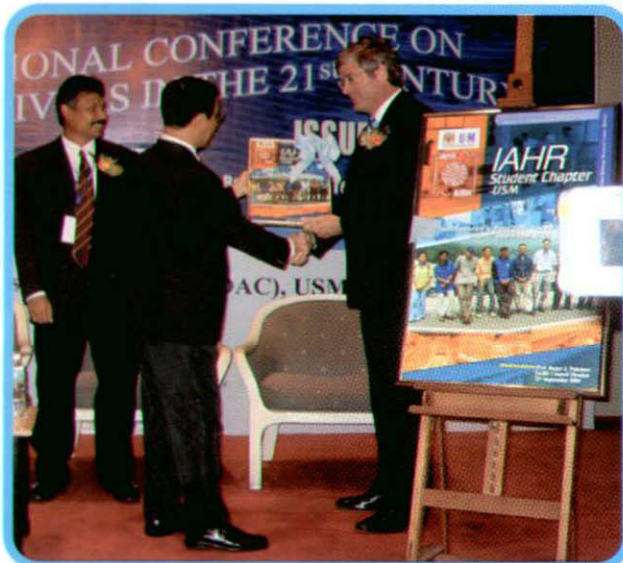




LAUNCHING OF IAHR STUDENT CHAPTER - USM



Launching Ceremony - Presentation of Souvenirs between USM Vice Chancellor and Prof. Falconer

Prof. Roger Falconer, a council member of IAHR graciously launched the IAHR Student Chapter - Universiti Sains Malaysia during Rivers'04 - 1st International Conference on Managing Rivers in the 21st Century: Issues and Challenges on 21st September 2004 at Penang, Malaysia. This student chapter is the first of its kind in the Far East. The founding committee members of the IAHR SC - USM are Mr. Abd. Jalil Hasan (President), Mr. Mohamad Ansar Derani (Vice President), Mr. Chang Chun Kiat (Secretary), and Mohd Fazly Yusof (Treasurer). Among activities carried out by the IAHR SC - USM are technical visit to the new Beris Dam at Kedah, postgraduate seminar, and paper presentations at National and International Conferences such as 6th ICHE (Brisbane, Australia, June-04), National Civil Engineering Conference (July-04) and Rivers'04 (September-04). The coming activities in 2005 include technical visit to Paya Indah Wetland at Putrajaya, and paper presentation at XXXI IAHR Congress (September, Seoul, Korea).



Technical Visit to Beris Dam
7th September 2004



By Associate Prof Dr Nor Azazi Zakaria, REDAC Director

Foreword

The year 2004 has been a hectic year for REDAC with so many activities carried out. Several research and consultancy works have been completed including the Bio-Ecological Drainage System (BIOECODS) project at USM Engineering Campus, Penang under a research contract with the Department of Irrigation and Drainage (DID). REDAC also completed the feasibility study on drainage improvement for Kg. Tersusun, Juru and the Perai Industrial Complex, Butterworth under a consultancy job with Seberang Perai Municipal Council (MPSP). Another Bio-Ecological Drainage System was also constructed at Ipoh through involvement with the Public Works Department (JKR).

REDAC was invited to present six papers on BIOECODS at the 6th International Conference on Hydro Sciences and Engineering (ICHE), Brisbane, Australia in June 2004. An international conference – Rivers'04: Managing Rivers in the 21st Century was successfully conducted in September 2004. 150 participants from seven countries (Malaysia, Iran, UK, Australia, Finland, India, and USA) attended the three-day conference. An "Urban Storm Water Management Short Course (USWM)" with the theme "Application of MSMA for Sustainable Urban Drainage System (SUDS)" was conducted twice during November and December 2004. The short course discusses the available options of Best Management Practices (BMPs) as listed in the Urban Storm Water Management Manual for Malaysia (MSMA) with the emphasis on the design criteria and regulatory requirements of MSMA. The participants of the short course were provided with examples of several completed SUDS projects in Malaysia. This short course will be offered again twice in 2005 (April and October 2005).

