



International Association of Hydrogeologists U.S. National Chapter Newsletter

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EDITOR'S NOTE

Hello to all! This Fall's newsletter contains a lot of material, so I will keep my Editor's Note down to a minimum. In September, I attended the IAH-sponsored International Conference on Groundwater in Geological Engineering in Bled, Slovenia, and thoroughly enjoyed an excellent program of talks, social activities, and meeting old and new friends from many different countries. Thanks to Miran Veselič, Andrej Juren, Nadja Zalar and the rest of the Slovenian national committee for their great organization and hospitality! Information from the IAH Executive Committee meeting and IAH Annual General Meeting, which were held at the conference, will be included in the IAH e-newsletter which goes to all members from the UK, so I won't include it here.

I'll be at GSA in a couple of weeks and hope to see some of you. As always, let me know if you change your e-mail or mailing address. And finally, many thanks to the contributors who have provided so much interesting and useful material for this newsletter!

-- *Colin Booth*

MESSAGE FROM THE CHAIRMAN

In August I had the pleasure of meeting and talking with a visiting delegation of about a dozen Israeli and Palestinian water scientists and water managers. During the previous week, the delegation had been in Texas for meetings, demonstrations, and briefings by U.S. and Mexican water managers. The idea behind this program was that the Palestinian and Israeli water managers could benefit from learning how Mexican and U.S. water issues and conflicts have been approached and which approaches were successful and which may not have worked well. The overall program is designed to assist in resolution of conflicts between Israel and the Palestinian Authority over shared groundwater resources. It was interesting to see that behind the scenes, such discussions and collaborations were actually occurring and progressing, and I feel they represent in a small way progress that is contrary to the general impression of the dire situation in the Middle East. I was also pleased to see that hydrogeological expertise was playing an important role in this process.

Perhaps we will hear more about the Middle East groundwater issues and conflicts at the "Transboundary Groundwater Flow" Symposium being held at the XXXIII IAH Congress in Zacatecas City, Mexico, October 11-15, 2004. This symposium is being jointly organized by NGWA and the U.S. and Canadian Chapters of IAH. My thanks to Mike Campana for representing the IAH/USNC in this effort. The main theme of the 33rd Congress is "Groundwater Flow Understanding: From Local to Regional Scales" and one of the invited keynote speakers is Joe Toth. Having the next Congress located so close to the U.S. offers our members an opportunity to attend and participate in an IAH Congress without overseas travel, and I urge you to consider doing so—you won't regret it. The recently extended abstract submission deadline is coming up soon—December 15, 2003. Get more details from the Congress Web site at: <http://www.igeograf.unam.mx/aih/> On this theme, note that there will be a session on "*Groundwater and Watershed Analysis Across Political Boundaries*" at the GSA Annual Meeting in Seattle on Monday morning, Nov. 3.

If you know of students who will be attending GSA in Seattle, I call your attention to two events that are held specifically for students. One is the GSA President's Student Breakfast on Sunday morning (Nov. 2). It includes a free breakfast for students and a chance for them to meet representatives of GSA Divisions and Associated Societies (including IAH). The GSA Hydrogeology Student Reception will be held on Tuesday afternoon (5:30-7:00 pm). This event is always fun and many students win valuable prizes. Speaking of students, this is an excellent time to remind you to encourage students to join IAH. Students receive a significant discount on membership dues, and their membership also includes a subscription to *Hydrogeology Journal*.

The IAH/USNC alliance program with the Groundwater Resources Association of California continues to be a success. IAH/USNC has co-sponsored several symposia and short courses with the Groundwater Resources Association of California during 2003, and we have 38 new IAH members through GRA's joint membership program with IAH. We will continue this alliance effort in 2003. I again thank Vicki Kretsinger for her efforts in fostering this alliance.

The IAH Council met in Bled, Slovenia, on September 22, 2003. Among their recommendations was to award the 50th Anniversary IAH Congress in 2006 to China, where a meeting is proposed for October in Beijing. The 50th Anniversary celebrations will be complemented by a Special Council Meeting in France, probably in June 2006, to also mark the 150th anniversary of Darcy's Law. Another recommendation was to keep membership dues at the same level as in 2003 (although the exchange rate for Euros has changed during the past year, which will likely result in a small effective increase for U.S. members).

Colin and I will both be at the GSA meeting in Seattle, and we hope to see you and talk with you there. Introduce yourself if we don't already know you. The next newsletter will be issued in the Spring, so I take this early opportunity to wish you all a happy holiday season.

