



# International Association of Hydrogeologists U.S. National Chapter Newsletter

Vol. 35, no. 1: May, 2006

Editors: Colin J. Booth, Northern Illinois University  
and Todd Halihan, Oklahoma State University



## CONTENTS

- \* EDITORS' NOTE – COLIN BOOTH & TODD HALIHAN
- \* CHAIRMAN'S REPORT – JACK SHARP

### ARTICLES AND REPORTS

- \* AGI GOVERNMENT AFFAIRS ADVISORY COMMITTEE – *Lenny Konikow*
- \* AMERICAN GROUND WATER TRUST: IVAN JOHNSON'S CONTRIBUTIONS TO GROUND WATER - AGWT
- \* FROM DATA GATHERING & GROUNDWATER MODELING TO INTEGRATED MANAGEMENT :REPORT OF IAH MEETING HELD AT ALICANTE, SPAIN IN OCTOBER 2005 – *Lenny Konikow*
- \* AGWSE 2006 and 2007 Ground Water Summit – *Vicki Kretsinger*
- \* DECLARATION OF THE GLOBAL IMPORTANCE OF GROUND WATER – *Vicki Kretsinger*
- \* NGWA PROMOTES EARTH SYSTEMS SCIENCE EDUCATION – *Vicki Kretsinger*
- \* GSA HYDROGEOLOGY DIVISION – *Vicki Kretsinger*
- \* GROUND WATER SUMMIT WORKSHOP – *Tim Parker*

### ANNOUNCEMENTS

- \* NEW YUCCA MOUNTAIN LEGISLATION INTRODUCED IN SENATE – *LENNY KONIKOW*
- \* NEW USGS DIRECTOR NOMINATED BY THE PRESIDENT – *LENNY KONIKOW/FROM AGI*
- \* CALL FOR APPLICATIONS FOR FELLOWSHIP SUPPORT: GROUNDWATER GOVERNANCE IN ASIA:  
INTERNATIONAL TRAINING AND RESEARCH PROGRAM, 2006



## CONFERENCE AND MEETING NOTICES

- \* IAH CONGRESSES
- \* INTERNATIONAL MINE WATER ASSOCIATION
- \* NATIONAL GROUND WATER ASSOCIATION
- \* AMERICAN GROUND WATER TRUST
- \* GEOLOGICAL SOCIETY OF AMERICA
- \* GROUNDWATER RESOURCES ASSOCIATION OF CALIFORNIA

## MEMBER NEWS

- \* MICHAEL CAMPANA - INSTITUTE FOR WATER AND WATERSHEDS, OREGON STATE UNIVERSITY

## MATERIAL CONCERNING INCORPORATION OF THE IAH/USNC

- 501c3 versus 501c6
- PROPOSED ARTICLES OF INCORPORATION
- PROPOSED BYLAWS
- BALLOT

### IAH/US NATIONAL CHAPTER: EXECUTIVE COMMITTEE 2005-2008

<b>Chairman:</b>	<b>John M. (Jack) Sharp</b> <a href="mailto:jmsharp@mail.utexas.edu">jmsharp@mail.utexas.edu</a>	<b>University of Texas at Austin</b> 512-471-3317
<b>Secretary-Treasurer:</b>	<b>Todd Halihan</b> todd.halihan@okstate.edu	<b>Oklahoma State University</b> 405-744-6358
<b>Past-Chair:</b>	<b>Leonard F. Konikow</b>	<b>(USGS)</b> <a href="mailto:ikonikow@usgs.gov">ikonikow@usgs.gov</a>
<b>Director:</b>	<b>Colin J. Booth</b>	<b>(Northern Illinois Univ.)</b> <a href="mailto:colin@geol.niu.edu">colin@geol.niu.edu</a>
<b>Director:</b>	<b>Victor Heilweil</b>	<b>(USGS)</b> <a href="mailto:heilweil@usgs.gov">heilweil@usgs.gov</a>
<b>Director:</b>	<b>Noel Krothe</b>	<b>(Indiana University)</b> <a href="mailto:krothen@indiana.edu">krothen@indiana.edu</a>
<b>Director:</b>	<b>Michael Wireman</b>	<b>(US EPA)</b> <a href="mailto:Wireman.Mike@epamail.epa.gov">Wireman.Mike@epamail.epa.gov</a>



## EDITORS' NOTE

Hello, everyone. This year, we have some additional tasks for our newsletters. First, we will be scheduling the Fall newsletter earlier (September) to better match the timing of the GSA Annual Meeting, at which our IAH/USNC annual open meeting takes place; and second, to bring the new Articles and Bylaws to a timely vote of the membership. For this issue of the newsletter only, we did not have the chance to send out a second general call for items for the newsletter from the members (it has a lot of info as is). However, we hope that you will be able to contribute items of interest for the Fall newsletter. Feel free to send them to either of us (Colin or Todd) throughout the summer. We will also send you a reminder in late August. We are looking both for news/report items, especially those with an international hydrogeological aspect, and also for announcements of conferences, etc. We do not accept advertising or publicity material for for-profit services or products.