REDAC has published 31 articles in both international and national levels throughout 2004. This achievement has been attained through dedicated work by the staff and postgraduate research students. Potential local and international researchers are encouraged to join REDAC in promoting sustainable urban drainage system for the benefits of conserving rivers not only in Malaysia but throughout the World. With rivers providing most of the required water supply, it is important that river systems are maintained in healthy conditions. BIOECODS has been a welcoming example of how a sustainable urban drainage system can provide a good quality of storm water before discharging to the receiving waterway in this case Kerian River. More such projects are needed as developments in Malaysia continue in line with the aspiration of achieving an industrial nation in 2020. REDAC is in the forefront in providing technical knowledge to support Malaysian Government's desire to maintain the river systems in good quality conditions not only in urban areas but also throughout Malaysia.

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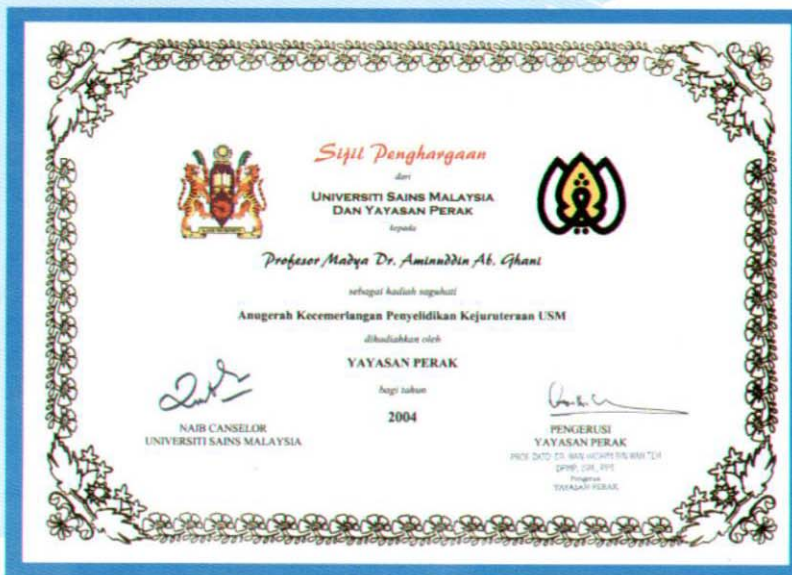
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Award

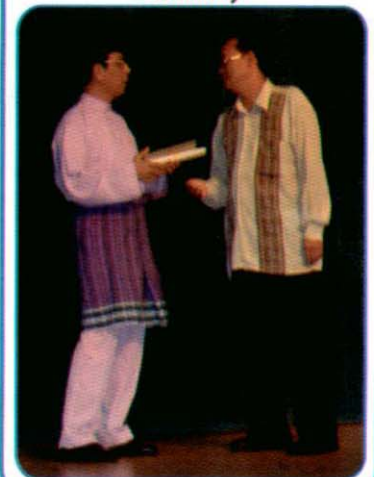
Perak Foundation

Meritorious Award for Flood Risk Mapping Project 2004

REDAC has won the 2004 Perak Foundation's Excellence in Engineering Research Meritorious Award for its IRPA RM 8 project on "FLOOD RISK MAPPING FOR RIVER IN MALAYSIA INCORPORATING SEDIMENT TRANSPORT IN RIVER CHANNEL". The award was presented by the USM Vice Chancellor to the Project Leader, Assoc. Prof. Dr. Aminuddin Ab. Ghani on 26th November 2004. Other team members of the projects are Assoc. Prof. Dr. Nor Azazi Zakaria, Assoc. Prof. Dr. Rozi Abdullah, Assoc. Prof. Ahmad Shukri Yahya, Dr. Mohd Sanusi S. Ahamad, Dr. Shanker Kumar Sinnakaudan and Mr. Chang Chun Kiat. Further information on the project can be obtained from the following website: <http://redac.eng.usm.my>



Presentation Ceremony



Flood Inundation, Kulim (2003)

Source: DID Kulim/Bandar Baharu

First Hospital Development Project Fulfilling MSMA

INTRODUCTION

The Public Works Department (JKR) has constructed a new building for the forensic ward at Hospital Bahagia Ulu Kinta, Tanjung Rambutan, Ipoh, Perak Darul Ridzuan. In this project, the drainage system has been designed to comply with the new guideline which is published by Department of Irrigation and Drainage (DID) in the year 2000 and gazetted by the government in the following year, namely Urban Stormwater Management Manual for Malaysia or MSMA. River Engineering and Urban Drainage Research Centre (REDAC), Universiti Sains Malaysia has assisted JKR in-house design team extensively during design stage. Alira Sepakat Sdn. Bhd. was appointed by the main contractor as the nominated specialist sub-contractor in realizing this project.