-Lenny Konikow

REPORTS

HYDROGEOLOGY JOURNAL

Cliff Voss, Executive Editor of *Hydrogeology Journal*, recently reported on the state of the journal at the IAH Council meeting in Bled. There are several highlights. So far in 2003, HJ has accepted manuscripts from 45 countries. The total number of journal pages has increased to 700 in 2003 from 660 in 2002, and will increase again in 2004 to 735. The journal has a diverse team of 58 Associate Editors—each reviewing an average of 4 manuscripts per year. About 40 percent of reviewed manuscripts are published. Significant improvement has been achieved in reducing the average decision time for an article from the date of online submission to the date of a publication decision—the reduction being from 5.60 months in 2002 to 4.25 months in 2003.

Upcoming Theme Issues include:

- 2004 (12:1) - "Towards Sustainable Groundwater Management," Guest Editor: Dr. Karin Kemper, World Bank.
- 2005 (13:1) - "Future of Hydrogeology," Guest Editor: Dr. Clifford Voss, U.S. Geological Survey.

WORLDWIDE HYDROGEOLOGICAL MAPPING AND ASSESSMENT REPORT OF MEETING AT KOBLENZ, GERMANY BY NORMAN GRANNEMANN, USGS

The Worldwide Hydrogeological Mapping and Assessment Programme (WHYMAP) was initiated in March 2002. Its aim is to collect, store, manage, and represent data and geo-information relevant to

groundwater and aquifers at a worldwide scale. The main output of the program will be a Global Groundwater Resources Map that highlights broad regional groundwater conditions. The first draft of the Global Groundwater Resources Map was presented at the Third World Water Forum in Kyoto, Japan in March 2003.

At the invitation of UNESCO and the German National Committee for the IHP/OHP, an international workshop on WHYMAP was held in Koblenz, Germany from June 25-28, 2003. Fourteen experts in hydrogeological mapping representing Africa, Asia, Europe, North America, and South America attended the workshop to discuss and improve the first draft of the Global Groundwater Resources Map. IAH member Norman Grannemann, USGS Ground-Water Resources Program Coordinator, represented North America at the workshop. Future workshops will also include experts from the Near East, Asia, and Australia. The main topics discussed were as follows:

- Review and consolidation of aquifer maps for each continent
- Update information on aquifer boundaries
- Strategies for regionalizing groundwater information
- Map and legend format
- GIS structure and attribute tables
- Methods for incorporating complementary data into the program
- Planning the involvement of experts at regional, country, and local levels

Discussion of the topics listed above and further review of new data will lead to a consolidated second draft of the global map to be discussed, improved, and finalized in a second workshop to be held in the spring of 2004. Endorsement of the map will be sought from the IHP Intergovernmental Council meeting in Paris in June 2004. The final draft will be printed, at a reduced scale of 1:50 million to be presented at the International Geological Congress in Florence, Italy in August 2004. The current working draft of the map can be found at www.iah.org/whymap.

**IAH INTERNATIONAL CONFERENCE ON GROUNDWATER IN FRACTURED ROCKS,
PRAGUE, SEPTEMBER 15-19, 2003
BY ALLEN M. SHAPIRO, USGS**

For much of the recent past, fractured rock has been a *poorly nourished younger brother* in comparison to the attention directed toward hydrogeologic investigations in near surface unconsolidated porous media. Issues of water supply, which dominated many of the early hydrogeologic investigations, focused on shallow unconsolidated deposits, because of the relative ease with which water could be abstracted from such formations. In contrast, fractured rocks were regarded as the impermeable aquitards and the formations where rates of water abstraction were insignificant or beyond the economic reach of consumers.

Societal issues related to population growth and industrialization have evolved over the past two decades to the point where fractured rock is no longer regarded as a boundary condition to other hydrogeologic problems. Ground water in fractured rock is an important source for water supply in many parts of the world, as well as an important source of water to aquatic ecosystems. Contaminant migration in fractured rock aquifers has attracted significant attention, along with methods of restoring contaminated ground water. Fractured rocks also are regarded as potential sites for anthropogenic waste, including radioactive waste, and the effect of ground-water flow in fractured rock is a concern in the vicinity of engineered structures, such as dams and tunnels.