Following the drafting of the revised Constitution and Bylaws last fall, we have moved on to seeking formal incorporation as a registered charitable organization. The previous IAH/USNC constitution was so old (1980's) that it referred to national organizations that no longer exist and operating structures that are no longer viable. Within the overall constitutional structure of the parent IAH organization, we have been functioning in a more or less ad hoc way for many years. With incorporation, the IAH/USNC will continue to be a nonprofit scientific organization, under the IAH parent organization, and the officers and executive committee members will continue to serve in a voluntary, unpaid status. In this modern legalistic age, however, we need to structure and protect the roles of the executive committee members, as well as to formalize the charitable scientific status of the IAH/USNC – hence, the process of Incorporation and the very formal way in which the Articles and Bylaws have to be written. In this newsletter to all members, we are asking you, the members, to vote on these new Articles and Bylaws (electronically if possible). Jack Sharp further explains the structure and procedures in his Chairman's Report below. The Articles and Bylaws are included at the end of the newsletter, along with a simple Yes/No ballot which we have placed online at: <http://www.zoomerang.com/survey.zqj?p=WEB225DPGZGJKJ>. The Executive Committee urges you to vote Yes.

Thanks, and have a good summer ...

-- Colin Booth and Todd Halihan

---

## CHAIRMAN'S REPORT

Greetings, colleagues:

There are several news items since last fall, and an important action item: incorporation.

The IAH Conference in Dijon met this May 29 – June 3. It celebrated the 50<sup>th</sup> anniversary of the founding of the IAH and the 150<sup>th</sup> anniversary of the publication of Darcy's book, *The Public Fountains of Dijon*. The XXXIV<sup>th</sup> IAH Congress will meet in Beijing, October 9-13, with the title "Groundwater- Present Status and Future Tasks." Also note that the XXXV<sup>th</sup> and XXXVI<sup>th</sup> Congresses are being organized for Portugal, September 17-21, 2007 (Groundwater and Ecosystems) and Japan, October 26 – November 1, 2008, respectively. If you haven't attended an IAH Conference or Congress yet, do try to make one of the forthcoming ones. They are a real treat!

IAH had a strong presence at the 2005 GSA Annual Meeting in Salt Lake City and 2006 NGWA Water Summit in San Antonio. An informal meeting of the Executive Committee was held at the Summit; attending were Vic Heilweil, Jack Sharp, and Mike Wireman as well as John Moore, a past-president of the IAH. We cosponsored several sessions/symposia at each meeting and plan on doing the same in future years -- this depends, of course, on IAH member initiative and willingness. This Fall's GSA Annual Meeting is in Philadelphia. We shall hold our annual corporate meeting Sunday before the welcoming party and will try to get it on the program this year,



which would be a first! GSA in 2007 is back in Denver in 2007 and the NGWA Water Summit next spring will be held in Albuquerque. The call for sessions/symposia at the Water Summit is due on 30 May.



Lunchtime at the NGWA Summit: *L to R: Vic Heilweil, Lourdes Lima (Admin. Director, Cape Verde National Institute for the Management of Water Resources), Ingrid Verstaeten (Assoc. Chief, USGS International Water Resources Branch), Jack Sharp, John Moore, Kevin Frederick (Wyoming DEQ), Mike Wireman, and Miguel Angelo da Moura (Water Economist, C. Verde Nat. Inst. Man. Water Res.)*

Several members have suggested an IAH Conference on groundwater tracing and modeling to be held in the US in 2008 or 2009. This would involve both natural and anthropogenic tracers (e.g., isotopes, water chemistry, colloids, microbes, and various human chemicals, such as optical brighteners, dyes, etc.) in a wide variety of geological settings. If you are interested, please contact Gareth Davies at [cambriangroundwater@mac.com](mailto:cambriangroundwater@mac.com).

There are a number of recent and forthcoming IAH Publications that you may find of interest:

- ICH25 Introduction to Isotope Hydrology, Stable and Radioactive Isotopes of Hydrogen, Oxygen and Carbon, 2005, by M.G. Mook.
- SP7 Groundwater Intensive Use, 2005, edited by A. Sahuquillo, J. Capilla, L. Martínez-Cortina & X. Sánchez-Vila.
- SP6 Groundwater and Human Development, 2005, edited by Emilia Bocanegra, Mario Hernández & Eduardo Usunoff.
- SP5 Nitrates in Groundwater, 2005, edited by Lidi Razowska-Jaworek & Andrzej Saduski
- ICH 24 Urban Groundwater Pollution, 2003, edited by David Lerner.



