulation, channel adjustments and restoration efforts due to the wealth of pre- and post-regulation data. Ecological implications of the geomorphic changes due to the construction of Cochiti Dam include detachment of the river from the floodplain, reduced recruitment of riparian cottonwoods, encroachment of non-native saltcedar and Russian olive into the floodplain and degraded aquatic habitat for the Rio Grande silvery minnow. Recent restoration strategies include removal of non-native riparian vegetation, mechanical lowering of floodplain areas, and channel widening. The paper "Sediment Transport Equation Assessment for Selected Rivers in Malaysia" by Chang *et al.* presents the results of a recent sediment data collection study for several rivers in Malaysia. A total of 346 data were collected for low and medium flows and for rivers with an aspect ratio of over 10 – suggesting wide river conditions. The sediment transport equation assessments have been carried out using Yang, Engelund and Hansen, Ackers and White and Graf equations. The results showed that the Yang and Engelund and Hansen equations gave better predictions of measured data. Comparisons with Graf's equation shows that for Malaysian sediment transport data, consisting of mainly coarse sand, agrees well with the equation. However, for fine sand, the modified Graf equation seems to suit better. The last paper in this category, "Impacts of Hydraulics and Sediment Transport in River Training Works and Flood Control Schemes (Case Study: Shahroud River)" by Hamidi and Khosroshahy desribes an example of

a river model application using HEC-6 to study the required training works for the Shahroud River, Iran. A thorough analysis of the system response for a range of design floods with return periods from 2 to 1000 years shows that nearly 80 km of the river requires training, both for main channel stabilization and flood control works implementation. To fulfill the training targets, Hamidi and Khosroshahy propose a combination of structural measures such as sills, revetments, flood walls, levees and vegetation covers.

The final group of papers address the need for sustainable urban drainage systems. In the paper "Storm water Treatment using Bio-Ecological Drainage System", by Ayub *et al.* recent results are presented on the applicability of Bio-Ecological Drainage Systems or BIOECODS in reducing storm water pollutant concentrations. Application of several Best Management Practice options, such as swales, wet ponds, detention ponds, and wetlands, proves the efficiency of the system to remove storm water pollutants. The next paper "The Importance of Sullage (grey-water) Treatment in the Restoration and Conservation of Urban Streams" by Idris *et al.* reveals that the quantity and quality of sullage (grey-water) is a major contributor of pollution sources in urban areas, especially where sullage is directly discharged into the streams without any treatment. The authors found that high levels of BOD, COD, AN, TKN, Orthophosphate and low DO are the main polluting characteristics of sullage from the residential area. About 83% of the water consumed in the study area is released as sullage without any treatment. The authors therefore suggest that it is of utmost importance to ensure that the necessary technical, institutional and legal arrangements to treat sullage are adequately considered before the sullage is discharged into the urban streams. This issue ends with the paper "Effects of Urbanization on Runoff Water Quantity and Quality: Experiences from Test Catchments in Southern Finland", by Metsaranta *et al.* which provides an example of extensive field measurements on the hydrological and water quality effects of urbanization by the Laboratory of Water Resources at the Helsinki University of Technology in three urban catchments located in Southern Finland. The authors found that the main result of the analysis of urban rainfall-runoff process was that both water quantity and quality varied widely between the different study catchments, and the quantity and quality showed a significant temporal variability in each catchment.

Aminuddin Ab. Ghani
Nor Azazi Zakaria
Rozi Abdullah
Mohd Sanusi S. Ahamad

River Engineering and Urban Drainage Research Centre (REDAC), Universiti Sains, Malaysia