The recent IAH International Conference on Ground Water in Fractured Rock held in Prague (Czech Republic) during September 2003 highlighted the extent of international interest in societal issues related to water resources and geologic engineering in various fractured rock terrain. The conference had over 250 contributions from 52 countries published in the conference proceedings. Contributions to the conference were divided into six areas:

- Hydrogeologic environment
- Ground-water flow and ground-water resources
- Chemical, physical and isotopic properties of ground water
- Methods of investigation and interpretation
- Anthropogenic impacts on fractured rock
- Numerical modeling

Keynote speakers provided summary lectures of these broad themes. In addition, Professor Jack Sharp (University of Texas, Austin, Texas, USA) provided an introductory lecture that reflected on recent advances and areas of investigation that continue to warrant attention. Professor Sharp used the 24th Congress of the IAH on the Hydrogeology of Hard Rocks held in Oslo, Norway in 1993 as a point of reference in assessing how far we have come and where we still need to go. Also, Professor Arie Issar (Ben Gurion University, Beer Sheva, Israel) gave an interesting historical perspective on water supply in the fractured rock aquifers of the Sinai Peninsula, and pointed to Moses as possibly the first hard rock hydrogeologist.

The recent IAH conference in Prague had an impressive number of contributions from the international hydrogeologic community; however, there were relatively few contributors from North America. Nevertheless, the proceedings of the IAH conference in Prague when taken in concert with recent conferences on fractured rock held in North America, for example, Fractured Rock 2001 (Toronto, Canada), and Fractured Rock 2002 (Denver, CO, USA) provide an international snap shot of the current theory and practice of characterizing ground-water flow and chemical transport in fractured rock.

WORKSHOP ON SOUTH AMERICA'S GUARANI AQUIFER: THE RIBEIRÃO PRETO PILOT PROJECT
BY VICTOR M. HEILWEIL, USGS

A workshop was held from 17 to 19 September 2003 in Ribeirão Preto, Brazil to organize the Ribeirão Preto Pilot Project, one of four pilot studies included in the Guarani Aquifer System Project of Argentina, Brazil, Paraguay, and Uruguay (see "Managing South America's Largest Groundwater Reservoir", page 3, August 2003 IAH Newsletter). The Ribeirão Preto area of the Guarani Aquifer was selected for a pilot study because recent groundwater development to meet growing agricultural and municipal needs has resulted in a large abundance of groundwater information compared to other parts of the Guarani Aquifer. The Guarani Aquifer is unconfined in much of the Ribeirão Preto study area and is an important groundwater recharge zone to both the local shallow flow system and the deeper regional aquifer. Therefore, point and non-point source pollution is of primary concern both locally and internationally. Overdevelopment of the aquifer is another concern, as the aquifer has recently experienced tens of meters of water level declines. Brazil is a leader in the region with regards to legislation for the sustainable use and management of water resources, however regulations have not been strictly enforced.

Discussion at the workshop focused on:

- Integrating currently available data on geologic structure, isotopes, geochemistry, and hydraulic properties into a comprehensive data base

- Developing and refining a conceptual model to investigate the aquifer's hydraulic properties, water budget, and flow paths
- Prioritizing additional data collection efforts
- Providing educational outreach to the many communities and businesses that rely on the water resource
- Coordinating between the various participating agencies to best utilize the pilot study's available financial resources

The Ribeirão Pilot Study is a multidisciplinary effort involving many governmental, university, and private institutions. It will provide a better understanding and the necessary data to protect and manage the area's ground-water resources. The findings of this study, along with the other 3 pilot studies, will provide critical information for the coordinated management of the entire Guarani Aquifer System – one of the world's largest groundwater reservoirs.

Additional information is available at <http://www.sg-guarani.org/>.

CONFERENCE NOTICES

Listed Chronologically

THE ROLE OF GROUNDWATER IN INTEGRATED WATER MANAGEMENT

October 28-29, 2003: Ontario, California: 24th Biennial Groundwater Conference & 12th Annual Groundwater Resources Association (GRA) Meeting:

See section on IAH Allied Activities with the GRA of California

GEOLOGICAL SOCIETY OF AMERICA ANNUAL MEETING

November 2-5, 2003: Seattle, Washington

The Annual GSA meeting includes a comprehensive and exciting program in hydrogeology. IAH/USNC is organizing one session on “*How Subsurface Properties Determine Microbial Habitats: The Role of Groundwater Flow and Subsurface Chemistry in Supplying Energy and Nutrients to the Subsurface Biosphere,*” which will be held on Tuesday morning, Nov. 4. Our thanks to IAH members Barbara Bekins and Phil Bennett for organizing this special session on our behalf. IAH is also a co-sponsor of the special session “*M. King Hubbert at 100: The Enduring Contributions of Twentieth-Century Geology's Renaissance Man,*” which is being held on Monday morning Nov. 3, with Alan E. Fryar and T.N. Narasimhan, presiding. IAH/USNC wants to continue sponsoring sessions at future GSA Annual Meetings. If you would like to organize and convene a session at GSA in 2004, or have an idea for a topic, please contact us within the next two months.