- ICH 23 Understanding Water in a Dry Environment, 2003, edited by Ian Simmers.

Two new SP volumes are expected in 2006. These are:

- Urban Groundwater - Meeting the Challenge, The Mattias Esworth Memorial Volume, edited by Ken Howard.
- Groundwater in Fractured Rocks, edited by Jirí Krásný & John M. Sharp

A complete list of IAH publications can be found at <http://www.iah.org/pubs.htm>.

I recently attended the Council of Scientific Society Presidents in Washington, D.C., where numerous topics were discussed, including generating more funds for scientific research at the Department of Energy and the National Science Foundation. It appears that the Senate is supportive, but the House of Representatives is a big question. I learned that polls show that 80% of the American public support federal funding of science as an important priority and over 90% of the public think that science is important for our quality of life. This is coupled with the fact that there are concerns about America losing its lead in matters of science and technology (for instance, China has many more engineers and scientists working on its space program than do we). The economic/technological challenges of China and India have sparked concerns about the state of our math/science/engineering capabilities similar to that generated by Sputnik in the late 1950s. Among the proposals worthy of your attention are HR 4434, which seeks to train more qualified teachers of math and science, HR 4435, which will increase energy research funding at the DOE, and HR 4596, which seeks to increase funding at NSF. I encourage you to contact your representatives about these proposals. We may have a window of opportunity to get science back on the “front burner.” Also at the Council, IAH member and past US Chapter Chair, Pat Leahy of the USGS, gave a very well received presentation entitled “Abundant Clean Water”.

### Incorporation

Following discussions at the previous executive committee meetings and in the last newsletter, we have consulted with an attorney, Deborah Kelley, who also works with the Geological Society of America in Boulder, Colorado. The approved Articles of Incorporation are attached. The Executive Committee and I recommend approval. Apart from providing corporate protection of the IAH/USNC and its Executive Committee, this move has several advantages and is, we believe, long overdue. First, we can start to accrue interest on our account, which has remained at approximately \$30,000 for 20 years. Consider how even a moderate interest could have grown these funds! Second, it will allow us to accept charitable donations (ones that can be deducted from one’s income tax). We (the US Chapter) have no plans to start a fund raising drive, but we can conceive of a number of beneficial uses – scholarships, outreach programs, sponsorships for foreign hydrogeologists to visit the USA, etc. The IAH is looking to expand donations internationally, and if you have an idea of a beneficial donation to the IAH or the US Chapter of the IAH, we would be happy to discuss it with you. The only disadvantage we can see is the paperwork that we will have to fill out every year.

We looked at incorporation as either a 501c3 or a 501c6 (see below). The former is typically the tax-exempt status for non-profit scientific organizations, whereas the latter is more for business organizations like the Chamber of Commerce. We decided to incorporate in Colorado because we need a permanent mailing address, which the Geological Society of America, through the good graces of IAH member and GSA Executive Director, Jack Hess, has agreed to provide. This is fitting because we hold our Executive Committee meetings in conjunction with the GSA annual meetings each fall.

The section at the end of the newsletter contains three items from the attorney whom we hired to advise us on nonprofit status. The first is 501c3 versus 501c6 (it is the conclusion of the Executive Committee that a 501c3 fits us better.) The second is the revised Articles of Incorporation, which replaces the previous draft constitution on which these articles were closely modeled. (Note: The initial board of directors shall be the members of our Executive Committee at the time of filing). The third is our revised Bylaws.





The Articles of Incorporation must be approved by the membership. **Please vote electronically if possible** by going to:

<http://www.zoomerang.com/survey.zgi?p=WEB225DPGZGJKJ>

and providing an up/down vote for the modifications to the bylaws and the articles of incorporation. You will remain nearly anonymous in the voting. If you prefer to remain anonymous and do not have access to the internet, just clip out the ballot at the end of this newsletter, and seal it in a blank envelope. Mail this inside another envelope with your name and address and signed across the back flap, to me at:

**Jack Sharp**  
**Department of Geological Sciences**  
**The University of Texas**  
**1 University Station – C1100**  
**Austin, Texas, 78712-0254 USA.**

All email votes and/or ballots must be returned by 15 July 2006. All voters must be members in good standing at the time of casting their ballots. If we get a positive vote, we will proceed. We will file the paper work ourselves and thus save considerable legal expenses. **Please vote.** The Executive Committee recommends a **YES** vote. There is little or nothing to lose, and much to gain.

