



IAHR/IWA Joint Specialist Group on URBAN DRAINAGE



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2. CHAIRMAN'S THOUGHTS

Dear friends and colleagues,

It belongs to the annual duties of the JC chairman to provide some personal impressions of our profession and its developments for the newsletter. I was in the midst of gathering my thoughts, when the sad news of the sudden death of our colleague Poul Harremoës arrived. His unexpected passing certainly occupies our thoughts and memories and thus also this text.

Prof. Poul Harremoës died on Wednesday, 26 November 2003, at the age of 69 after a few days of illness. Poul Harremoës was a most remarkable scientist and scholar, and he has left strong footprints in the profession. Very few of our mentors influenced our field as much as he did, and perhaps none have done it in his imaginative and humorous way. This was very well described by Wayne Huber's words:

'I was privileged to know Poul since the first ICUD in Southampton. Poul's showmanship at the third ICUD in Gothenburg, was legendary (e.g., "The Danes lost to Nelson at the Battle of Denmark because the English were sneaky. ")'

The choice of the ICUD in Copenhagen 2005 had also an element of acknowledgement for his long and outstanding activities to promote urban drainage at an international level. Sadly he will not witness this. In the following I add a few lines borrowed from the homepage of E&R:

Poul Harremoës had gained leading international positions in several areas of environmental research. In the seventies he worked with oxygen depletion in rivers and biofilm kinetics in wastewater treatment. In the eighties modelling of sewers and receiving water discharges during rain, in the nineties modelling and control of integrated urban drainage systems and lately uncertainty, risk and environmental ethics. In all these areas he was recognized at the international research front within a short time span. At the same time he was acting as an inspiring teacher and initiator of multi-disciplinary education. All these accomplishments were a result of hard and extremely well disciplined work, paired with his remarkable intellectual wingspan.

He had a leading role in the establishment and organisation of the Danish Ministry of Environment in 1972 (the first of its kind in the world) and numerous other activities in Denmark. Internationally he set his footprint on what is now IWA, the International Water Association, where he completely reconstructed the activities during his presidencies in the eighties emphasizing the development of specialised conferences and specialist groups. As a member of the Scientific Committee of the European Environmental Agency (1994-2002) he masterminded the development of the precautionary principle.

We will all miss Poul. Many suggestions for commemoration are being circulated at the moment (prizes, papers, lectures, scholarships, etc.). We are currently in the phase where these ideas are collected and discussed but hopefully put in place soon with the combined effort of the JC.

The mention of a commemoration for Poul and other distinguished members of our scientific community leads me to another topic and that is the 'institutional memory' of the Joint Committee (JC). At the moment we still do have members active that both remember the history of the JC well and also keep the written documents of late activities. However, with time passing, inevitably this knowledge – based on the memory and the archives of former members – will fade. The recent and unexpected loss of Poul has sadly reminded us of this fact. On the other hand, a successful and longstanding institution as the JCUD needs to be aware of its historical roots and professional development. Not only to be able to reflect on activities of its members and the fate of the committee in historical terms, but also to serve as a professional memory for developments in the field. I therefore suggest that we try to establish an institutional archive, where we keep at least the following documents:

- Newsletters and other important notes of the JC activities
- Conference proceedings of all JCUD conferences
- Those papers and reports produced by JC members that are directly related to the JC activities.

If we follow this idea several questions arise. First, where and how to establish this archive, so that it is of value for all of us? A physical archive, where we keep hard copies of the documents mentioned above, should be easy enough to establish. However, it does not favour direct access. Thus it should be an electronic archive and there it is probably best placed under one of the parental organisations IWA or IAHR. Second, the question must be put forward, how to establish this task. It will certainly require manpower to collect the ‘ancient’ documents and for the older ones (that are only available as hardcopies) to bring them in an electronic format. I do not have a solution to these issues. Instead I would like to invite all of you to reflect on this idea of an institutional memory. In case of being positive towards the idea and willing to become active, please approach the JC.

At last I would like to mention that with the retirement of Prof David Stephenson and Prof R. Arsov from the JC there are openings for new members. By the time you have this text in your hands we will (hopefully) have filled some of the vacancies. Still, such voting rounds inevitably trigger discussions on the ideal committee member and I would like to share some of my thoughts with you.

It is one of the main goals of the JC to aim to promote the knowledge of urban drainage solutions internationally. For achieving this, the JC has always tried to keep a sufficient regional distribution of its membership, e.g., by maintaining the rule that each country can have only one member on the JC. Although this principle is not being questioned, another important issue is the international and scientific reputation of our members. Of course we request highest professional standing from the candidates, and thus the members of the JC are usually in leading roles either in research or in engineering organisations. However, on the other hand, we also request from the members of the JC a high level of engagement in promoting the activities of the committee. Put in very simple (and maybe too blunt) terms the following problem arises: the higher the reputation, the more professional responsibilities are connected and the more difficult it is to find the time for extra activities such as the JC duties.

Who is then an ideal candidate: the young and eager one, who still has enough time resources left that can be devoted to JC activities, or the distinguished and highly recognised professional whose numerous contacts are equally beneficial for the JC’s promotion? No ‘best’ answer to this dilemma can be given and inevitably the same question arises every time the candidates for JC membership are discussed. However, it is a sign of the high reputation of our organisation that we are by no means lacking good candidates to fill the vacancies. And thus I am sure that we will once again succeed in identifying the ideal committee members.

With this I would like to thank all members of the JC, all working group members and especially our secretary Jiri Marsalek for his continuous and strong support of the JC.

Wolfgang Rauch
Chairman of the Joint Committee

3. FROM THE SECRETARY’S DESK

3.1 Committee Newsletter – We will continue to publish the JC’s annual newsletter in a format similar to this issue. The main purpose of the newsletter is to facilitate communications and interactions among specialists in our field, rather than presenting detailed information. Please keep this in mind when submitting contributions.

Both IWA and IAHR now distribute newsletters only electronically, and place our newsletter on their web sites. IAHR also distributes some excerpts from our newsletter in their Newsflash. Furthermore,

thanks to the continuing efforts of Mr M. Zaizen, our newsletter is translated into Japanese and 200 hard copies are distributed in Japan.

Please share your electronic newsletter copy with other colleagues, or refer them to the IAHR and IWA websites. Your comments on the current issue and contributions to future newsletters are welcome.

3.2 Joint Committee Activities – the annual Committee meeting was held in Thessaloniki, Greece, on 24 August 2003, in conjunction with the IAHR congress. Altogether, ten members and guests were in attendance. Excerpts from the meeting minutes follow.

Brian Parsons (ASCE) reported on the 9th ICUD in Portland (September 2002) – the conference was highly successful and well attended with 664 registrations (414 full-time). Brian further offered ASCE help in promoting the 10th ICUD conference (Copenhagen, Denmark, 21–26 August 2005).

Wolfgang Schilling reported on IWA efforts at the 3rd Water Forum in Kyoto, Japan, 16–23 March 2003 – IWA produced a brochure promoting the assistance of water professional associations (IWA, IAHR) to developing countries. Gael Rodenhuis (IAHR, The Netherlands) also worked on this and proposed a ‘Blue Line Network’ – an informal network of water research institutes offering technical assistance. Other IWA initiatives of high interest - formation of a Steering Committee on Sustainability and Improved collaboration between Europe/Africa/Asia – Helena Allegre (Portugal) and Paul Reiter (IWA) lead this initiative. In the 6th Frame, EU will fund projects with African/Asian partners.

The JC Position Paper on Urban Drainage – it will be discussed at a special session at the NOVATCH conference (Lyon, 6–10 June 2004). A reduced version should be published in a journal and possibly translated into other languages

Evaluation of the 11th ICUD conference bids – the Committee received three bids to hold the conference in 2008 (Edinburgh, UK; Putraiaya, Malaysia, and South Africa). The Edinburgh bid received the highest number of votes and has been accepted by the Committee. Thus, the 11th ICUD will be held in Edinburgh, UK.

Other news

Urban Water journal – Chief Editors (Cedo Maksimovic and David Butler) plan to continue to publish the journal in hard copy, but their negotiations of new publishing arrangements hit unexpected delays.

Urban Drainage Glossary (reported by Bryan Ellis) – it is now some nine years since members of the JC agreed to put together a multi-lingual Urban Drainage Glossary, recognising a need for a lexicon of commonly used terms in our professional field. The varying understanding of terms such as catchpit/gullypot/catchbasin, criteria/standards, permit/consent, etc., provided the initial basis for the glossary but it was also felt that an international benchmark for future terminological referencing would facilitate technical communication in the urban drainage field. The glossary is now finally to be realized, with the IWA/IAHR publication early in 2004 (see News from IWA Publishing on page 11). The glossary has been compiled and written by 17 engineers and scientists drawn from 10 countries and contains definition and technical discussion of over 850 terms in English, French, Japanese and German. The volume will be of interest to both practitioner and academic covering topics in urban hydrology/hydraulics, sewerage, surface water runoff, urban water quality, receiving waters, ecology and ecotoxicology, best management practices and urban water resource management.

Future JC meetings (open to guests) – Lyon, France, 6 June 2004 (Sunday before the NOVATECH conference), and in Copenhagen, Denmark, 2005, during the 10th ICUD conference (21–26 August 2005).

Jiri Marsalek
JC Secretary

4. WORKING GROUP REPORTS

4.1. International Working Group on Data and Models (IWGDM) (Chairman: Dr. Lothar Fuchs, ITWH, Engelbosteler Damm 22, 30167 Hanover, Germany; Phone: +49-511-971-9321, Fax: +49-511-971-9377, E-mail: L.Fuchs@itwh.de).