- Lenny Konikow

2003 NGWA GROUND WATER EXPO

December 9-12, 2003 – Orlando, Florida: National Ground Water Association

The **2003 NGWA Ground Water Expo** will be held in Orlando, Florida, Dec. 9-12, 2003. The theme of the technical session, organized by AGWSE, is *Ground Water in Coastal Zones: Availability, Sustainability, and Protection*. The event will highlight the latest basic and applied research associated with ground water issues related to the sustainability, availability, and protection of ground water

resources in coastal zones. Like last year, the technical sessions will use the TIPs (technical interactive presentation) format. The presentations are designed for interaction and will use two 4-foot by 8-foot boards and a table. Poster material, field equipment, site samples, and speaker-provided computer displays can compose the TIP. Latest details are available from links on the NGWA web site at: <http://www.ngwa.org/>

- Repeated from our June newsletter

GROUNDWATER CONTAMINANTS: 1,4-DIOXANE AND OTHER SOLVENT STABILIZER COMPOUNDS IN THE ENVIRONMENT

December 10, 2003: San Jose, California: California GRA and allied organizations:

See section on IAH Allied Activities with the GRA of California

SALT WATER INTRUSION MEETING

May 31 – June 3, 2004: Cartagena, Spain

The 18th SWIM meeting will be held at the Technical University of Cartagena (UPCT), Cartagena, Spain, from May 31st to June 3rd, 2004. This meeting is a continuation of a long series of conferences that focus on hydrogeological, hydrodynamic, geophysical, geochemical, numerical modeling, and management issues related to seawater intrusion. A 3-day pre-conference short course on “Practical Modeling of Saltwater Intrusion” will be organized and taught by Dr. Cliff Voss (IAH/USNC member, and editor of *Hydrogeology Journal*). Cartagena is located on the Mediterranean coast in southeastern Spain. More information is available on the Conference web site at: <http://www.upct.es/swim2004>

INTERNATIONAL CONFERENCE ON GROUNDWATER VULNERABILITY ASSESSMENT AND MAPPING June 15 – 18, 2004: Sosnowiec, Poland

INFO: Dr Andrzej J. Witkowski, Secretariat of the Conference, University of Silesia, Będzińska Str., 60, 41-200 Sosnowiec, Poland. Tel: +48 32 291 68 88; Fax: +48 32 291 58 65; E-mail: awitkows@us.edu.pl; Web: <http://khgi.wnoz.us.edu.pl/vulnerability.htm>

Registration starts late afternoon Monday 14th June, and 2-day post-conference tour is on Saturday and Sunday -19-20th June. Currently there are abstracts and registered participants from 38 countries, but not from the USA – which has the greatest experience in this. Abstracts can still be submitted!

XXXIII IAH CONGRESS – ZACATECAS, MEXICO

October 11-15, 2004: Zacatecas, Mexico

The 33rd IAH Congress will be held Oct. 11-15, 2004, in Zacatecas City, Mexico. *Plan to attend!* Zacatecas is one of the most beautiful cities in Mexico and has received special UNESCO status. The Congress will be held jointly with a meeting of AHLSD (Latin-American Association of Underground Hydrology for Development). The overall theme is “GROUNDWATER FLOW UNDERSTANDING: FROM LOCAL TO REGIONAL SCALES.” The congress topics will be covered through keynote lectures and technical sessions, as well as by associated symposia and round table discussions.

T.1 Environmental issues of groundwater-flow scaling

T.2 Chemical and isotopic data in local and regional flow definition

- T.3 Groundwater flow scaling in hard-rock media
- T.4 Role of flow systems in contaminant migration
- T.5 Recharge to local and regional systems
- T.6 Wetlands and groundwater flow dimensions
- T.7 Differential groundwater flow to coastal areas
- T.8 Modeling of groundwater flow systems
- T.9 Flow systems: Social, legal, economical, and educational aspects of groundwater management

In addition, Symposia are planned on the following topics:

- Trans-boundary groundwater flow – *see item below*
- Groundwater in thick aquifers
- Groundwater and hard rock metal mining
- Groundwater surface water interaction
- Flow and transport in materials of low permeability
- Arsenic in Groundwater
- Unintended recharge to groundwater

There will also be a number of special invited keynote lectures of broad interest. Several short courses are planned prior to the conference, and several field trips will be held during and after the Congress.