*- Jack Sharp*

---

## ARTICLES AND REPORTS

### **AGI Government Affairs Advisory Committee**

IAH/USNC participated in the March 27, 2006 meeting of the American Geological Institute (AGI) Government Affairs Advisory Committee. It included a joint session with GSA's Geology and Public Policy Committee. There were three primary items for discussion.

1. We discussed approaches to getting more active participation from societies and their members in public affairs. AGI recommended that societies should help promote Congressional Visit Days (AGI sponsored one on March 28-29, 2006). AGI also provides a web site on how to communicate with government officials (<http://www.agiweb.org/gap/resources/communicate.html>). A Congressional Fellow attending the meeting noted that a call from one constituent to a Congressman on an issue can make a difference.

2. We discussed approaches to dealing with teaching evolution controversies based on recent meetings and surveys. It was noted that the judge from the recent Dover, PA, case will be an invited speaker at the Fall Annual GSA meeting in Philadelphia. Several geosocieties have resources available on their web sites related to teaching evolution (including GSA, AGI, National Association of Geoscience Teachers [NAGT], and Paleontological Society [PS]).

3. We discussed how to better connect science with policy within the realm of energy resources and water resources. IAH participation in the recent World Water Forum in Mexico City was duly noted, as was IAH interaction with international/global groups such as the World Bank and UNESCO.

**---- Lenny Konikow**



## **American Ground Water Trust recognizes Ivan Johnson's Contributions to Ground Water**

At the March 21<sup>st</sup> "Managing Aquifers" Conference in Denver, Colorado, Andrew Stone, Executive Director, of the American Ground Water Trust, presented Dr. Ivan Johnson with an award recognizing his outstanding contributions to the science and technology of managed aquifer recharge.

The citation on the certificate reads: *"This award is made in recognition of your long and distinguished service over six decades. Your contributions to the development of sustainable water supply through managed aquifer recharge, your leadership in establishing ASR standards, your volunteer committee work in national and international arenas, and in particular, your willingness to share your experiences and knowledge of engineering, water resources and hydrogeology with generations of engineers, scientists and government officials has made a great impact and will have a lasting effect."* On the award is a photograph of a little boy enjoying the benefits of a safe and dependable water supply.

At the award presentation, Peter Barkmann of the Colorado Geological Survey provided a summary of Dr. Johnson's many career highlights beginning with his graduation from the University of Omaha, Nebraska in 1940, his service in the US Navy, 31 years with the US Geological Survey and 27 years working world-wide as a ground water consultant. Dr. Johnson is the current Chair of the UNESCO Working Group on Managed Aquifer Recharge and Chair of the American Society of Civil Engineers, Standards Committee for Managed Aquifer Recharge.

The American Ground Water Trust (a non-profit ground water education organization) has been active in promoting the science and technology of aquifer management for several years, and has held thirteen conference programs in Florida, Arizona, California and Colorado, with a focus on aquifer recharge & recovery. The Trust's next aquifer management program will be in Orlando, Florida, in October 2006.

--- *from an item by Andrew Stone*

*For more information contact: Jessica Pierce (jpierce@agwt.org) (603 228 5444)*

## **From Data Gathering & Groundwater Modeling to Integrated Management Report of IAH Meeting Held at Alicante, Spain in October 2005**

The Spanish Chapter of IAH organized an International workshop on "From Data Gathering and Groundwater Modeling to Integrated Management." It was held in Alicante, Spain, during October 4-8, 2005. It was attended by about 200 participants who were mostly from the European community, although some came from Australia, Africa, Asia, North America, and South America.

The Workshop was organized from the perspective that integrated management of water resources is a necessary part of a sustainable development strategy. Topics covered included data acquisition, sampling methods, monitoring networks, mathematical models, aquifer management and regulation, conjunctive use, and hydrologic information systems. The Workshop Proceedings will be published in the near future.

The U.S. National Chapter was represented by Lenny Konikow and Shlomo Neuman, both of whom were invited keynote speakers. Their talks were on "From data gathering to groundwater modeling" and "Coping with conceptual, parameter and data uncertainty in groundwater models of flow through multiscale, strongly heterogeneous composite media," respectively. Konikow cautioned that the scale of data must be relevant to the scale of the model, presenting the analogy that data from detailed studies of a tree may generate little understanding of a forest. Neuman introduced a maximum likelihood Bayesian model averaging method as a way



to cope jointly and effectively with both conceptual (model) and parameter uncertainties. Both authors participated in the post-workshop field trip to view coastal aquifers and submarine springs

(*at left: coastal outcrop; at right: enjoying the field trip luncheon*).