The main activity of the Working Group is preparation of the 6th International Conference on Urban Drainage Modelling – UDM '04, to be held in Dresden, Germany, 15–18 September 2004. The main goal of the conference is to bring together researchers and practising engineers to exchange experience on, demonstrate the current potential of, and identify needs of urban drainage modelling. Conference topics include data availability for UDM, model and parameter identification and dealing with uncertainty, GIS support to UDM (data resolution, emerging technologies, cost), effects of climate change trends and scenarios on the urban drainage system, urban flooding and risk analysis, emerging issues in UDM, pollutant transport modelling (from wash-off to pollutograph dynamics), UDM for interactions with catchment based modelling (urban area impact on catchment base EU WFD implementation), Modelling of interactions and integrated systems (with urban catchment, ground water, WWTP, receiving water), modelling SUDS (quantity, quality, ecology, performance trends and life span assessment, can the socio-economic interactions with UDS be modelled?), RTC modelling, training tools for UDM, and UDM in education.

Call for abstracts – submit abstracts of not more than two A4 pages (including text, figures and tables), with paper title, author(s) name(s) and address(es), corresponding author, formatted according to *Water Science and Technology* (template is available at www.udm04.org) to the following address: udm04@mailbox.tu-dresden.de

Deadlines: submission of abstracts by 31 January 2004, notification of acceptance 15 March 2004, final papers due no later than 30 June 2004.

4.2. The Real-Time Control of Urban Drainage Systems (RTCUDS) Working Group (Chairman: Dr H. Colas, BPR-CSO, 5100 Sherbrooke St. E., Suite 400, Montreal, Quebec H1V 3R9, Canada; Phone: 001-514-257-2439, Fax: 001-514-257-2414, E-mail: Hubert.Colas@bpr-cso.com). Secretary: Dr Alberto Campisano, Department of Civil and Environmental Engineering, University of Catania, Viale Andrea Doria 6, 95125 Catania, Italy, Phone: +39 (0)95 7382711, Fax: +39 (0)95 7382748, e-mail: acampisa@dica.unict.it). Web site: <http://web.tiscali.it/RTCUSD/>

The RTCUDS group follows its work plan developed in Lyon, in 2001. Building on the success of the group's workshop held at the 9th ICUD in Portland in 2002, another such pre-conference workshop was held at the 2003 EWRI World Water and Environmental Resources Congress in June 2003 in Philadelphia. The workshop covered RTC hardware, software, control strategies, and case studies.

A paper entitled 'Real-Time Control of Urban Water Systems' was co-authored by many group members and published in Cabrera, E. and Cabrera, E. Jr (eds) (2003). *Pumps, Electromechanical Devices and Systems Applied to Urban Water Management*. Proc. Int. Conf., Valencia, Spain, 22–25 April 2003, Vol 2, pp. 807–824, A.A. Balkema Publishers, Lisse. The paper provides a broad overview of the field of real time control in urban water systems.

Real Time Control pre-conference seminar, Lyon, France, Sunday 6 June 2004 - the Workgroup is organizing a special pre-conference seminar on Sunday, 6 June 2004, in Lyon, France, as part of NOVATECH 2004. Recognized international Real Time Control experts will provide a comprehensive overview of the RTC technology and present some recent applications and results obtained using this technology. A good portion of time will be allotted to discussions. You can register through the NOVATECH (<http://www.novatech.graie.org/>). For further information please contact Dr Hubert Colas (Ph. 001-514-257-2439, E-mail: Hubert.Colas@bpr-cso.com) or consult the group's web site (<http://web.tiscali.it/RTCUSD/>).

Louisville Metropolitan Sewer District (MSD) Real Time Control Seminar, Louisville, KY, 14–16 September 2004 - Louisville MSD is implementing a real time control system using global optimisation and radar rainfall forecast. It will become operational in early 2004. The focus of the Seminar will be the Louisville MSD system, but other US communities will also be invited to present their experience with this technology. The seminar will emphasize the significance of using RTC to save more than \$ 100 million on Louisville's combined sewer overflow control program and will feature results from the first few months of operation of the system. Field visits will help participants understand local and central station set-ups and discuss operational issues. The Real Time Control Workgroup is sponsoring this Seminar. For further information please contact Dr Hubert Colas (Tel. + 1-514-257-2439, E-mail: Hubert.Colas@bpr-cso.com).

4.3. Sewer Systems and Processes Working Group (SS&PWG) (Chairman: Dr Jean-Luc Bertrand-Krajewski, URGC Hydrologie Urbaine, INSA de Lyon, 34 avenue des Arts, F-69621 Villeurbanne Cedex, France; Phone: +33 4 72 43 81 80, Fax: +33 4 72 43 85 21, E-mail: jean-luc.bertrand-krajewski@insa-lyon.fr. Vice-chairman and secretary: Prof. José Saldanha Matos, Technical Superior Institute of the Technical University of Lisbon, Av. Rovisco Pais, 1049-001 Lisbon, Portugal: jsm@civil.ist.utl.pt. Web site: <http://www.sspwg.civil.auc.dk/>).

New members: since September 2002, 4 new Committee Members have joined the group: Neil Armitage (South Africa), Ana Deletic (Australia), Suhaimi Abdul-Talib (Malaysia) and Guang-Hao Chen (Hong-Kong, China). The total number of Committee Members is now 29 (with a maximum of 2 members per country). See <http://www.sspwg.civil.auc.dk/> for details.

Publications: 22 selected and revised papers from the 3rd International Conference on 'Sewer Processes & Networks' (3rd SPN), organised by the SS&PWG in Paris, France on 15–17 April 2002, have been published in *Water Science and Technology*, **47**(4), 194 pp.

Recent events: An international seminar on 'In-Sewer Processes' was held in Delft, NL, on 10-11 April 2003. It was organised jointly by TU Delft and Sewnet. Some PowerPoint presentations are now available at <http://www.sewnet.org/>, at 'Archive'. For more information, please contact François Clemens (f.h.l.r.clemens@citg.tudelft.nl).

Junior Workshops: the 18th EJSW (European Junior Scientists Workshop) on 'Sewer Processes and Networks' has been held in Almogrove, Portugal, on 8-11 November 2003. 24 Juniors Scientists from 11 countries have worked very intensively during 3 days. Workshop proceedings and other material (PowerPoint presentations, reports, etc.) will be made available soon (January 2004) on the SS&PWG website at <http://www.sspwg.civil.auc.dk/>. The 1st AJSW (Asian Junior Scientists Workshop) on 'Sewer Processes and Urban Drainage' will be held in Malacca, Malaysia, on 7-10 February 2004. Abstracts have been received and reviewed. Contact: Suhaimi Abdul-Talib at esuhaimi@hotmail.com. A report on the 18th EJSW will be given during the 1st AJSW. Preliminary contacts were made with IWA Publishing about publishing a selection of reviewed and revised papers from both 18th EJSW and 1st AJWS in a single document, completed with reports and some seniors' complement.

S&TR on 'Solids in Sewers': the final proofs of the IWA Scientific and Technical Report on 'Solids in Sewers' were checked in December 2003. Publication by IWA Publishing is planned for early 2004. For further information, please contact Richard Ashley at r.ashley@bradford.ac.uk.

SS&PWG Meetings - a SS&PWG Committee Meeting was held on 28 August 2003, during the XXX IAHR Congress, in Thessaloniki, Greece. The next meetings are planned during the NOVATECH 2004 conference in Lyon, France (6–10 June 2004) and during the 4th SPN conference in Funchal, Madeira (22–24 November 2004).

Next event: 4th SPN International Conference – The 4th International Conference on Sewer Processes and Networks (4th SPN), organised by the SS&PWG, will be held in Funchal, Madeira Island, Portugal, on 22–24 November 2004. The conference chairman is José Matos. Deadline for abstract submission: 2 March 2004. For more information (call for abstracts, announcement, contact, deadlines, etc.) see at the SS&PWG website <http://www.sspwg.civil.auc.dk/#Events> or contact J. Matos (jsm@civil.ist.utl.pt).

4.4. Working Group on Source Control for Stormwater Management (SOCOMA) (Chairman: Georges Raimbault, L.C.P.C., BP 4129, 44341 BOUGENAIS Cedex, France; Phone: +33 02 40 84 58 63, Fax: +02 40 84 59 98, E-mail: georges.raimbault@lcpc.fr), vice-chairman: Gilles Rivard, Aquap Praxis Inc, 948 Donat-Bélisle, LAVAL (Québec), Canada H7X3W5; Phone: 001-450-689-2967, Fax: 001-450-689-2969, E-mail: GRivard@aquap Praxis.com; Secretary: Carsten Dierkes, Hydrocon, HefeHof 25, 31785 HAMELN, Germany, Ph.: 49 5151 100295, Fax: 49 5151 100296, E-mail: dierkes@hydrocon.de).

The working group deals with source control techniques defined as all measures concerning stormwater before it enters a sewer system or a surface water body. Its objective is to facilitate the development of these techniques, by conducting research and experiments, and disseminating information. The next meeting of the Group will be held during the NOVATECH 2004 Conference (Lyon, France, 6–10 June 2004). The group will review the progress of activities planned in Portland (2002) and will decide on future ones.

At the last SOCOMA meeting a small group of participants decided to initiate a working group on the interface between water techniques and the society. Govert Geldof (govert.geldof@planet.nl), who manages this group, organized a workshop in Leeuwarden (The Netherlands), 17–21 September, 2003. It was proposed to hold a session on ‘Urban water and society’ at the NOVATECH Conference in 2004.

A new European Research Project called DAYWATER was initiated in Dec. 2002, under the management of CERREVE-ENPC (France- daywater@cereve.enpc.fr). The project’s objective is to develop an Adaptive Decision Support System (ADSS) for Stormwater Pollution Control by integration of stormwater source control into sustainable urban water management strategies. Among the first tasks of the project, a review of the use of stormwater BMPs in Europe (deliverable 5.1) has been completed. A copy of this report and more information on this project can be obtained from its website (www.daywater.org).