PROJECT BACKGROUND

This project consists of the construction of a single building, which includes administration unit, clinical unit, forensic block and ward. The project covers a catchment area of 1.51 hectares. More than 60 % of the total area has been developed into impervious area such as paved road and car park, sheltered walkway, and utilities other than the building. The land use changes from undeveloped to developed areas have caused approximately 50% increment of peak flow discharge from 0.36m³/s to 0.55m³/s on receiving water body.

DESIGN CRITERIA

The design criteria for this project were based on MSMA. The manual recommends "control-at-source" concept in order to manage this valuable water resources as an asset towards creating a sustainable environment. The objectives of new stormwater management approach emphasize the control of both the quantity and quality of urban runoff.

DRAINAGE SYSTEM

The proposed drainage system is known as Bio-Ecological Drainage System (BIOECODS). This has been embodied in the concept of ecologically sustainable development which is aimed at ensuring that development can occur without long-term degradation of natural resources and the environment. Grassed swale (Figures 1 and 2) was designed as a conveyance to serve the post-development runoff generated from the developed catchment area.

The grassed swale is defined as grass earth channel combined with subsurface modules which enclosed within a permeable geotextile.

The grassed swale acts as main conveyor on collecting and discharging runoff while the subsurface module acts as water quality treatment facility and assist in dewatering the base of grassed swale. The grassed swale is designed by taken into consideration of peak flow attenuation, soil erosion and safety to the public. Grassed swale has the ability to reduce on-site peak flow rates by increasing the roughness of the channel and infiltration rates. These vegetated systems also provide runoff quality treatment by removing low concentrations and quantities of TSS, heavy metals, hydrocarbons and nutrients from storm water. The vegetated systems remove pollutants by means of sedimentation, filtration, soil absorption and plant uptake.

On-site detention pond facility was selected as storm water quantity control facilities for this project. On-site detention pond was designed to regulate the outflow discharge to pre-development discharge limit (Figure 3). This detention basin is designed to store to the surface of 600mm of the excess rainfall under design average recurrent interval of 10-year and blend with the surrounding landscape. The outflow path is controlled by orifices in order to drain the pond system in less than 24 hours.

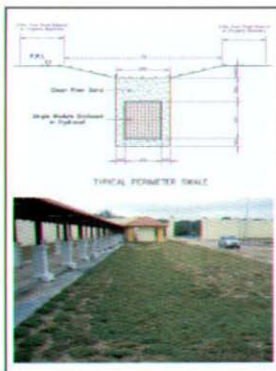


Figure 1 Perimeter Swale

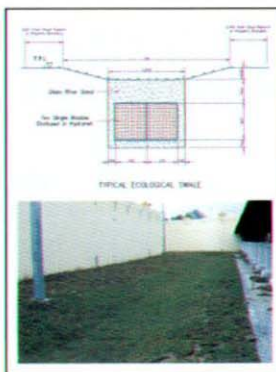


Figure 2 Ecological Swale

Consultancy

The excess storm water is also stored in the subsurface detention storage as illustrated in Figure 4. The storage modules have been placed at the connecting points, junction and critical point of the system. The detention storage are provided to reduce flows from the building, regulating flow velocity which cause the gravity settling of particulates and increase the infiltration process where all these mechanisms will control the quality and quantity of storm water runoff.

CONCLUSIONS

This project has applied new storm water management approach to minimize the impact of urbanization on the environment. It adopts an integrated approach to obtain both practical and cost effective solutions for drainage system. With this drainage system, the quantity and quality of the runoff from new developed areas at Hospital Bahagia Ulu Kinta can be maintained to be the same as pre-development condition.

ACKNOWLEDGEMENT

REDAC would like to thank Public Works Department (JKR) for the opportunity to participate in this project.