--- Lenny Konikow



### AGWSE 2006 and 2007 Ground Water Summit

The Association of Ground Water Scientists and Engineers' (AGWSE, division of the National Ground Water Association) convened the second annual "Ground Water Summit" April 23-26, 2006 in San Antonio, Texas. The AGWSE Board extends a hearty thank you to all its co-sponsors, including the IAH USNC. Officers of the IAH USNC, including Victor Heilweil and Mike Wireman, were actively involved in session planning and/or presentations. Additionally, Jack Sharp, IAH USNC Chairman, was one of the instructors for the workshop on "Groundwater Management in Texas: A Continuing Challenge in a Changing Environment." This workshop was presented to a sell-out crowd. See also the article by Tim Parker in this issue for more details.

**Call for Conveners; Proposals Due August 1, 2006:** The call for session proposals is now open for the 2007 Ground Water Summit scheduled to take place April 29-May 3, 2007 in Albuquerque, New Mexico. Planning is underway, and the AGWSE Board and Summit Task Force, including Summit co-chairs Bill Alley of the USGS and Erik Block of Block Environmental, welcome continued session and other event co-sponsorship by IAH. Events being planned for the 2007 Summit and proposed session categories are listed at <http://www.ngwa.org/e/conf/0704295095prop.cfm>. All session proposals (paragraph description of up to 100 words on the session topic) for the 2007 Ground Water Summit must be submitted in electronic format. To submit online see <http://www.ngwa.org/forms/gwsummitform.htm>.

- Vicki Kretsinger, Past Chair of AGWSE, Division of NGWA

### Declaration of The Global Importance of Ground Water

The National Ground Water Association (NGWA) invites others to join with it in recognizing that groundwater represents an important global resource to future communities. By recognizing that both surface and groundwater constitute essential resources, thoroughly integrated water-resources management strategies serve to enhance the security, reliability, and quality of the world's water supplies. On December 16, 2005, NGWA's Board of Directors adopted the "Declaration of the Global Importance of Ground Water" and on the heels of that occasion a parallel declaration was crafted at the "International Symposium on Groundwater Sustainability" held in Alicante, Spain in January 2006. The Symposium, organized by the Spanish Geological Survey, the Spanish Ministry of Science and Education, the Universidad de Alicante, and the Spanish Royal Academy of Sciences, is part of the Interacademy Panel's Water Program for the triennium 2004-2006. Other collaborators included: UNESCO, and the National Academy of Sciences of the United States, Brazil, and Mexico. This symposium brought together experts from different disciplines and regions of the world to discuss challenges and propose solutions to contribute to the long-term sustainability of groundwater resources. The Symposium explored five themes involving the expanding role groundwater plays in the broader issues facing the world, including "The Science of Hydrology--Current Innovations and Trends; Groundwater Economics-- Experiences throughout the World; The Ecological Implications of Groundwater Use; Information, Education and Conflict Prevention; and Institutions for Groundwater Management." NGWA representatives served on the Scientific Committee for the Symposium, and NGWA is now editing and publishing the Symposium proceedings.





For more information on the declarations, see <http://www.ngwa.org/presscenter/iaglobal.cfm> and [http://www.cawater-info.net/library/eng/alicante\\_declaration.pdf](http://www.cawater-info.net/library/eng/alicante_declaration.pdf) .

- Vicki Kretsinger, Past Chair of AGWSE, Division of NGWA

### **NGWA Promotes Earth Systems Science Education**

The National Ground Water Association has joined other federal and state groups and geoscience organizations in calling for strengthened Earth systems science education as vital to meeting society's needs. On February 13, 2006, NGWA's Board of Directors adopted the statement "The Importance of Earth Systems Science Education." To address future environmental and resources challenges, including complex water resources evaluation and sustainability issues, requires a better understanding of the interrelationships between Earth systems' processes.

Key to the national movement to bolster Earth science education is the National Science Education Standards published by the National Research Council in 1996. However, as pointed out by Dickerson and Callahan (May-June 2006) in their article "Ground Water is Not an Educational Priority" (*Ground Water Journal* Vol. 44, No. 3), the term "groundwater" is not mentioned in this document. Since groundwater is an integral part of Earth systems, NGWA's Board sees a strengthening of Earth systems science education as critical to improving public understanding of the importance of groundwater. Accordingly, the NGWA statement reads, "through Earth systems science education, students learn to understand Earth's complexity...[and] appreciate the significance of wise utilization of the Earth's resources...Earth science education promises to play an ever-expanding role in meeting society's needs. Essentially, Earth systems science education constitutes a core element of students' curriculum."

NGWA's statement calls for increased efforts to elevate Earth science education "across all avenues of society", including:

- Uniting other geoscience organizations in support of Earth systems science education,
- Supporting adoption of the National Science Education Standards by all public and private school systems,
- Promoting Earth science education through NGWA's National Ground Water Awareness Week, Earth Sciences Week, and other science education events,
- Providing examples of applied Earth science to organizations that develop educational training materials and resources,
- Providing opportunities for engaging students and others in interactive learning by creating "outdoor" classrooms with hands-on learning activities, and
- Promoting Earth systems science education at all levels, including necessary collection of data to better understand the complexity of all Earth systems.