4.5. Working Group on Urban Rainfall (GUR) (Chairman: Dr Guido Vaes, Hydraulics Laboratory, University of Leuven, Kasteelpark Arenberg 40, B-3001 Heverlee, Belgium; Phone: 32 16 32 16 58, Fax: 32 16 32 19 89, e-mail: guido.vaes@bwk.kuleuven.ac.be. Secretary: Dr Thomas Einfalt, Einfalt & Hydrotec GbR, Wakenitzmauer 33, D-23552 Lübeck, Germany. Ph: +49-451-7027333 Fax: +49-451-7027339, E-mail: thomas@einfalt.de. Group’s web site: <http://www.einfalt.de/GUR>).

The 6th International Workshop on Precipitation in Urban Areas was held in Pontresina, Switzerland, in Dec. 2003. Forty-seven abstracts were accepted by the review team for presentations, limiting oral presentations to one per author and referring other abstracts to poster presentations with full paper submissions. About 45 participants from 15 countries were expected. The workshop was sponsored by ETH Zurich (the main sponsor) and led by Drs Burlando, Einfalt, Schmid, Sevruk and Vieux. The workshop scientific committee will further review full papers and look for venues for secondary publication.

The annual meeting of the group was planned for the Pontresina workshop, the 2004 meeting will be held at the NOVATECH conference (June 6–10, 2004).

The GUR prepared a state of the art paper entitled ‘Towards a roadmap for the use of rainfall radar in urban drainage’ which was submitted to the *Journal of Hydrology*.

4.6. Technology Exchange, Transfer and Training Working Group (TETTWG) (Chairman: Dr Jozsef Gayer, VIKUTI Rt, P.O. Box 27, Budapest H-1453, Hungary; Phone: +361 215 61 40, Fax: +361 216 15 14, E-mail: gayer@vituki.hu; Secretary: Dr Jonathan Parkinson, Brazilian Association of Environmental and Sanitary Engineers, Goiás Office, Avenida 2a Radial N. 440 Quadra 119 Lote 10, Setor Pedro Ludovico, 74934-590 Goiânia-Goiás, Brazil, Tel/Fax. +55 62 281 2954, E-mail: parkinsonj@bigfoot.com; Group's website: <http://www.datanet.hu/hydroinfo/vituki/int/tett.htm>

An intensive short course and workshop on Global Developments in Urban Drainage Management were organised by the Working Group together with the Department of Civil Engineering, Indian Institute of Technology, Bombay, Mumbai, India, in Mumbai, February 3–5, 2003. The aim of the course was to familiarise the participants with recent global developments and international state-of-the art techniques in urban drainage management presented by key national and international experts. The course was attended by 25 trainees, mostly from India, but also from Bangladesh and Thailand. The course program included 18 hours of lectures on Urbanization impacts and drainage, The Mumbai drainage system, Real time use of rainfall data for UDM, Sustainable technologies and drainage performance indicators, Urban drainage and wastewater treatment for the 21st century, The Rajasthan urban infrastructure development project, Problems, challenges and solutions for coastal areas, Removal of solid waste from stormwater drains, and CSOs and screens; a field excursion to the Mithi River drainage system in Mumbai; six hours of group work on a sustainability workshop; and, the presentation of each study group's proposal for sustainability criteria. The lecturers/contributors came from U.K., Portugal, South Africa, Thailand/ Denmark and India; some of them are members of the TETT working group. The course was financially sponsored by UNESCO-IHP, WSSCC-WHO and the IWA. Sponsor's support is highly appreciated. Further information is available from Dr Kapil Gupta, Course Co-ordinator, IIT Bombay kgupta@civil.iitb.ac.in. Dr. Gupta is considering repeating this event in the future.

During 2003 contacts have been established with the UNESCO-IHE Institute of Water Education to explore opportunities for co-operation. A short course is envisaged in francophone Africa within this framework. Another short course in Latin America is envisaged in collaboration with Global Water Partnership South America.

4.7. Urban Drainage in Cold Climate Working Group (UDCCWG) (Chair: Dr Maria Viklander, Division of Sanitary Engineering, Lulea University of Technology, S-971 87 Lulea, Sweden, Ph. 46 920 491 634, Fax: 46 920 491 493, Email: Maria.Viklander@sb.luth.se; Secretary Dr John J. Sansalone, Civil and Environmental Engineering, Rm. 3510 CEBA Bldg, Louisiana State University, Baton Rouge, LA 70803-6405, USA, Ph.: 001-225-578-6047, Fax: 001-225-578-8652, Email: jsansal@lsu.edu

The working group's mission is to pursue research on environmentally sound and cost-effective planning, design and operation of urban drainage systems in cold and/or Alpine climates characterized by snowfall and snowmelt.

The group assisted in organising a conference on Urban Drainage and Highway Runoff in Cold Climate, Riksgränsen, Sweden, March 25–27, 2003. To reduce the gap between the knowledge base on urban drainage in cold climates and the needs for such information, and to stimulate further research in this field, the Division of Sanitary Engineering of Luleå University of Technology, in cooperation with many other agencies, including IAHR and IWA, held an international conference on urban drainage and highway runoff in cold climates, in Riksgränsen, Sweden, from 25 to 27 March 2003. The conference attracted almost 70 participants from 10 countries. The conference program comprised 31 presentations dealing with issues such as winter impacts of urban drainage on water quality and the environment, effects of chloride on receiving waters and toxicity of metals in highway runoff, the fate of aircraft de-icing fluids, urban hydrology and snowmelt in cold and alpine climates, management and planning for impact mitigation, and treatment facilities for storm water quality enhancement, including green roofs, roadside ditches, and ponds. Selected conference papers were expanded and published in a special issue of *Water*

Science and Technology, entitled 'Urban Drainage and Highway Runoff in Cold Climates (edited by M. Viklander, J. Marsalek, P.-A. Malmqvist and W.E. Watt), volume 48, no. 9.

In conjunction with the Riksgränsen conference, a workshop on urban drainage in cold climate was held, with the objectives of identifying climate change impacts on urban drainage in cold climates, future research needs, and identifying opportunities for international cooperation in this field. The workshop findings were summarized in a state-of-the art review document. Other post-conference activities included a PhD course on urban drainage, and the official promulgation of the establishment of the Working Group on Urban Drainage in Cold Climate, under the Joint Committee on Urban Drainage, by the JC chairman Wolfgang Rauch.

4.8. Formation of a New Group on Water Sensitive Urban Design (Convener: Dr Tony Wong, Ecological Engineering, PO Box 453, Prahran, Victoria 3181, Australia, tel +613 9533 8445; fax +613 9533 7781; tony@ecoeng.com.au)

A new working group on Water Sensitive Urban Design is being formed to provide a forum for sharing research findings and implementation experiences on the integrated urban water cycle management in urban environments. The term Water Sensitive Urban Design (WSUD) is often used inter-changeably with the terms Ecologically Sustainable Development (ESD) and Integrated Urban Water Cycle Management. This is because the three terms are all intrinsically linked. ESD is the broader framework for which decision-making and development occurs. WSUD has evolved from this framework to specifically guide initiatives towards sustainable urban water management, particularly the interactions between the urban built form (including urban landscapes and building architecture) and the urban water cycle as defined by the three urban water streams - potable water, wastewater, and stormwater. WSUD applies across the entire spatial scale of urban catchment management, from a catchment-wide regional and precinct levels, to both the local and on-site levels. There are both technical and non-technical issues associated with the successful implementation of WSUD principles and practices, underpinned by an appropriate administrative and legislative framework. The concept of WSUD in urban stormwater management is based on formulating land development and urban renewal plans that incorporate multiple stormwater management objectives and involves a pro-active process which recognises the opportunities for urban design, landscape architecture and stormwater management infrastructure to be intrinsically linked. WSUD espoused the need to integrate stormwater management into the planning and design of urban areas. It presents a range of alternative planning and design practices aimed at changing the conventional layout and design of urban areas to achieve the multiple objectives of stormwater management that include water quality improvement, flow management and the use of stormwater as a valuable resource. The concept provides the basis for a holistic approach to stormwater management using techniques that are capable of delivering a wide range of beneficial outcomes at both the regional and local levels. A number of meetings are being planned to commence the activities of this working group. Interested participants should contact the convener of this new group, Dr. T. Wong.

5. NEWS FROM IAHR AND IWA

IAHR News (reported by Dr Christopher George, IAHR Executive Director)

IAHR Secretariat contacts: IAHR, Paseo Bajo Virgen del Puerto 3, 28005 Madrid, Spain; Tel: +34 91 335 7908; Fax: +34 91 335 7935; E-mail: iahr@iahr.org, URL <http://www.iahr.org>. For more information on IAHR activities and free subscription of the IAHR e-newsletter 'NewsFlash', please contact the IAHR Secretariat: IAHR@IAHR.org

IAHR held its biennial XXX Congress in Thessaloniki, Greece, 24–29 August 2003. The congress was well attended and featured such topics as coastal environment: processes and integrated management, urban and rural water systems for sustainable development, inland waters: research, engineering and management, hydroinformatics and advanced data technology in engineering practice, and Linkage between education, research and professional development in water engineering. Other activities, e.g., workshop sessions on wastewater reclamation and reuse, or transboundary water issues, reflected the IAHR desire to address pressing issues of international interest outside of the traditional IAHR activities.