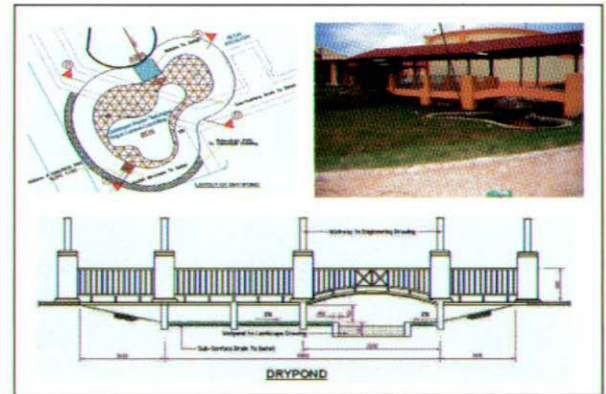


Figure 3 On-Site Detention Basin (Dry Pond)

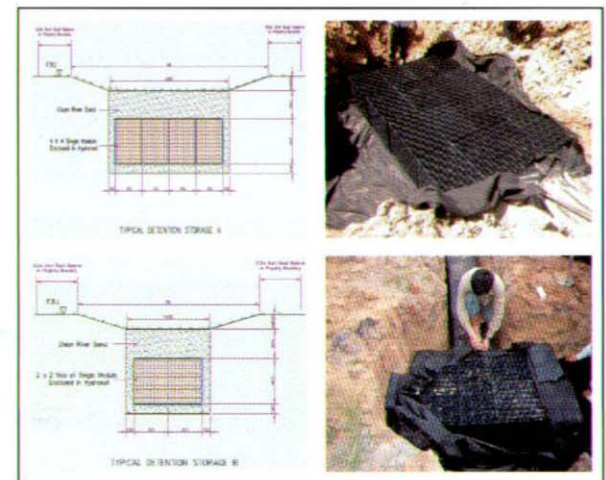


Figure 4 Subsurface Detention Storage

Wading River



Ecological Swale



“University in A Garden - BIOECODS, USM Engineering Campus”

1st International Conference on Managing Rivers in the 21st Century: Issues and Challenges

21st - 23rd September, 2004, Penang, Malaysia

Rivers'04 was organized by River Engineering and Urban Drainage Research Centre (REDAC), Universiti Sains Malaysia (USM) as the first conference in the series of triennial International Conference on Managing Rivers in the 21st Century for the purpose of providing a major forum to researchers and engineers from national and international levels to present and exchange their views on the latest research issues and application methods to solve existing problems related to rivers in Malaysia and worldwide. 150 participants from seven countries (Malaysia, Iran, UK, Australia, Finland, India, USA) attended the three-day conference. The official opening of Rivers'04 was made by His Excellency the Head of State of Penang on 21st September 2004. Government agencies and research institutions at national level and a prestigious international professional society supported this conference. These include: Department of Irrigation and Drainage (DID), Malaysia, Malaysian National Committee on Irrigation and Drainage (MANCID), Humid Tropics Centre (HTC), Universiti Teknologi MARA (UiTM), Institute for Environment and Development (LESTARI), National Hydraulic Research Institute of Malaysia (NAHRIM), and International Association of Hydraulic Engineering and Research (IAHR).

Rivers'04 highlighted issues dealing with managing rivers such as flash flood, urban drainage, water scarcity, water pollution, catchment management, and river conservation. The challenge ahead in managing rivers remain to be evaluated and applied so as to preserve the natural environment of existing rivers in recognition of the developments that are coming to river basins. Among the challenges ahead are designing a Sustainable Urban Drainage System (SUDS), River Restoration by applying "Back to Nature" approach, and Integrated River Basin Management (IRBM). As such the four Keynote Speakers who are renowned experts from national and international levels namely Prof. Roger A. Falconer (Cardiff University, UK), Prof. Pierre Y. Julien (Colorado State University, USA), Datuk Ir. Hj. Keizrul Abdullah (President, International Commission on Irrigation and Drainage, ICID), and Prof. Chan Ngai Weng (Water Watch Penang, WWP) opened Rivers'04 with their Keynote Addresses on the subjects of Sustainable Management, River Restoration and Environmental Modeling in River Basin Management.