Among the federal agencies similarly involved in promoting Earth systems science education are the U.S. Geological Survey, the National Oceanic and Atmospheric Administration, and NASA. Other organizations demonstrating their support of Earth systems science education efforts include:

- American Geological Institute's (AGI) development of the brochure called "Why Earth Science?" to communicate how Earth science benefits society (see [http://www.agiweb.org/education/WhyEarthScience/Why\\_Earth\\_Science.pdf](http://www.agiweb.org/education/WhyEarthScience/Why_Earth_Science.pdf)), and
- Geological Society of America (GSA's), policy statement on "The Importance of Teaching Earth Science in Schools" (see <http://www.geosociety.org/science/govpolicy.htm>).
- Groundwater Resources Association of California, an Associated State Society of NGWA.

- Vicki Kretsinger, Past Chair of AGWSE, Division of NGWA

GSA's Hydrogeology Division Co-Sponsors 40 Sessions at the 2006 Annual Meeting --

### **Three Groundwater Sessions Co-Sponsored by NGWA/AGWSE**

Planning for the 2006 Geological Society of America's (GSA's) 2006 Annual Meeting and Exhibition, "The Pursuit of Science -- Building on a Foundation of Discovery," October 22-25, 2006 in Philadelphia, Pennsylvania



is off to a resounding start. Rob Young, of Western Carolina University, 2006 Technical Program Chair, along with Laura Toran of Temple University and Mark Person of Indiana University, Hydrogeology Program Co-chairs, have successfully rounded up 40 sessions that are being co-sponsored by GSA's Hydrogeology Division and other groups, including the National Ground Water Association. As an Associated Society of GSA, NGWA/AGWSE will be co-sponsoring three of these sessions. Co-sponsorship of these sessions by NGWA/AGWSE also furthers collaborative activities that benefit both organizations and is in concert with the additional alliance established when NGWA's Mutual Cooperation Agreement formalized a reciprocal partnership between NGWA and GSA. All the Hydrogeology Division sessions are described on GSA's web site at <http://www.geosociety.org/meetings/2006/sessions/topical.asp>. A few additional details on the three sessions co-sponsored by NGWA/AGWSE are provided below.

One of the GSA Hydrogeology Division and NGWA/AGWSE co-sponsored sessions at the 2006 GSA annual meeting is **“Water-Quality Issues in Sole-Source and Principal Aquifers in the U.S.”** which is being organized by Brian Katz and Mike Focazio of the U.S. Geological Survey (USGS). This session (Topical Session T25) will highlight research on anthropogenic and natural factors that control water quality in sole-source and principal aquifers in the U.S. Also, the session will encourage presentations on innovative chemical methods (e.g., isotopes and other chemical species) and hydrologic techniques (groundwater flow and transport modeling) that are being used in vulnerability assessments for regional and site-specific investigations of water quality in these aquifer systems. This session will bring together researchers from many different disciplines that use a variety of techniques to study groundwater quality issues in important aquifer systems. The conveners welcome oral and poster presentations. Invited speakers presenting in this session include representatives from the US Environmental Protection Agency and the USGS National Water-Quality Assessment (NAWQA) program.

A second session co-sponsored by GSA's Hydrogeology Division and NGWA/AGWSE is **“Emerging and Innovative Approaches to Groundwater Modeling.”** This session (Topical Session T66) convened by Abe Springer of Northern Arizona University and Linda Zhang of the University of Michigan focuses on the evolution and widespread application of groundwater models and innovative approaches in modeling. This session will explore these innovative approaches in development, application, effective parameter determination, uncertainty of models, or other topics. NGWA's 2006 Darcy Lecturer Eileen Poeter, currently a Professor of Geological Engineering at the Colorado School of Mines and Director of the International Ground Water Modeling Center, will provide her Darcy Lecture “All Models Are Wrong: How Do We Know Which Are Useful?” in coordination with this session. Poeter's lecture details how the groundwater profession today is searching for appropriate approaches to developing conceptual models, evaluating which are useful, and describing the uncertainty associated with their predictions.