If you would like to submit an abstract, the deadline is December 15, 2003 (Note: revised date) — so act quickly. A full manuscript is not required. To find out more details about the meeting, go to the Congress Web site at: <http://www.igeograf.unam.mx/aih/>

-- Information from our June newsletter & Lenny Konikow

Transboundary Groundwater Flow Symposium at XXXIII IAH Congress.

Zacatecas, Mexico, October 11-15, 2004 (indy2.igeograf.unam.mx/aih/)

During the 2004 IAH XXXIII Conference "Groundwater Flow Understanding From Local to Regional Scales", one of the Associated Symposia will be Transboundary Groundwater Flow, co-chaired by David Rudolph, Shammy Puri, Luis Marin and Michael E. Campana. Transboundary water issues have traditionally focused on river basins with little emphasis given to transboundary aquifers until very recently. Future water shortages and global change will likely stress subsurface water sources more than they are at present and may lead to conflict among nations sharing transboundary groundwater resources. Cross-border contamination may also cause tensions to escalate. On the other hand, the realization that a shared resource is critical to the well-being of all parties may promote cooperation. The conveners seek abstracts dealing with all aspects - hydrogeological, political, social, legal, economic, etc. – of transboundary groundwaters from all parts of the world. Abstracts must be submitted to the Secretariat, following the instructions at indy2.igeograf.unam.mx/aih/ (click on "Abstract Submission"). Indicate that you are submitting an abstract for the Transboundary Groundwater Flow symposium. Please also send an electronic copy of your abstract to aquadoc@unm.edu (M. Campana). Abstracts are due by 15 December 2003 (NOTE: revised deadline).

-- From Michael Campana

EVAPORITE KARST AT THE 6TH INTERNATIONAL CONFERENCE ON GEOMORPHOLOGY

September 7–11, 2005: Evaporite-Karst Program in Spain, Zaragoza, Spain

A special session on **Evaporite-Karst Processes and Problems** will be held during the *Sixth International Conference on Geomorphology*, to be held in Zaragoza, Spain, on September 7–11, 2005. This session on Evaporite Karst (EK) will be an excellent opportunity for you and the international community to meet and discuss topics related to karst in evaporite rocks and sediments (salt, gypsum, potash, etc). EK studies are multidisciplinary, and thus talks or posters are welcome on the following topics (related to EK): geology, geomorphology, hydrogeology, speleogenesis, minerals, paleokarst, subsidence/collapse, or environmental problems (and other topics) are welcome. Many excellent 3- to 5-day-long field trips are offered before and after the conference.

The First Circular is available at: <http://wzar.unizar.es/actos/SEG/index.html> along with a fuller description of the special EK program (open "First circular," then open "SS3: EK, Info"). If the website does not open with a left click, then click right and then "open hyperlink." The Second Circular will be sent in the Fall of 2003 to those who return the preliminary registration form. There are plans to publish the EK papers in an international journal.

The EK session is being organized by Francisco Gutiérrez, University of Zaragoza, Spain <fgutier@posta.unizar.es>, and Kenneth Johnson, Oklahoma Geological Survey, USA <ksjohnson@ou.edu>. Please go the website, register, contribute, and participate in this major EK program.

- From Kenneth Johnson

GROUNDWATER RESOURCES ASSOCIATION OF CALIFORNIA
ACTIVITIES AND INFORMATION
BY VICKI KRETSINGER

"California Groundwater Management" Handbook

The second edition of the "California Groundwater Management" handbook, or reference book and guidance manual published by the Groundwater Resources Association (GRA), is scheduled to be released in November 2003. Handbook chapters include a systematic guide on preparing groundwater management plans and local wellhead protection programs, as well as reference material on California hydrogeology and groundwater quality. The handbook also provides an extensive discussion of the political, institutional, legal, and technical issues that are part of the groundwater management process.

The handbook is intended to be used as: 1) a reference for public officials who need a fundamental understanding of groundwater issues as they determine policies for the comprehensive management of water resources, and 2) general guidelines for the hands-on development of groundwater management plans.