Future activities related to urban drainage—the 2005 IAHR Biennial Congress will take place in September, 2005, Seoul, Korea and will have a major focus on urban water – a key issue in South Korea. Most of one congress theme, Theme B, will be devoted to this field as shown below:

Theme B: Urban and Industrial Flows - Analysis, Management, and Security

- B1. Internal flows in industrial systems
- B2. Security of water resources and water services
- B3. Combined sewer overflows
- B4. Storm water management
- B5. Flows in water supply pipe networks
- B6. Hydro-machinery and fish passage
- B7. Urban water system rehabilitation

The other main congress themes include (A) Hydroinformatics, Hydraulic Modelling, and Data: Competition or Integration?, (C) Protecting and Restoring the Aquatic Environment - Water Quality and Habitat Challenges, (D) Coping with Extremes in Water Resources, (E) Coastal Development, Dynamics, and Ecosystem Fragility - A Delicate Balance , and (F) Freshwater Crisis – Trends, Challenges, and Global Change. As always, the congress will also include a range of seminars and technical workshops.

For full information visit the new Congress Website at: <http://www.iahr2005.or.kr/>.

IAHR and the congress organizers welcome specific ideas and suggestions with respect to further development of the congress program and help with organization.

A new IAHR monograph – Hydraulicians in Europe, 1800–2000, by Willi Hager (2003). This very comprehensive book (700 pages) contains hundreds of short biographies of important individuals who have significantly contributed to knowledge in all fields of hydraulics and water engineering in Europe between 1800 and 2000. The book can be ordered from the IAHR website www.iahr.org and costs €110 (€99 for IAHR members).

Finally, the IAHR membership renewals are now due, for details, please contact the IAHR Secretariat.

IWA News

IWA Governance Structure – the Association is in the throes of a major strategic realignment of its governance structure, aiming to replace the current dual-chamber management with a single, Strategic Council. This will break down the previous barriers between the scientific–technical leadership and the regular governance. It will also be created to provide diverse constituents with opportunities to contribute to the direction of the Association. This will give groups like regulators and the younger members better representation than they have enjoyed up to now. On the leadership front, Michael Rouse will replace Professor Norihito Tambo in the President’s role at the Board Meeting in March 2003. David Garman, Director of CRC for Waste Management and Pollution Control, will remain on the IWA Executive until the 2006 Congress, which will take place in Beijing. Ali Fassi Fihri replaces David Garman in the Congress President’s role until the Marrakech Congress in September 2004. The latest information on IWA activities can be obtained on the IWA home page (<http://www.iwahq.org.uk>). If you know of any sites that you feel would be of interest to IWA members, please send details to Keith Robertson (keith.robertson@iwahq.org.uk) at the Secretariat.

Message from the IWA Executive Director, Paul Reiter – Membership renewal letters have now been sent to all IWA members. You can easily renew your membership in the following ways: on-line, using the link on the IWA homepage to the on-line renewal form, and by fax or post, using the membership renewal form that has been posted to you.

Check the IWA website – www.iwahq.org.uk – for the latest information and activities of IWA, including: improvements in service to Members in 2003; plans for 2004; conference programme, publications and journals, as well as other news.

Remember to update your contact details, particularly your e-mail address, so that we can easily get in touch with you. IWA looks forward to continued collaboration with you in 2004.

World Water Monitoring Day

October 18th 2004 sees the celebration of the second annual World Water Monitoring Day, a global educational exercise designed to raise awareness and stimulate interest in the importance of clean water for everyone on the planet. The event is run by the International Water Association in partnership with America's Clean Water Foundation and was forged around each organisation's commitment to clean water and foresight in broadening efforts to include global outreach activities. Beginning in 2002 in the United States as National Water Monitoring Day, it became an international event for the first time last year, and from 2004 onwards the IWA and ACWF aim to make this a memorable annual event which will gain momentum and increase in popularity. The aim is to involve volunteers from all over the globe in a co-ordinated effort to test and monitor their local water bodies, with a view to encouraging continued stewardship and environmental responsibility. This practical, fun activity invites volunteers to go to their local rivers, lakes and streams and measure 4 basic water properties: Temperature, pH, Dissolved Oxygen and Turbidity. Results are then recorded by country and location on the World Water Monitoring Day website: www.worldwatermonitoringday.org. Water-testing kits can also be ordered via the website, and include enough materials for up to 50 tests. The monitoring window is from 18th September to 18th October, culminating in the celebration of World Water Monitoring Day itself. Monitoring results will ultimately be compiled into an annual report, which will be available on the website early the following year, and will provide a glimpse of the condition of freshwater bodies all over the world at a specific time. World Water Monitoring Day aims to involve members of the community and teach them how easy it is to be 'hands-on' with their immediate environment, and thereby have a positive effect on the planet in general.

For more information, please contact: Clare Nelson, World Water Monitoring Day co-ordinator, E-mail: clare.nelson@iwahq.org.uk, Tel: +44 (0)20 7654 5541, or www.worldwatermonitoringday.org

IWA Membership Renewals

Don't forget to renew your IWA membership for 2004 if you want to continue receiving this newsletter. If you have not done so already, you can renew online at www.iwahq.org.uk or using the membership renewals notice that was sent to you in December 2003.

IWA recognises that your support, with that of our other members in more than 120 countries worldwide, is central to its success. We look forward to continued collaboration with you in 2004."

6. NEWS FROM IWA PUBLISHING

Titles in urban drainage and sewerage

NEW

Urban Drainage: A Multilingual Glossary

JB Ellis, B Chocat, S Fujita, J Marsalek, W Rauch

Urban Drainage: A Multilingual Glossary has been written by research engineers and scientists with substantial experience in the urban drainage field. It provides definitive descriptions of urban drainage terms in English, French, Japanese and German, giving guidance on their appropriate usage and context. The glossary also contains many diagrams, tables and technical discussions, and is a very practical tool to facilitate international technical communication in the urban drainage field.



Containing well over 850 commonly-used terms in urban drainage, all expressed in a user-friendly manner, the book serves as a valuable resource for both practitioner and academic.

Topics covered include:

- urban hydrology/hydraulics
- sewerage
- surface water runoff
- pollution (groundwater and surface)
- receiving waters
- ecology
- ecotoxicology
- best management practices
- urban water resource management

It will be of great use and interest to scientists, engineers and ecologists, professionals and students working in urban hydrology/hydraulics, urban water resource management and regulation, urban planning and ecology.

January 2004 · Pages: 528 · ISBN: 190022206X · Paperback

IWA Members Price: £66.75 / US\$113.25 / €93.75

To find out more about this title and to place your order click through to

<http://www.iwapublishing.com/template.cfm?name=isbn190022206x>

NEW

Solids in Sewers

The Sewer Systems and Processes Working Group of the IWA/IAHR Joint Committee on Urban Drainage

This Report presents information on the current state of knowledge of the origins, occurrence, nature and effects of sewer solids for use by engineers, scientists, administrators and water quality planners for the planning, design and operation of sewerage systems. The report addresses both sewer maintenance requirements and environmental protection issues.



The title belongs to Scientific and Technical Report Series, Scientific & Technical Report No. 14

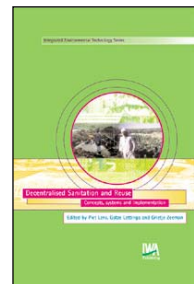
February 2004 · Pages: 300 · ISBN: 1900222914 · Paperback
Members' price: £56.25 / US\$96.00 / €78.75. Non Members Price: £75.00 / US\$128.00 / €105.00

To find out more about this title and to place your order click through to <http://www.iwapublishing.com/template.cfm?name=isbn1900222914>

Decentralised Sanitation and Reuse: Concepts, Systems and Implementation

P. Lens, G Zeeman, G Lettinga

Adopting a multi-disciplinary approach, *Decentralised Sanitation and Reuse* places public sanitation in a global context and provides a definitive discussion of current state-of-the-art sanitation technologies. It shows how these technologies can be implemented to integrate domestic waste and wastewater treatment in order to maximize resource recycling in domestic practice.



This book will be an invaluable resource for a wide academic and professional readership active in the fields of environmental protection and public sanitation.

The title belongs to Integrated Environmental Technology Series

March 2001 · Pages: 650 · ISBN: 1900222477 · Hardback
IWA Members Price: £67.50 / US\$114.75 / €108.75

To find out more about this title and to place your order click through to <http://www.iwapublishing.com/template.cfm?name=isbn1900222477>

Rainfall in Urban Areas

Selected Proceedings of the Fifth International Workshop on Rainfall in Urban Areas held in December 2000 in Pontresina, Switzerland

Editor(s): P Burlando

2002 · ISBN: 1843394111

IWA Members Price: £103.50/US\$175.50/€165

Sewer Processes and Networks, Selected Proceedings of the 3rd International Conference on Sewer Processes and Networks, held in Paris, France, 15–17 April 2002, Editors: J-L Bertrand-Krajewski, G Chebbo, 2003 · ISBN: 1843394367, IWA Members Price: £103 / US\$175.50 / €165

Environmentally Sound Technology for Wastewater and Stormwater Management: An International Source Book, Authors: UNEP International Environmental Technology Centre, April 2002. ISBN: 1843390086, IWA Members Price: £66 / US\$112.50 / €105

Urban Rivers — Our Inheritance and Future, Editors: G. Petts, J. Heathcote, D. Martin, April 2002 · ISBN: 1900222221, IWA Members Price: £15.75 / US\$27 / €24.75.

Dictionary of Water and Waste Management, Authors: PG Smith, JS Scott, March 2002 · ISBN: 1843390159, IWA Members Price: £27 / US\$46.50 / €43.50.

Performance Indicators for Wastewater Services, IWA Manual of Best Practice (plus CD). *Editor(s)*: Rafaela Matos (LNEC, Portugal), Adriana Cardoso (LNEC, Portugal), Prof Richard Ashley (University of Bradford, UK), Alejo Molinari (ETOSS, Argentina), Patricia Duarte (LNEC, Portugal) and Andreas Schulz (EGLV, Germany).