The presented papers were published into two parts: a Book of Proceedings and the CD-ROM Proceedings. Both contain 75 papers selected from 100 abstract submissions, covering the four major topics: River Hydraulics & Hydrology (30 papers), River Management (27 papers), River Modeling (12 papers), and Case study (6 papers). These papers were presented by authors in five technical sessions divided into three parallel sessions. 30% of the papers are from international participants whereas the rest 70% from local participants including those from research institutions, NGOs and government agencies. The proceedings (Book and CD-Rom) are priced at USD 50 (RM 200) and can be obtained from Assoc. Prof. Dr. Aminuddin Ab. Ghani (redac02@eng.usm.my).

Two technical visits were also conducted during the second day of the conference. The first visit was to the BIOECODS project at the USM Engineering Campus. The participants were able to see themselves the application of several options of Best Management Practices (BMPs) in urban storm water management to reduce flash flood, water scarcity and water pollution. The second visit was to the USM Marine Research centre at Muka Head.

A special publication on a pilot project on Urban Storm Water Management called "Bio-Ecological Drainage System (BIOECODS)" was launched by His Excellency during the official opening ceremony. The special publication can be purchased at a price of USD 25 (RM 100).



Rivers'04

Opening Ceremony



Exhibition



Paper Presentation



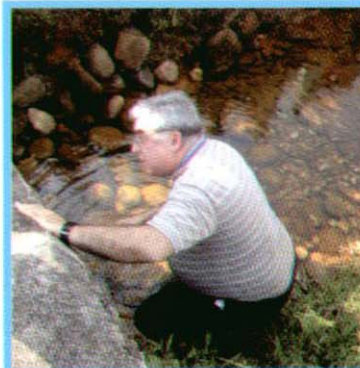
Conference Banquet



Technical Visits



The USM Marine Research Centre at Muka Head



BIOECODS Project at The USM Engineering Campus

Urban Stormwater Management Short Course

*Application of MSMA for Sustainable Urban Drainage
System (SUDS)*

30th Nov - 2nd Dec 2004
USM Engineering Campus

USWM

Opening Ceremony



Presentations

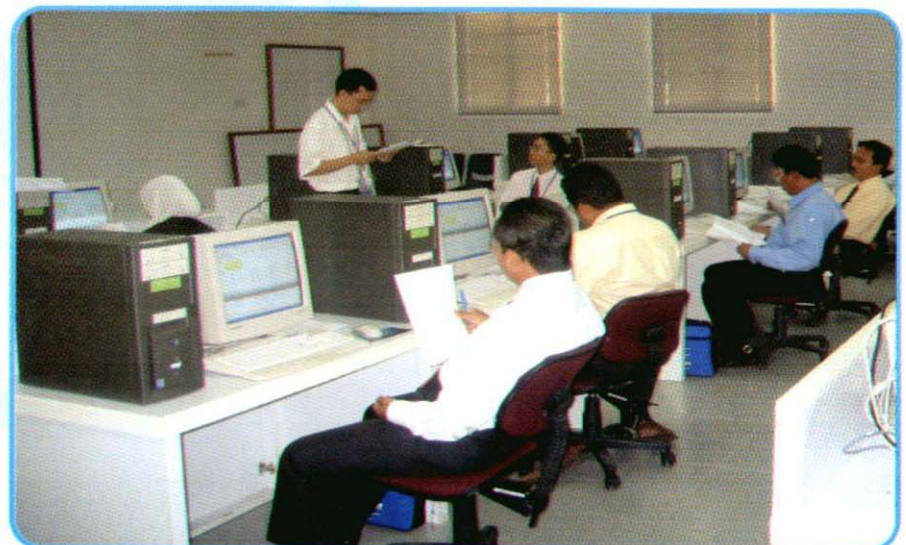
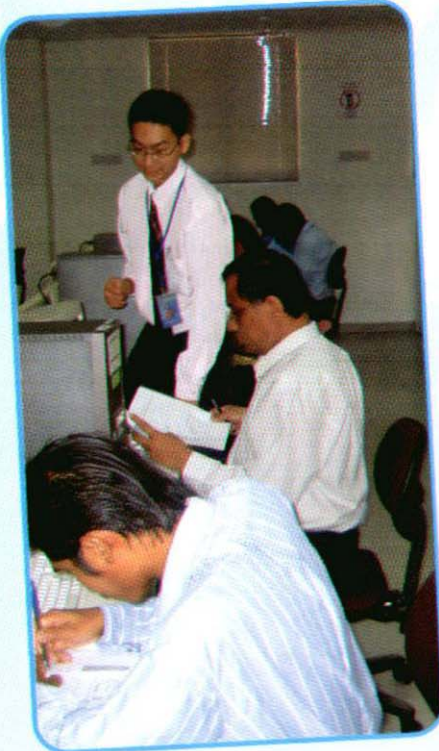