The regular handbook cost will be \$35 for GRA members and \$45 for non members. A slight discount is available for members, and a discount of \$15 is available for non members, by pre-ordering before November 21, 2003. For more information about the handbook, visit the GRA web site -- www.grac.org

24th Biennial Groundwater Conference & 12th Annual Groundwater Resources Association (GRA) Meeting

THE ROLE OF GROUNDWATER IN INTEGRATED WATER MANAGEMENT

October 28-29, 2003, Ontario, CA

by Vicki Kretsinger, Conference Co-Organizer

The theme of the 24th Biennial Groundwater Conference and 12th Annual Groundwater Resources Association Annual Meeting is ***“The Role of Groundwater in Integrated Water Management”*** and will emphasize the interconnected nature of water resources at basin-wide, regional, and global scales. Presentations will explore the role of groundwater in formulating water policies, planning and managing water resources, and optimizing beneficial uses. The conference will be held October 28-29, 2003, at the Doubletree Hotel, Ontario Airport, Ontario, CA.

Sponsors are the University of California, California Department of Health Services, California Department of Water Resources, California State Water Resources Control Board, Groundwater Resources Association of California, U.S. Geological Survey, and the Water Education Foundation. Cooperating Organizations include the International Association of Hydrogeologists, Association of California Water Agencies, California Groundwater Association, National Ground Water Association, and the National Resources Section of the California State Bar.

The Plenary Session will include Keynote Speaker, Dr. Chip Groat the Director of the USGS, whose talk title is **“Groundwater and Surface Water: A Single Resource.”** Dr. Groat will describe how the scientific community has a responsibility to increase the understanding by policy makers of the connectivity between these two critical and interconnected resources and how the scientific community also needs to understand the value of further science and technology transfer among many disciplines to better address technical issues related to resources interconnectivity. Other speakers in this session include: Robert Glennon, Morris K. Udall Professor of Law, University of Arizona, Author of “Water Follies: Groundwater Pumping and the Fate of America’s Fresh Water”; his talk is similarly titled **“Water Follies: The Impact of Groundwater Pumping on the Environment.”** Anthony Saracino, Principal of Saracino-Kirby-Snow will speak on **“Worldwide Groundwater Banking.”** Jonas Minton, Deputy Director of the California Department of Water Resources, will speak on **“Groundwater in California: Bulletin 118.”**

Other session topics include:

- * Regulatory and legislative actions affecting groundwater
- * Developing a sound groundwater management plan
- * Conjunctive management and water banking

- * Wastewater management
- * Public outreach and public involvement strategies
- * Desalination technologies
- * Tools for quantifying groundwater resources
- * Emerging contaminants
- * Contaminant fate and transport
- * Calculating a groundwater budget
- * Transboundary and international issues

For more information, visit these web sites: www.grac.org and www.waterresources.ucr.edu/

To Register - <http://www.grac.org/biennialreg.html>
Program Agenda - <http://www.grac.org/biennialagenda.pdf>

Groundwater Contaminants: 1,4-Dioxane and Other Solvent Stabilizer Compounds in the Environment

December 10, 2003 DoubleTree Hotel, San Jose, California

Organized by GRA and being held in Cooperation with IAH and Other Organizations

Abstracts Being Accepted Through October 2003

The Groundwater Resources Association (GRA) will be conducting its 9th Symposium in a Series on Contaminants on December 10, 2003 at the DoubleTree Hotel in San Jose, California. This Symposium will focus on solvent stabilizers and 1,4-dioxane in particular. Attendees will hear from speakers on the nature of stabilizers, their behavior in the subsurface environment, analytical issues for identification of stabilizers, the toxicology of 1,4-dioxane and toxicity characteristics of other stabilizers that may pose problems, and the significant challenges to remediating this compound. The Fall 2003 issue of GRA's newsletter, HydroVisions, contains an article that describes what solvent stabilizers are and why they are of interest to those involved in characterization and remediation of solvent release sites. This article is posted at http://www.grac.org/Fall_2003.pdf on page 3 of the newsletter.

GRA is now organizing speakers to illuminate the myriad of issues surrounding 1,4-dioxane, an extremely mobile compound, and also other solvent stabilizers. The Symposium will provide attendees with a greater appreciation for the occurrence of 1,4-dioxane at dozens of solvent release sites in California, with concentrations greater than 100 mg/L at some sites. 1,4-dioxane is a main driver of risk in the indoor air studies recently conducted at Moffett Field – does it emanate from the underlying solvent plume? Like the more familiar ether compound, MtBE, 1,4-dioxane is generally considered not suitable for in situ biodegradation. How does the discovery of 1,4-dioxane at solvent cleanup sites affect plans for dealing with asymptotic tailing of pump and treat systems using monitored natural attenuation or in situ bioremediation? Can stabilizers

be used to distinguish different sources of the same solvents used for different purposes? Invited speakers from across the country will profile these issues and provide a detailed examination of the stabilizers issue. Abstracts are also being accepted for presentations on 1,4-dioxane, solvent stabilizers, and other additive compounds affecting existing cleanups.