The third co-sponsored session is **“Revolutionizing Hydrologic Systems Observations: Data Needs to Insure Groundwater Availability,”** which is being co-convened by Vicki Kretsinger of Luhdorff and Scalmanini, Consulting Engineers and AGWSE Division Past Chair and Bev Herzog of the Illinois State Geological Survey and AGWSE Division Chair. This session (Topical Session T89), co-sponsored by NGWA/AGWSE, GSA's Hydrogeology Division and GSA's Geology and Society Division, highlights the global need to revolutionize hydrologic systems observations to achieve sustainable resources goals and provide decision makers with the data needed to better assess and manage groundwater resources. The conveners welcome papers on topics that highlight innovative approaches to regional systems analyses, including surface-water and groundwater interrelationships and modeling applications that address complex whole systems analyses. Invited speakers presenting in this session include Gene Whitney of the National Science and Technology Council at the White House Office of Science and Technology Policy and chair of the Subcommittee on Water Availability and Quality and T. N. Narasimhan, Emeritus Professor at the University of California of Berkeley.

Abstracts for GSA's Annual meeting must be submitted electronically on GSA's web site at [www.geosociety.org](http://www.geosociety.org) (instructions are posted at the site) by **July 11, 2005** (11:59 pm Pacific Time). Electronic abstracts will be archived and remain searchable on the site for at least two years. To contact the conveners or submit an abstract, see GSA's site for more information.



- Vicki Kretsinger, Past Chair of AGWSE, Division of NGWA

## NGWA Ground Water Summit Workshop on *Groundwater Management in Texas* a Great Success

In Texas, groundwater policy changed in 2005 when House Bill 1763 passed and resulted in some significant modifications to the process of determining *groundwater availability* (the amount of groundwater available for use) in Texas. These changes include:

- (1) Regionalizing decisions on groundwater availability,
- (2) Requiring regional water planning groups to use groundwater availability numbers developed from the groundwater management area process, and
- (3) Requiring a permitting target for groundwater production.

The new process requires that groundwater conservation districts in a groundwater management area meet at least annually to conduct joint planning, review groundwater management plans, and define the *desired future conditions* of groundwater resources within a groundwater management area. Desired future conditions are, in essence, management goals or objectives—quantified conditions of groundwater resources (such as water levels, water quality, spring flows, or volumes) at a specified time or times in the future or in perpetuity. The Texas Water Development Board (TWDB) will provide values of *managed available groundwater* using groundwater availability models or other tools based on the desired future conditions to the groundwater conservation districts and regional water planning groups. The districts and planning groups will then incorporate the managed available groundwater values in their water plans. Besides running the models, attending meetings, coordinating technical assistance, and maintaining groundwater information, the TWDB is also in the process of developing guidance documents and considering providing optional training to the districts in public participation and conflict resolution.

Needless to say, the changes in groundwater policy and approaches needed to address these changes present a challenge to groundwater managers in Texas. Addressing the new law and these challenges was the main focus of an NGWA Ground Water Summit workshop in San Antonio titled “Groundwater Management in Texas: A Continuing Challenge in a Changing Environment.” The workshop was assembled and co-chaired by Robert Mace, Director, Groundwater Resources Division, TWDB, and Tim Parker, Principal Hydrogeologist, Schlumberger Water Services. Speakers at the workshop included Janie Hopkins, TWDB, Monique Norman, Attorney at Law, Craig Pedersen of the URS Corporation; Rima Petrossian of the TWDB; Jack Sharp, IAH USNC Chairman and Professor at the University of Texas at Austin; and Matt Uliana, Professor at Texas State University, San Marcos. The workshop was jammed full of information which included basic hydrogeologic principles and Texas hydrogeology, groundwater tools and technologies, aquifer tests and interpretation, state groundwater sampling and quality issues, changes to the water code due to House Bill 1763 and how to address these changes, groundwater management plan changes, stakeholder involvement and dispute resolution, groundwater availability models, and legal aspects of groundwater management. The target audience of the workshop was groundwater conservation district managers, staff, and board members. The workshop was an overwhelming success, with more than two-thirds of the attendees from the districts and every workshop slot filled. Special thanks are extended to the workshop instructors for their time and efforts to conduct this workshop.

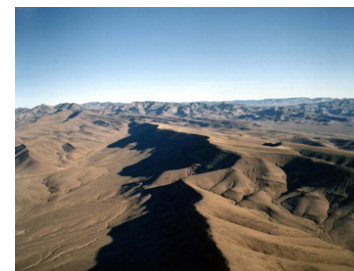
- Tim Parker, Schlumberger

---

## ANNOUNCEMENTS

### New Yucca Mountain Legislation Introduced in Senate

Senate sponsorship of the Nuclear Fuel Management and Disposal Act (S.2589), a bill drafted by the Department of Energy (DOE) to revitalize the Yucca Mountain nuclear waste repository program, was announced in April. Provisions in the bill





would "facilitate the licensing, construction, and operation of a repository at Yucca Mountain," Energy Secretary Samuel Bodman wrote in a letter to Vice President Dick Cheney accompanying the bill.