The main purpose of the MBP **Performance Indicators for Wastewater Services** is to present a coherent framework of performance indicators (PIs) for wastewater services. The manual also provides guidance as to how to utilise the PIs or subsets thereof for:

- internal evaluation of performance by wastewater undertakings;
- comparisons between the performance of undertakings in the scope of metric benchmarking initiatives;
- regulatory agencies to extract requisite information for their specific needs;
- to provide data for international comparisons of the performance of wastewater services.

The manual is intended primarily for use by wastewater undertakings, but may also be used by other stakeholders concerned with the performance of an undertaker in providing wastewater services. Those parts of the system that deal only with stormwater, which does not ultimately enter a sewer operated by the undertaking, are excluded. This excludes stormwater handled by source control systems, BMPs or SUDS.

This product aims to be a valuable reference source for all those concerned with managing the performance of wastewater services including customer groups, utility managers of policy-makers, regulators and other stakeholders.

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7. REPORTS ON CONFERENCES

The 1st International Conference on Urban Drainage and Highway Runoff in Cold Climate was held in Riksgränsen, Sweden, March 25–27, 2003 (reported by J. Marsalek). The conference was chaired by Maria Viklander, organised by the Division of Sanitary Engineering of Luleå University of Technology, Lulea, Sweden, and co-sponsored by IAHR, IWA, the Swedish Research Council for Environment Agricultural Sciences and Spatial Planning (FORMAS), the Swedish National Road Administration (SNRA), and COLDTECH. The main conference goals were to reduce the gap between the knowledge base on urban drainage in cold climates and the needs for such information, and to stimulate further research in this field. The conference attracted almost 70 participants from 10 countries. The conference programme comprised 31 presentations, 17 of which were selected for further revision and publication in a special issue of *Water Science and Technology* volume **48(9)**, entitled ‘Urban Drainage and Highway Runoff in Cold Climates (Edited by M. Viklander, J. Marsalek, P.-A. Malmqvist and W.E. Watt). An abstract of the conference overview paper (Viklander, M., J. Marsalek, P.-A. Malmqvist, and W.E. Watt (2003). Urban drainage and highway runoff in cold climate: conference overview, *Water Science and Technology* **48(9)**, 1–10 follows.

Overview of research findings presented at the conference on urban drainage and highway runoff in cold climates starts with generation of urban runoff and snowmelt, followed by snowmelt and winter runoff quality, best management practices for urban snowmelt and winter runoff, and snow management in urban areas. Research on the urban hydrological cycle is lagging behind the needs in this field, particularly in terms of data availability. The current studies of winter urban runoff quality focus on road salts in the urban environment and their environmental effects. The needs for better source controls in salt applications, improved management of chloride-laden runoff, and selective adoption of environmentally safer alternative de-icers were reported. Adaptation of the conventional stormwater best management practices (BMPs) for winter operation remains a challenge. The first step in refining the existing BMPs for winter operation is to advance the understanding of their operation, as reported for some cases at the conference. Finally, snow management in urban areas may require local storage of fresh (unpolluted) snow and disposal of more polluted snow at central snow disposal sites.

NATO Advanced Research Workshop on **Enhancing urban environment by environmental upgrading and restoration** was held in Rome, Italy, November 5–8, 2003 (reported by J. Marsalek). The workshop was directed by Drs Jiri Marsalek (National Water research Institute, Burlington, Canada) and Daniel Sztruhar (Slovak Technical University, Bratislava, Slovakia), sponsored by NATO and Steinhardt (Germany), and supported by the directors’ employers, and the Water Research Institute, Rome, Italy, and

Urban Drainage and Flood Control District, Denver, CO, USA. The workshop was attended by 60 invited participants from 14 countries, both members of NATO and Partners for Peace Countries. The workshop programme focused on upgrading stormwater management facilities, optimizing combined sewer overflow (CSO) facilities and sewage treatment plants, urban stream restoration, and socio-economic challenges in restoration of the urban environment. The workshop was successful with respect to both main objectives – sharing knowledge on improving urban environment and fostering co-operation among the participants. For further information, contact Jiri Marsalek (jiri.marsalek@ec.gc.ca).

OTHU 1st Scientific Seminar, held in Lyon, France, on November 12, 2003 (reported by Jean-Luc Bertrand-Krajewski) - The Field Observatory for Urban Water Management (OTHU) is a long-term (10 years) field research laboratory, which is operated in the drainage system of the Urban Community of Lyon and some water bodies receiving its drainage effluents. The main objective of the European scientific seminar was to inform the European scientific community about the research results obtained in the framework of the Field Observatory, to disseminate broadly the data collected, and to invite European researchers to exchange data and develop new collaborations in international projects. Results of eight research programmes, referring to four themes, were presented. The themes are as follows: (a) Rainfall analysis and representation, (b) Stormwater runoff infiltration: pollutants transfer, facility design and management, and impacts on groundwater, (c) Impact of urban wet weather discharges on small watersheds, and (d) Measurements in urban hydrology. For further information contact info@othu.org and webpage <http://www.othu.org>

8. NEWS FROM AROUND THE WORLD

Australia (reported by Dr. T. Wong)

There has been significant progress in industry uptake of the water sensitive urban design philosophy in urban water cycle management with a number of high profile land development projects incorporating sustainable urban water management strategies in the major capital cities in Australia. A number of state and national manuals providing guidelines and engineering design procedures for the planning and design of stormwater management measures has been published to facilitate industry uptake of latest research findings and best practice in stormwater management. *Australian Runoff Quality* [<http://www.arq.org.au/>] provides an overview of current best practice in the management of urban stormwater in Australia. It is an initiative of the Institution of Engineers, Australia's National Committee on Water Engineering, and contains:

- Procedures for the estimation of a range of urban stormwater contaminants;
- Design guidelines for commonly applied stormwater quantity and quality management practices;
- Procedures for the estimation of the performance of these practices; and
- Advice with respect to the development/consideration of integrated urban water cycle management practices.

There has been further development on the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) with the release of Version in December by the Corporate Research Centre for Catchment Hydrology (CRCCH) [<http://www.catchment.crc.org.au>]. This model has a very rapid industry uptake since it has been launched in March 2002. It serves as a decision support system and packages many of the CRCCH research findings into an easily used tool. MUSIC is designed to operate at a range of temporal and spatial scales suitable for catchment areas from 0.01 km² to over 100 km². The modelling approach is based on continuous simulation, operating at time steps that can range from 6 minutes to 24 hours to match the spatial scale of the catchment being modelled. MUSIC enables urban catchment managers to (a)

determine the likely water quality emanating from specific catchments, (b) predict the performance of specific stormwater treatment measures in protecting receiving water quality, (c) design an integrated stormwater management plan for each catchment, and (d) evaluate the success of specific treatment measures, or the entire catchment plan, against a range of water quality standards. Interested users can download the software free (on a trial basis) from the website: <http://www.toolkit.net.au/cgi-bin/WebObjects/toolkit>

Another study of interest was reported by Dr Tim Fletcher and his colleagues from the CRCCH who undertook a desktop investigation to determine how many storm events we should sample in order to record natural variability of Event Mean Concentration (EMC) within one catchment. In that study, two existing data sets on stormwater quality (Total Suspended Solids –TSS, Total Nitrogen, -TN, and Total Phosphorus – TP) collected in separate systems at: (1) Blackburn catchment in Melbourne (200 ha, mixed land use) and (2) Sandy Creek catchment in Brisbane (220 ha, predominantly residential) were analysed. The Sandy Creek data was supplied by Brisbane City Council, from their Stormwater Quality Monitoring Program. The Blackburn data consists of N=45 monitored Event Mean Concentrations (EMCs) of TSS, while Sandy CK data has $n = 90$ EMCs of TSS. Climate is very different in these two regions; Brisbane climate being subtropical-tropical and Melbourne being Mediterranean. There may be also a difference in the data acquisition; Melbourne data has been collected purely for research purposes (by dedicated PhD student), while Brisbane data were collected for management and operational purposes.

A rigorous statistical analysis of the data found that the confidence in the estimate of the catchment event mean concentration increases rapidly as the number of samples analysed increase from 5 to 20 samples. In other words, monitoring programs which take only 5 or 10 samples cannot provide anything more than a broad indication of the likely event mean concentration. Conversely as the sample size increases past 50 events, the reliability increases only slightly, despite significantly greater expenditure on sample collection and analysis. [Source: Catchword No 122 November 2003;

<http://www.catchment.crc.org.au/products/catchword/index.html>

or

<http://www.catchment.crc.org.au/products/catchword/2003/catch122.pdf>]

Austria (reported by Prof W. Rauch)

Dr. R. Fenz of the Technical University Vienna reports on a project aiming to quantify sewer exfiltration. The antiepileptic drug carbamazepine was used as a marker species in wastewater to identify and quantify sewer exfiltration. In several studies, carbamazepine turned out to be hardly removed in wastewater treatment and either not at all or just slightly attenuated during bank infiltration. Concentrations in wastewater are generally 1000 times higher than the detection limit. In contrast to many other marker species, a relatively recently introduced drug, such as carbamazepine, is discharged to the environment only with wastewater. The results of a study carried out by the Vienna University of Technology in Linz, Austria, in which carbamazepine concentrations were measured in wastewater and groundwater, indicate an average exfiltration rate, expressed as a percentage of the dry weather flow that is lost within the city, as 1%. This rate is lower than sewage losses reported in most other studies, which attempted to quantify exfiltration from sanitary sewers on the basis of groundwater pollution.