Please submit abstracts for oral presentations and posters to Tom Mohr, GRA Seminar Chair, by October 31, 2003 at tmohr@valleywater.org.

IAH Allied Activities with the Groundwater Resources Association of California by Vicki Kretsinger

IAH/USNC is co-sponsoring the following GRA events through 2003 and during 2004:

- 24th Biennial Groundwater Conference and 12th Annual GRA Meeting: The Role of Groundwater in Integrated Water Management, October 28-29, 2003 [see article];
- 1,4-Dioxane Symposium, December 10, 2003, San Jose, CA [see article]; and
- PCE and Dry Cleaners Symposium, February 18, 2004.

GRA is also organizing other events for 2004 for which IAH also plans to be cooperator. IAH members are welcome to express their interest in assisting with the planning of these events or participating as a session organizer or presenter by e-mailing GRA's Executive Director, Kathy Snelson, at executive_director@grac.org. The events, with the general topic noted and the anticipated time frame that the event will be offered, include:

- Groundwater Management Workshop, a 1-day workshop is planned at two locations in California in spring 2004; the updated California Groundwater Management Handbook will be used as part of the course [see article];
- Low Yield Aquifer Testing and Analysis Workshop, late spring 2004;
- Symposium on Arsenic in Groundwater, late spring or early summer 2004;
- Symposium providing an Update on Perchlorate Issues, summer 2004; and
- 13th Annual GRA Meeting and Conference – Aquifer Protection, Restoration, Replenishment and Treated Water Reuse, Fall 2004, Sacramento, CA.

Learn more about GRA, or the programs in which IAH is participating with GRA as a cooperator, on the GRA web site at <http://www.grac.org>

OTHER ITEMS

AGI LAUNCHES EARTH SCIENCE WORLD IMAGEBANK

The American Geological Institute (AGI) recently announced the launch of the Earth Science World ImageBank, a free service (<http://www.earthscienceworld.org/imagebank>) with high-quality, fully-indexed images. Launched with approximately 1,000 images, the ImageBank continues to grow with dozens of new images being added every day and is one of the largest collections of Earth science images available to the public.

This searchable database is designed to provide the public, educators, and the geoscience community access to quality images in a wide range of Earth science topics at no cost for non-commercial use. "There are literally thousands of photos of excellent quality that capture the forces that created our dynamic Earth and our interaction with it," said Marcus E. Milling, AGI Executive Director. "The ImageBank is an extraordinary resource that will benefit teachers and others who want to convey these concepts."

Images in the database have been gathered from geoscientists, professional photographers, and government organizations and are individually described and cataloged using a main subject, keywords, and location, if applicable. The American Geological Institute is encouraging use of this resource for professional and educational non-commercial use. Additionally, geoscientists or photographers who would like to participate in the ImageBank should logon to find out more.

The Earth Science World ImageBank project was initiated in August 2002 and is supported by the AGI Foundation. In addition to expanding the collection of photos in the ImageBank, future plans include making high-resolution copies (digital or print) available for non-commercial and commercial purposes, depending on the author's rights.

- Lenny Konikow

AGI FOUNDATION ENDOWS CONGRESSIONAL GEOSCIENCE FELLOWSHIP

Many issues addressed by our government leaders either are impacted by or cause changes to water resources, the environment, and other natural factors. Professional geoscientists who get involved in the policy-making process are able to provide a scientific perspective to these discussions. To facilitate this practice at the national level, the American Geological Institute Foundation (AGIF), in cooperation with the American Geological Institute (AGI) announced the establishment of the William L. Fisher Congressional Geoscience Fellowship Endowment to enable selected geoscientists to work as congressional staffers.

"The endowment was created to ensure a lasting commitment for the geosciences and is named in honor of Dr. William L. Fisher to commemorate his important geoscience contributions and the key role he has played in development of geo-policy decisions at the national level," said Russell G. Slayback, chairman of the Foundation. Fisher is the Leonidas T. Barrow Chair in the Department of Geosciences and the director of the John A. and Katherine G. Jackson School of Geosciences at the University of Texas, Austin, and for three decades was the state geologist of Texas. The endowment will sponsor one to two fellows annually.