Site Visit to BIOECODS Site



USWM

Hands-On Workshop

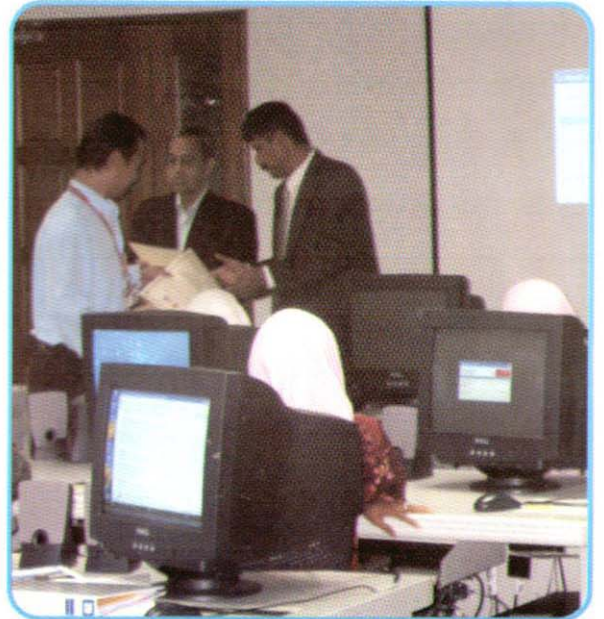
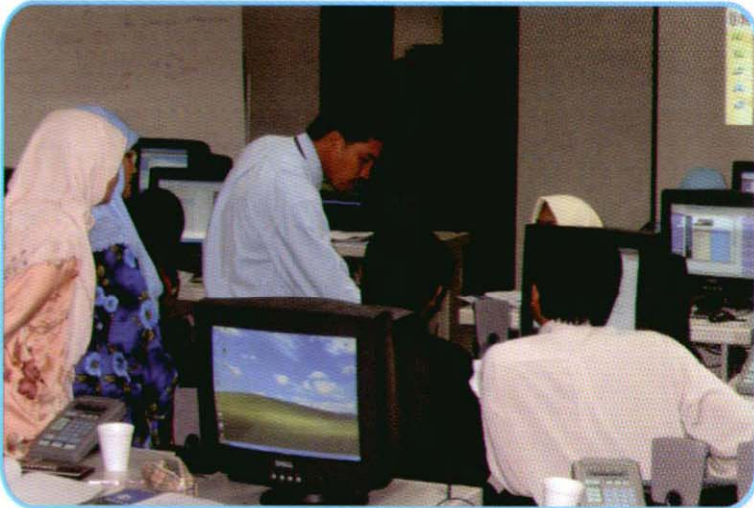


USWM

Urban Stormwater Management Short Course

Application of MSMA for Sustainable Urban Drainage System (SUDS)

13th - 15th Dec 2004
Public Works Department, Kuala Lumpur





IAHR SC - USM Activity



On-Going Research**Abd. Jalil Hassan*****Floodplain Analysis for Selangor River***

Assoc. Prof. Dr. Aminudin Ab. Ghani

Assoc. Prof. Dr. Rozi Abdullah

Nur Asmaliza Mohd Noor***Constructed Wetland For Urban Stormwater Treatment Under Humid Tropic***

Assoc. Prof. Dr. Rozi Abdullah

Assoc. Prof. Dr. Aminuddin Ab. Ghani

Chang Chun Kiat***River Stability Analysis Using FLUVIAL and InfoWorks RS: Case Studies of Pari and Kulim Rivers***

Assoc. Prof. Dr. Aminudin Ab. Ghani

Assoc. Prof. Dr. Rozi Abdullah

Wong Lai Peng***Effectiveness of The Water Quality Control of Urban Drainage System: BIOECODS as a case Study***