Dr Gruber from the TU-Graz reports on sewer online monitoring as part of a project addressing innovative technology for integrated water quality measurement. As one part of a pilot water-quality network in Austria a sewer monitoring station has been installed at a combined sewer overflow in Graz. The main goal of the monitoring station is to record frequency and duration of overflow events and the subsequent pollution discharge to the receiving water body by means of on-line techniques. The sewer monitoring station has been operating since October 2002 and except for two-week breakdown caused by malfunction of an industrial PC, it has been continuously providing data to a central data server. The recorded raw data are presented and continuously updated on a project homepage (www.imw.ac.at). By November 30, 2003, in total, 30 overflow events were observed and recorded. The central sensor of the

station is a submersible UV-VIS spectrometer situated in a floating pontoon installed directly in the CSO chamber. The sensor measures continuously CODeq, T(D)OCeq, solids and nitrate. A permanent video control could be installed directly in the overflow chamber, which would greatly ease maintenance work, since the correct position of the pontoon can be controlled permanently and maintenance work on demand could be established.

Experience gained so far shows that the sensors installed directly in the CSO chamber can be operated with comparably low maintenance. On the other hand, sensors which had to be installed in a measurement container – since no explosion-proof version was available – still show some problems with their reliability. Such problems are not caused by the sensor itself, but by the required sample supply system providing samples from the CSO chamber. So far continuous operation of these sensors could not be established because of clogging of the sampling line during the periods of low wastewater flows.

The future work planned for the next year will focus on an intensified calibration and validation of the sensors used and on the integration of rain gauges into the monitoring network for future modelling work. The observed data will be used in a Ph.D. thesis to develop probabilistic forecasts of CSO emissions of COD and TSS.

Prof. Rauch reports on activities at the University Innsbruck, Institute of Environmental Engineering. Project CD4WC, dealing with optimising the efficiency of the urban wastewater system with regard to impacts on natural water bodies and the capital and operational costs, is now entering the second year. The Institute in Innsbruck is investigating the legal framework provided by the EU Water Framework Directive (WFD) and its effects on engineering planning within the boundaries of the project. The WFD aims to reach an ecologically ‘good’ status for water bodies. Every member state can define its own standards in the implementation of the WFD. These steps of implementation will set the boundary conditions for future developments. Status of the implementation regarding typology classification, definition of reference sites and declaration of water bodies has been investigated with the focus on rivers as the main receiving waters.

In planning procedures, engineers are further requested to predict biological effects in rivers. Studies dealing with these new challenges have also been reviewed within the frame of the project. Also a closer investigation has focused on the combined approach, in which discharges (releases) and water quality standards have to be taken into account. The rule of applying the more stringent standard is discussed in the context of the legal incorporation of the WFD into the Austrian law. First results have been presented at a workshop at Achensee, in September 2003 and will be published soon on the project homepage: <http://www.cd4wc.org>

Concerning the CSO pollution abatement, the Austrian Society of Wastewater Engineers (ÖWAV) currently works on establishing new guidelines. The project KAREN aims to develop a software platform for determining the relevant parameters according to these guidelines. The key issue of this research is the lack of simple planning tools that can establish a clear cause–effect relationship between the control measures and the impact on the receiving water. KAREN is developed to close this gap for the Austrian situation. The CSO impact on the receiving water system is computed by means of long-term simulations and expressed by the percentage of annual precipitation that appears as CSOs (as required by the guidelines). The software development is done in collaboration with the Technical University of Vienna and the result will be presented at a workshop in summer 2004.

Canada (reported by Dr Jiri Marsalek)

The Federation of Canadian Municipalities (FCM) and the National Research Council (NRC) have been working on the National Guide to Sustainable Municipal Infrastructure. This Guide is designed to assist Canadian municipalities in dealing with infrastructure issues, and specifically, it aims to provide: (a) a decision-making and investment planning tool; (b) a compendium of technical best practices (BPs); (c) a road map to the best available knowledge and solutions for addressing infrastructure issues; and (d) serve as a focal point for the Canadian network of practitioners, researchers and municipal governments dealing

with infrastructure issues. So far, about 15 best practice documents have been produced, including those dealing with source and on-site controls for municipal drainage systems, Infiltration/inflow control/reduction for wastewater collection systems, and wastewater source control. The work is starting on a new BP addressing stormwater management planning in a broad context, including flood protection, water quality protection and mitigation of environmental impacts, habitat values, community amenity objectives, compliance with regulatory requirements, life-cycle costs, the feasibility of implementation, systems reliability and sustainability, and equitability of provided benefits and protection. For further information, contact Dr Marsalek who is one of the leaders of this effort (jiri.marsalek@ec.gc.ca).

France (reported by Dr Jean-Luc Bertrand-Krajewski)

Two French national working groups (WGs) are active in the field of urban drainage: (a) the WG on Stormwater, chaired by Mathieu Ahyerre of AGHTM, and the WG on Urban Hydrology, chaired by Jean-Luc Bertrand-Krajewski of SHF. Since many professionals are active in both WGs, the two WGs have decided in April 2003 to work jointly and to systematically organise joint meetings and activities. As the AGHTM is closely related to IWA and SHF to IAHR, the common group is somewhat analogous to the Joint Committee on Urban Drainage, at the French national level. The common group has 31 registered members, who meet every 2 months. The chairmen of the two WGs work alternatively as the chairman and rapporteur of these meetings.

The currently planned activities of the AGHTM + SHF Working Groups include:

- A one-day conference on storage and settling tanks on January 27, 2004 (see the announcement in this newsletter),
- A two-day national conference devoted to PhD students (Doctoral Conference on Urban Hydrology) will be organised in Lyon, France on October 27 and 28, 2004 (tentative dates),
- A two-day national conference on the linkages between sewer monitoring and sewer modelling is planned for March-April 2005, and
- An enquiry and a report about the use of RTC in France is planned to start in the spring of 2004.

For more information, please contact Mathieu Ahyerre (ahyerre.mathieu@aesn.fr) or Jean-Luc Bertrand-Krajewski (jlbk@urgc-hu.insa-lyon.fr).

CSO modelling and survey - the Combined Sewer Overflow (CSO) structures represent safety valves protecting sewers and thereby serve as vectors conveying the pollution to the receiving waters. In this context, an important project has been started between the ENGEES and Anjou-Recherche in 1995 and will be finished in 2004. This project combined two major investigations: (a) CSO modelling and (b) video observations of the CSO structure. For CSO modelling, a one-dimensional model called 'CalDo' has been developed by coupling the Barré de St-Venant and Hager's equations and used to simulate operation of a long side weir with presence of a hydraulic jump. For the video observations, a prototype device was installed in a sewer network. It films the overflow events and the digital pictures are used to optimise the future self-monitoring system of a very complex CSO structure. For further information, contact mathieu.zug@generale-des-eaux.net and jose.vazquez@engees.u-strasbg.fr.

Germany (Reported by Prof Peter Krebs and Dr Manfred Schütze)

When examining the various German conferences on wastewater held in 2003, the following main topics related to urban drainage may be identified:

- The role of urban drainage and especially of CSOs in impacts on river water quality.
- Integration of the sewer system and WWTP, especially with respect to modelling the integrated system.
- Balancing parasite waters and their effects on the wastewater system and the groundwater aquifers.

- Optimisation of special facilities/structures, such constructed wetlands for combined sewer overflow (CSO) treatment or CSO storage sewers (i.e., not separate tanks).

A series of German simulation research workshops (*'Hochschul-Simulationsgruppe'*) was continued: The autumn 2003 workshop was held in Magdeburg, and was attended by a number of researchers from neighbouring countries, including Poland, Austria, Switzerland and Luxemburg. Two groups were formed, discussing (a) simulation guidelines for dynamic simulation of wastewater treatment plants (WWTP) and (b) current status and developments of integrated modelling of sewer systems and WWTPs, including real-life case studies. It appeared that currently a fair number of projects considering the sewer system and WWTP as a single entity are carried out, as also indicated by several PhD theses recently published or currently being underway. Intensive discussions made this workshop highly successful and tasks taken home as 'homework' will ensure consolidation and further developments of the workshop outcomes.

The biennial conference on control and automation of wastewater systems was held in Wuppertal, Germany. Over 180 practitioners and researchers convened to present and discuss recent developments and implementation of sensors, data transmission and processing technologies and process control systems, thus ensuring cross-fertilisation in this important intersection of environmental and control engineering.

Realising the need for increased application of communication and information technologies within the field of urban drainage (e.g., not only real-time control of wastewater installations, but also remote access to information on the status of wastewater systems), several research projects within this field are currently underway at IFAK Magdeburg, University of Kaiserslautern and other institutions.

In the city of Dresden, the August 2002 flood caused the groundwater level to rise up to a height that has never been recorded before. In a research project involving the Dresden University as one of the partners, the contribution of the sewer system to the decrease of the groundwater level is investigated. It appears that the sewer system does not help reduce the peak level during the event, but it is a locally significant drainage factor in the months after the end of the flood and prevents certain sub-catchments from being flooded by groundwater over a longer period of time. This shows a conflict of water management objectives – on the one hand, the sewers should be tight to reduce parasitic water and on the other hand, more leaky sewers help to lower extreme groundwater levels.

Japan (reported by Mitsuyoshi Zaizen)

A new law concerning urban drainage recently promulgated in Japan. In 2003, an important law called 'Inundation Damage Control Law for Specific Urban Rivers' was proclaimed. The main objective of the law is to promote cooperation between sewer system operators and river authorities in order to prevent inundation in urban areas. In recent years, heavy rainfall events caused serious flood damage in urban areas. Under these circumstances, the Ministry of Land, Infrastructure and Transportation (MLIT) instituted a committee comprised of academics and experienced engineers to address this problem. Following several meetings, the committee produced a report, which served as a basis for the new law. The main points of the law can be summarised as follows:

- Identify the urban rivers and catchments, where the risks of flooding and significant damages exist.
- Devise a plan to prevent inundation and flooding, and promote implementation of infiltration and storage facilities.
- Force private developers to install runoff control facilities.