Geoscience congressional fellows are in high demand on Capitol Hill because of their broad scientific training and the relevance of geoscience knowledge to real-world issues. After an intensive

orientation, fellows seek placement in personal offices of senators and representatives or in congressional committee offices where they spend a year working as a professional staff member. These individuals share their scientific knowledge and expertise and make practical contributions to the legislative process while gaining invaluable experience in how the political process works. Several former geoscience fellows have obtained permanent congressional staff positions or leadership roles in federal agencies following their fellowship. Others take their congressional experience back to the private sector or to state and local government service.

The Congressional Science Fellowship Program, initiated 30 years ago, is coordinated by the American Association for the Advancement of Science. Each year, a variety of scientific and engineering societies sponsor about 30 congressional fellows. The 2003-2004 AGI congressional fellow is Eloise Kendy, an independent hydrologist from Helena, Montana. More information about Congressional Fellowship opportunities can be found on the web page at <http://www.agiweb.org/gap/index.html>. Applicants must be a member of one of AGI's 40 member societies (so US members of IAH are eligible to apply). Interested candidates for next year must apply by February 1, 2004.

INTERNATIONAL MINE WATER ASSOCIATION

The International Mine Water Association was a co-sponsor of the recent IAH meeting at Bled, Slovenia, and has a long record of involvement in all hydrogeological issues related to mining, from control and risks of mine water inflows to hydrological effects of mining to environmental impacts of mine drainage. The association's journal "Mine Water and the Environment" is published quarterly through Springer; its Editor is Bob Kleinmann, US Department of Energy (Pittsburgh), and the US Associate Editor is Colin Booth (editor of this newsletter). IMWA is very much an international society, holding annual symposia and triennial congresses around the world. The 2003 Congress is being held this October in South Africa; the 2004 symposium is in the UK and the 2005 in Italy. IMWA is a very worthwhile organization to join for all hydrogeologists involved with any aspect of mining. Information is available on the web page at <http://www.imwa.de>

HYDROLOGICAL MAP OF ALICANTE PROVINCE, SPAIN

I have received several copies of the hydrogeological map of Alicante Province, Spain, together with its 48-page accompanying report, in English, and a request from the Excma. Diputacion Provincial de Alicante to distribute the map to those persons or entities who might be interested. If you are interested in a (free) copy of this very impressive map-report set, I have 15 or 16 copies to go to the first people who ask (however, no batch requests for multiple copies for classroom use, please).

----- Colin Booth (colin@geol.niu.edu)

CALIFORNIA'S GROUNDWATER BULLETIN 118 – UPDATE 2003 IS ONLINE

The final document "**California's Groundwater, Bulletin 118 –Update 2003**", recently posted at http://www.waterplan.water.ca.gov/groundwater/pdf/Bulletin118/Bulletin118_Entire.pdf is a publication by the California Department of Water Resources for the purpose of enhancing the management and understanding of California's groundwater basins, encouraging partnerships between the state and local agencies, and coordinating and expanding data collection and monitoring activities that will provide necessary information for more effective groundwater

management. The Bulletin also includes a web-based, dynamic supplement that is an inventory of essential information on the state's groundwater resources to help guide local water planning and decisions for the protection and sustainable use of groundwater.

-- From Vicki Kretsinger

MEMBER NEWS

Members **Hongbin Zhan**, Department of Geology and Geophysics at the Texas A&M University, and **Vitaly A. Zlotnik**, Department of Geosciences, University of Nebraska-Lincoln, have recently edited a special issue entitled "Recent Advances in Aquifer Hydraulics and Their Applications to Aquifer and Vadose Zone Characterization, Remediation, and Dewatering" for the Journal of Hydrology (Vol. 281, Issue 1-2). For details see: <http://www.elsevier.com/inca/publications/store/5/0/3/3/4/3/index.htm>

Additionally, **Hongbin Zhan** (Texas A&M) and W. Spencer Guthrie (Brigham Young University) have won the Fred Burggraf Award of the National Academies' Transportation Research Board (TRB). The award, which recognizes excellence in transportation research by individuals 35 years of age or under, was presented for their paper entitled "Solute Effects on Long-Duration Frost Heave Behavior of Limestone Aggregate" (Transportation Research Record: Journal of the Transportation Research Board, No. 1786) which presents the results of a two-stage frost heave behavior study that may lead to more effective repair techniques and preventive maintenance strategies to extend a pavement's life. Details on: http://www4.trb.org/trb/homepage.nsf/web/dir_awards

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