Assoc. Prof. Dr. Rozi Abdullah

Assoc. Prof. Dr. Aminuddin Ab. Ghani

Piramli Muhamad***Development of Infiltration Map for Stormwater Planning and Design: A Case Study for Kota Bharu Municipal Council (MPKB) Kelantan***

Assoc. Prof. Dr. Rozi Abdullah

Assoc. Prof. Dr. Nor Azazi Zakaria

Joseph Dinor***Modelling Using HEC-HMS and The Application of Detention Pond Facilities Function on Flood Attenuation in A Midsized Catchment***

Assoc. Prof. Dr. Nor Azazi Zakaria

Assoc. Prof. Dr. Rozi Abdullah

Urban Stormwater Management Short Course 2005**Objectives**

To present the new design, concepts, criteria and regulatory requirements of MSMA

To present examples of constructed projects based on MSMA

To perform design calculation for urban drainage system that complies with MSMA

Speakers

The course will be conducted by a group of professional and experienced researchers from REDAC. They specialized in the field of stormwater management, river management, hydroinformatic and environmental management. They have involved extensively in research and consultancy project involving MSMA throughout Malaysia.

Who Should Attend

Engineers, regulators, planners and designers who are involved in stormwater management

**Date: 26th - 28th April 2005****Location: USM Engineering Campus***The registration form is provided in page 16*



Mr. Lau Tze Liang
Associate



Mohd Fazly Yusof
Science Officer



Rosmaliza Ramli
Science Officer



Shahrul Aidey
Mohammed
Technician



Mohd Firdaus Talib
Technician

Latest Publication

Prediction of Sediment Deposition in Raja River Concrete Drainage System: A Case Study

Kassim, M., Ab. Ghani, A., Abdullah, R., Zakaria, N.A.

IWA's Water & Environmental Management Series: Sewer Networks and Processes within Urban Water System, pp. 59-65, November 2004

Abstract: The existing conventional drainage system in cities throughout Malaysia is built mainly to cater for the increase in surface runoff due to rapid development that occurs in the city borders. The drainage system is normally made up of open rigid concrete drains susceptible to maintenance problems such as sediment deposition, litter, and utility pipes crossing and blocking the waterways. The paper highlights the result of the survey carried out to determine the sediment size characteristics in urban drains throughout cities in Malaysia. New result from sediment deposition profile measured at Raja River drainage system, Alor Setar is also described. Assessment of the existing incipient motion criteria was also made to identify the equation that is able to predict the sediment deposition trend in the River Raja drainage system.

Keywords: Sediment deposition; self-cleansing; sediment size; storm drain

USWM-2 Registration Form

Urban Stormwater Management Short Course

Application of MSMA for Sustainable Urban Drainage System (SUDS)

26th - 28th April 2005

Participant Name(s)	(1)		
	(2)		
	(3)		
Organization			
Address			
Email		Postal Code	
Telephone No.		Fax No.	
Registration Fee: RM 750.00 per person x _____ person(s)		= RM	

Mode of Payment:

Cheque / Bank Draft Number		Bank / Branch	
L.O. Number		Agency	

The Registration Fee covers notes, lunch and refreshments during the short course. Registration Fee must be made to "USAINS HOLDING" using L.O./Cross Cheque/Bank Draft/Money Order. Registration will be on a "first come first served" basis.

Accommodation

Phone numbers for some nearby hotels are listed below:

Parit Buntar Inn : 05-7176750

Damai Hotel : 05-7165222

Jawi Inn : 04-5820759

Bukit Merah Lake Town Resort : 05-8978888

Sunway Hotel : 04-3707788

Pearl View Hotel : 04-3989888

Registration & Inquiry:Ms. Noor Hasliza Wan Chik
Secretariat,Urban Stormwater Management Short Course
River Engineering and Urban Drainage Research Centre (REDAC)
Engineering Campus, Universiti Sains Malaysia, Seri Ampangan,
14300 Nibong Tebal, Penang, MALAYSIA
Tel : +604-5941035 Fax : +604-5941036E-mail : redac@eng.usm.my, redac02@eng.usm.my, redac07@eng.usm.my, redac16@eng.usm.my
<http://redac.eng.usm.my>