The law will become effective in 2004, and further promotion of countermeasures against inundation damages is strongly expected.

Progress on CSO control. In May 2002, MLIT notified the local public bodies that operate combined sewer systems (CSS) of the need to improve CSO control. In this notification, MLIT offered financial incentives (subsidies) to the CSS operators, if they establish a plan of the CSO abatement within three years and start to construct the CSO abatement facilities within five years of entering the agreement to join

this program. Thus, the deadline for establishing the plan is 2005. There are 192 cities joining this CSS initiative in Japan, and some large cities have already commenced the CSO abatement projects even before receiving the notification about this program. Although many cities have recognized the importance of CSO problems, they have not started working on the CSO abatement for economic reasons. However, many cities have embarked on the CSO abatement by starting with monitoring, because MLIT offered subsidies even for CSO monitoring, in the same notification. Furthermore, the Enforcement Order of the Sewerage Law was revised in September 2003, and this revision uses the water quality effects of CSOs to speed up the implementation of the CSO abatement. Under these circumstances, the projects dealing with the CSO abatement must proceed.

Follow-up report on the National Project on Sewerage Works ‘SPIRIT 21’. This is a follow-up report on ‘SPIRIT 21’. MLIT launched a new sewerage project ‘SPIRIT 21’, and chose the technologies for CSO treatment as the first theme of the project (reported in the previous JC Newsletter No. 16). After one year of field testing, the first four of the 24 treatment technologies tested were approved by MLIT in October 2003 (see newsletter No. 16 for details). Those 24 technologies are divided into five groups: (a) Removal of impurities in sewer systems, (b) Disinfection, (c) High-rate filtration, (d) Measurements and monitoring, and (e) Coagulation and separation. The four technologies approved by MLIT at this time are two types of high-rate filtration, a disinfection technology, and one coagulation and separation technology. One of the high-rate filtration technologies was presented at the 9th ICUD in Portland as a poster. Within the next two years, the other 20 technologies, including screen technology, are expected to obtain official approval certifying their practical applicability.

United Kingdom (reported by Prof R. Ashley)

UK Government Office of Science and Technology Foresight Flood and Coastal Defence Project. An assessment of future flood risk 2030 to 2100 - *the challenges and choices*. This project has been underway since September 2002. The aim is to produce a long-term vision for the future of flood and coastal defence in the UK which takes account the many uncertainties, but which is nevertheless robust, and can be used as a basis to develop an informed government policy and its delivery. The project is in 3 stages: (1) Set up and identification of the drivers of flood risk; (2) Assessment of the baseline flood risks and impacts; and, (3) Assessment of the potential for flood risk responses to reduce the risk. Work on Phase 3 started in September 2003. An initial report up to the end of Phase 2 is available on the OST website. A source-pathway-receptor approach is being taken and predictions of future rainfall are being used, together with four pre-defined socio-economic scenarios for the future. The project encompasses the whole catchment system including the coastal zone and is using a variety of approaches based on expert review. The urban drainage aspects are being led by the Pennine Water Group assisted by main UK experts in urban drainage. Further information about the project can be obtained from R.Ashley@bradford.ac.uk. Reports and other information are available from <http://www.foresight.gov.uk/fcd.html>.

WaND: Water Cycle Management for New Developments. this project was reported in an earlier newsletter (No. 16) and is on-going. The UK Engineering & Physical Science Research Council is funding an ambitious portfolio of consortia under the heading ‘Sustainable Urban Environment’. The most relevant consortium to ‘urban drainage’ is WaND (Water Cycle Management for New Developments), which aims to support the delivery of integrated, sustainable water management for new developments by provision of tools and guidelines for project design, implementation and management.

The project is co-ordinated by Prof David Butler and his group at Imperial College London, and is being carried out by Imperial College, the universities of Bradford, Cranfield, Exeter, Leeds, Sheffield and Wales (Aberystwyth) plus CEH and HR Wallingford. Industrial support is widespread across the water sector including contributions from water companies, regulators, consultants and others. Work packages focus on technical aspects of the water cycle (water supply, wastewater collection, storm drainage and

SUDS) and social, planning, economic and health issues. The project began on 1st April 2003 and will last for 4 years. For more details, please contact Prof Butler (d.butler@imperial.ac.uk) or go to: www.wand.uk.net.

USA (reported by Eric Strecker and UWRRC of ASCE)

The report that follows is based on the activities of the ASCE (American Society of Civil Engineers) Urban Water Resources Research Council (UWRRC). The sharing of information and collaboration between the Council and the JC is arranged through Eric Strecker (member of executives of both bodies) and Jiri Marsalek. The next Council meeting will be held at the 2004 Environmental and Water Resources Institute (EWRI) World Water and Environmental Resources Congress in Salt Lake City, Utah, June 28–July 1, 2004. The conference web site is: <http://www.asce.org/conferences/ewri2004/>
A likely meeting date: July 27, 2004, the Sunday before the conference.

Update on Council Task Committees (TC) activities.

History TC (Contact Jon Jones Jonjones@wrightwater.com) is compiling a history of the UWRRC, including a summary of the conferences organized by the Council and a summary of research and guidance produced by the Council and its members. A document has been prepared and review is continuing as time allows.

CSO/SSO TC (Contact Richard Field: field.richard@epa.gov). The Combined Sewer Overflow/Sanitary System Overflow committee made a strong recommendation to get the Council and EWRI to concentrate on CSO/SSO issues because there are in national rules and regulations and billions of dollars being spent on controls. Two technical sessions have been proposed for the 2004 Salt Lake conference with a general theme of integration, coordination and cooperation. The TC will develop a full track of sessions for the Anchorage conference – emphasizing the need to integrate CSO/SSO control programs into overall watershed management programs. The TC would like to emphasize more international interaction and cooperation. It is important to draft a policy to integrate watershed protection, pollutant reuse, and reducing monitoring requirements for watersheds.

Urban Streams Restoration TC (contact Jim Gracie: jgracie@holonet.net) developed an extensive Urban Streams Symposium (**Symposium on the Protection of Rural and Urban Streams**) at the 2003 Philadelphia EWRI conference (see: <http://www.asce.org/conferences/ewri2003/display.cfm?process=1>). The sessions were very successful and the proceedings are available at: <http://www.pubs.asce.org/BOOKdisplay.cgi?9991640>), ISBN number is: 0-7844-0695-2.

A follow up symposium has been prepared for the Salt Lake City conference, titled: River Restoration and Urban Streams Symposium. Committee representatives have been approached by CRC for a book on the topic of symposium. The TC intends to publish a subset of the symposium papers in a special issue of the WRPM Journal. TC recognises a need for a Standards of Practice identifying the approach and guidance. Current efforts will focus on guidelines with coordination with stream restoration group (John Schwartz and Don Carpenter).

LID TC (Ed Herricks, Herricks@uiuc.edu) reports on a forthcoming conference on Low Impact Development - LID, with primary funding coming from EPA. The conference will last 3–4 days and be held likely in September 2004.

The need for guidelines and standards of practices is recognised and could be addressed by future research efforts that reflect Engineering Foundation Conference issues, design standards, codes potentially leading to an Engineering Foundation Conference, possibly a post-conference session as a pre foundation conference.

MOP (ASCE Manual of Practice) 77/87 (Charles Rowney Rowneyac@cdm.com /Andrew Earles aearles@wrightwater.com) committee is reviewing the two ASCE manual of Practices related to urban stormwater management (77 - Design and Construction of Urban Stormwater Management Systems and 87 - Urban Runoff Quality Management <http://www.pubs.asce.org/BOOKdisplay.cgi?9802392>)

Committee focused on two objectives: (a) review of new practices, and (b) special issues to improve 77/87. Findings - 77/87 MOP is sound and thorough, some areas need update, focus on new topics, take a modular approach, include LID and Urban streams.

Gross Solids TC (Betty Rushton: Betty.Rushton@swfwmd.state.fl.us) is developing and reviewing standardized definitions and sampling protocols, plans to holding 2 technical sessions at the Salt Lake City conference in 2004.

Sponsored Projects - BMP Database Project (Strecker estrecke@geosyntec.com and Urbonas burbonas@udfcd.org) – has been renamed as the International Stormwater BMP Database to better reflect the international contributions and data sources. Sustained funding is a critical issue. Grants for continued operational funding are not readily available, one possible source would be a coalition of professional groups. WERF is assisting in reaching out internationally for obtaining support for database effort. If funding is not obtained, the project may need to be curtailed (perhaps web site kept up, with minimal other activities). Maintenance and answering of questions continues, as is addition of new data (currently over 200 BMPs in database), BMP performance effects, and hydrologic effects. There are currently over 30 studies waiting for QA/QC analysis before entered into the Database pending funding. Database Activity: 4,000–5,000 website hits per month (www.bmpdatabase.org). Monitoring Guidelines Manual – thousands of downloads with significant International activity (<http://www.bmpdatabase.org/docs.htm>). Some more user friendly Excel ‘flat files’ on statistical data are available (<http://www.bmpdatabase.org/search.htm>). Other considerations – a Training class (through EWRI) and charging for database access. The current primary users are felt to be research oriented.

Other Council efforts: International Watershed Management Conference in China (Shaw Yu sly@virginia.edu) is being planned as the 4th International Conference on Watershed Management in Shenzhen, China Sept. 2004. Considerations are given to expanding of the Conference topics to include a 2-day workshop in Hong Kong and post session tours.

9. FUTURE MEETINGS AND CONFERENCES

Conference on storage and settling tanks, Paris, France, Jan. 27, 2004. The AGHTM Working Group on ‘Stormwater’, in association with the SHF Working Group on ‘Urban hydrology’, the Cereve and the Seine-Normandie Water Agency, organise a one-day conference on storage and settling tanks in sewer systems: design methods, monitoring, modelling, measurement of settling velocities, and case studies. More information (programme, registration) is available at:

<http://www.aghtm.org/communication/manifestations/calendrier/accueil.asp>

The 5th International Conference on Sustainable Techniques and Strategies in Urban Water Management (NOVATECH 2004) will be held in Lyon, France, 6–10 June, 2004. The general conference theme is alternative solutions to traditional stormwater drainage and combined sewerage systems, sustainable technologies, strategies for and approaches to the management of wet-weather flows in urban and suburban areas. Preliminary programme and online registration will become available between December 2003 and January 2004. There are special offers for exhibitors. For further information, please contact novatech@graie.org and visit the website: <http://www.novatech.graie.org>

World Water and Environmental Resources Congress in Salt Lake City, Utah, June 28–July 1, 2004. This congress is sponsored by the Environmental and Water Resources Institute of ASCE, the congress web site is: <http://www.asce.org/conferences/ewri2004/> . More than 1000 abstracts have been submitted, indicating a strong interest in the congress.

Real Time Control Seminar, Louisville, KY, September 14–16, 2004 - Louisville MSD and the Real Time Control Workgroup of JC are sponsoring this seminar focusing on the Louisville MSD RTC system. The

seminar will emphasize cost savings achieved by using RTC and will learn about the early experience with operating this system. Field visits will help participants understand local and central station set-ups and discuss operational issues. For further information please contact Dr Hubert Colas (Tel. + 1-514-257-2439, E-mail: Hubert.Colas@bpr-cso.com).

6th International Conference on Urban Drainage Modelling – UDM '04, Dresden, Germany, Sept. 15–18, 2004. Conference topics include data availability for UDM, model and parameter identification and dealing with uncertainty, GIS support to UDM (data resolution, emerging technologies, cost), effects of climate change trends and scenarios on the urban drainage system, urban flooding and risk analysis, emerging issues in UDM, pollutant transport modelling (from wash-off to pollutograph dynamics), UDM for interactions with catchment based modelling (urban area impact on catchment base EU WFD implementation), Modelling of interactions and integrated systems (with urban catchment, ground water, WWTP, receiving water), modelling SUDS (quantity, quality, ecology, performance trends and life span assessment, can the socio-economic interactions with UDS be modelled?), RTC modelling, training tools for UDM, and UDM in education.

Call for Abstracts – submit not more than two A4 pages (including text, figures and tables), with paper title, author(s) name(s) and address(es), corresponding author, formatted according to *Water Science and Technology* (template is available at www.udm04.org) to the following address: udm04@mailbox.tu-dresden.de Deadlines: submission of abstracts by 31 January 2004, notification of acceptance 15 March 2004, final papers due no later than 30 June 2004.

IWA 4th World Water Congress, 19–24 Sept. 2004, Marrakech, Morocco. The congress programme covers the following topics: 1. Operating water and wastewater systems, 2. Innovation in wastewater treatment, 3. Innovation in water supplies: use, reuse and efficiency, 4. Innovation in drinking water treatment, 5. Integrated water resource and river basin management, 6. Managing assets strategically, 7. Managing the business, and 8. Water and health.

NATO Advanced Research Workshop on Flood Risk Management: Hazards, Vulnerability and Mitigation Measures, Czech Republic, late September/early October 2004. This workshop of invited experts will review the latest knowledge on reducing flood risks and flood damages, by improving the linkage between meteorological and hydrological flood forecasting, modelling of vulnerability, pre- and during-flood management measures and management strategies considering also transboundary issues of common information and compatibility of data/instruments. To obtain more information, or request invitation contact Ms. Pavlina Nesvadbova at p.nesvadbova@dhi.cz or Jiri Marsalek (jiri.marsalek@ec.gc.ca).

IWA Diffuse Pollution Specialist Group Conference, Kyoto, Japan, October 25–29, 2004. These conferences address a broad range of research topics on diffuse pollution, including urban runoff. For more information, contact Brian D'Arcy at Brian.Darcy@sepa.org.uk.

3rd International Conference on Water Sensitive Urban Design will be held in Adelaide, Australia from 21 to 25 November 2004. The general conference theme is Cities as Catchment, exploring the changes being made in urban water planning and management that are compatible with greater sustainability. The conference will explore the challenges and opportunities that will arise as the practice of importing water supplies to urban areas from external catchments moves towards utilising and recycling the waters generated within the catchments comprising the urban areas themselves. Implementation of Water Sensitive Urban Design principles has very large implications for the manner in which urban land, built forms, water infrastructure and social institutions are planned and managed. [<http://www.plevin.com.au/wsud2004>]

The 4th International Conference on Sewer Processes and Networks (4th SPN), organised by the SS&PWG, will be held in Funchal, Madeira Island, Portugal, on 22–24 November 2004. The conference is chaired by Prof. José Matos. Deadline for abstract submission: 2 March 2004. For more information (call for abstracts, announcement, contact, deadlines, etc.) visit the SS&PWG website <http://www.sspwg.civil.auc.dk/#Events> or contact Prof. J. Matos (jsm@civil.ist.utl.pt).

World Water and Environmental Resources Congress, May 15–19, 2005, Anchorage, Alaska. Sponsored by EWRI of ASCE.

10th International Conference on Urban Drainage, Copenhagen, Denmark, Aug. 21–26, 2005. The conference planning continues despite the unexpected and sad death of Prof. Poul Harremoës recently; final arrangements for venue and conference format will be made during early spring 2004. A substantial part of the programme will be organized around special sessions on defined themes, and specialist groups will be actively involved in planning the programme and selecting contributions. Towards that end, agreements have already been made with the JCUD Group on Urban Rainfall (GUR) as well as with CityNet, a cluster of six major research projects on integrated urban water management funded by the European Commission (see <http://citynet.unife.it>). EC sponsorship through CityNet will allow travel support to selected delegates from economically disadvantaged regions. The organisers welcome suggestions from expert groups as well as individuals and potential sponsors for conference topics. There will be rigorous reviews of papers, and contacts are made with international publishers to allow publishing selected papers in international scientific journals. The second announcement and call for papers is planned for February 2004 – submission of abstracts by 31 May 2004. For more information and signing up for the 10ICUD mailing list, check the conference website (<http://10icud.er.dtu.dk> - to be updated in late February 2004) or send an e-mail to 10icud@er.dtu.dk.

XXXI IAHR Congress, Seoul, South Korea, September 2005. The congress progress will address six major themes, (A) Hydroinformatics, Hydraulic Modelling, and Data: Competition or Integration?, (B) Urban and Industrial Flows: Analysis, Management and Security, (C) Protecting and Restoring the Aquatic Environment - Water Quality and Habitat Challenges, (D) Coping with Extremes in Water Resources, (E) Coastal Development, Dynamics, and Ecosystem Fragility - A Delicate Balance, and (F) Freshwater Crisis - Trends, Challenges, and Global Change. As always, the congress will also include a range of seminars and technical workshops. For full information visit the new Congress Website at: <http://www.iahr2005.or.kr/>.

XXXII IAHR Congress, Venice, Italy, 2007.

The 11th International Conference on Urban Drainage, the Edinburgh International Conference Centre, Edinburgh, UK, August 31 – September 5, 2008 (to be confirmed by IWA). The conference will be organised by the UK community of urban drainage specialists. Please add these dates to your diary. More details will be available in the next newsletter.

10. RECENT PUBLICATIONS OF INTEREST

Special Journal Issues (IWA Publishing)

Sewer Processes and Networks, *Water Science and Technology* 2003, 47(4), 194 pp. Twenty-two selected revised papers from the 3rd International Conference on ‘Sewer Processes & Networks’ (3rd SPN), organised by the SS&PWG, Paris, France, April 15–17, 2002.

Urban Drainage and Highway Run-Off in Cold Climates, *Water Science and Technology* 2003, **48**(9), 177 p. Seventeen selected revised papers from the 1st International Conference on Urban Drainage and Highway Run-Off in Cold Climate, organised by the UDCCWG of JC, Riksgränsen, Sweden, March 25–27, 2003.

Urban Runoff Reports

(Available from Environment Agency R&D Dissemination Centre, WRc, Frankland Road, Swindon, Wilts. SN5 8YF and further information on them can be obtained by reference to publications@wreplc.co.uk)

The Long Term Monitoring of Pollution from Highway Runoff (F Moy, R W Crabtree and T Simms), R&D Technical Report P2-038/TR1, ISBN 1 844 32208 4. 2003

Guidance Manual for Constructed Wetlands (J B Ellis, R B E Shutes and D M Revitt), R&D Technical Report P2-159/TR2, ISBN 1 844 321185. 2003.

La Ville et son assainissement (in French) - The City and Its Drainage. ‘La ville et son assainissement – principes, méthodes et outils pour une meilleure intégration dans le cycle de l’eau’ (the city and its drainage – principles, methods and tools for a better integration in and management of the water cycle – in French). The necessity of an integrated approach to the management of the urban part of the water cycle has been accepted for quite some time. This guide presents the tools for such an approach. The French Ministry of Environment asked a group of experts to write this guide, in order to facilitate the implementation of a global, integrated and sustainable approach to water management in urban areas. Available as a CD ROM (€25) from CERTU. For further information and to order, contact bvente.certu@equipement.gouv.fr . Website : www.certu.fr

Arsov, R., J. Marsalek, W.E. Watt and E. Zeman (eds)(2003). **Urban water management: science, technology and service delivery**. NATO Earth and Environmental Science Series Vol. 25, Kluwer Academic Publishers, Dordrecht/Boston/London, ISBN 1-4020-1539-9, 328 p.

12. WORKING GROUP CONTACTS

International Working Group on Data and Models (IWGDM)

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Real-Time Control of Urban Drainage Systems (RTCUDS)

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