One of the primary provisions in the legislation would remove the 70,000 metric ton limit on the amount of nuclear waste that can be stored in the repository. According to a 2002 Environmental Impact Statement, the site has the capacity to store 120,000 metric tons of waste. Without lifting the 70,000 ton cap, the repository will likely be oversubscribed as soon as it opens.

Further provisions in the bill would: remove 147,000 acres of land around the repository from public use to comply with Nuclear Regulatory Commission (NRC) licensing requirements; authorize construction of a rail line connecting Yucca Mountain with the national rail network; give DOE the authority to regulate the transportation of radioactive materials; eliminate "essentially duplicative regulation" by exempting nuclear waste stored in NRC-certified containers from federal, state, and local regulation; authorize the Environmental Protection Agency to administer air quality permits; and ensure adequate water supplies for the nuclear waste activities.

Regarding water supplies, the proposed Bill stipulates that "the use of water from any source in quantities sufficient to accomplish the purposes of this Act ... is declared to be a use that is beneficial to interstate commerce," and "a State shall not enact or apply a law that discriminates against this use."

To view the text of the legislation, a summary and a sectional analysis of the bill, and the letter from Energy Secretary Bodman to Vice President Cheney, see <http://www.energy.gov/media/Cheney-Yucca-package.pdf>

*-- Lenny Konikow, modified from AGI news release*

## **New USGS Director Nominated by the President**

President Bush has nominated Dr. Mark D. Myers to be the new director for the U. S. Geological Survey (USGS). Acting Director Patrick Leahy, a member and former Chair of IAH/USNC, will continue to serve as the head of the USGS until Myers is confirmed by the Senate.

Myers is the former State Geologist and head of Alaska's Geological Survey. He received his doctorate in geology from the University of Alaska-Fairbanks in 1994, specializing in sedimentology, clastic depositional environments, surface and subsurface sequence analysis and sandstone petrography. He earned his B.S. and M.S. degrees in geology from the University of Wisconsin-Madison. He served as an officer in the U.S. Air Force Reserve from 1977 to 2003, retiring as a Lt. Colonel.

According to Acting Interior Secretary Lynn Scarlett, "Mark is known not only for his accomplishments as a geologist and state survey manager but also for the consensus building approach he has emphasized throughout his career. He brings more than 22 years of wide ranging experience in geological science and strong leadership skills to the U.S. Geological Survey."

*--from Lenny Konikow, modified from AGI news release*



**Call for applications for fellowship support:**

**“GROUNDWATER GOVERNANCE IN THEORY AND PRACTICE”  
GROUNDWATER GOVERNANCE IN ASIA  
INTERNATIONAL TRAINING AND RESEARCH PROGRAM, 2006-2007**

*This item is modified from material received via various routes from Karen Villholth, GGA Project Leader & Program Director. It is past the deadline, but is included for information to the membership.*

The International Water Management Institute, in Sri Lanka invites applications for supported fellowships to participate in an international training and research program that extends over several weeks between October 2006 and March 2007 in India and elsewhere in Asia. The targeted applicants are professionals with experience in the five project states (India, China, Pakistan, Bangladesh, and Nepal), preferably living in the region.

There are three categories of Fellow

1. Senior Professional Research Fellow (top policy level in key groundwater organizations);
2. Junior Professional Research Fellow (groundwater managers or researchers below the age of 40 years, working in the government sector, NGO's, or academic);
3. Media Fellow (young journalist working on environmental and natural resources issues).

**Eligibility:** Junior and senior managers and professionals who are actively involved in groundwater management and research in the five project states are eligible to apply and participate. Applicants should preferably be involved with well-established organizations or institutions active in the region/basins; or in the case of the Media Fellows, with well established, recognized media organizations. Applicants should preferably reside in one of the five states.

The GGA project on "Groundwater Governance in Asia: Capacity Building through Action Research in the Indo-Gangetic (IGB) and Yellow River (YRB) Basins" is led by IWMI (<http://www.iwmi.org/>) and funded by the CGIAR Challenge Program on Water and Food (<http://www.waterandfood.org>). Its overall goal is: " - to contribute to the protection and better management of a fundamental component of the natural capital of the IGB and YRB, namely groundwater, and by that safeguard the livelihood of individual inhabitants and families dependent on this resource". Building capacity of individuals with experience and roles in groundwater management and research in the five target countries is a major component of the project.

*Application deadline is 31 May 2006.*

**Website:** <http://www.waterforfood.org/gga/>

---

## CONFERENCE AND MEETING NOTICES

*For information on the IAH conferences listed below, and other conferences, please go to the IAH website, [www.iah.org](http://www.iah.org)*

**IAH Congresses, as noted by Jack Sharp in the Chairman's Report:**

IAH Conference in Dijon, France: May 29 – June 3: to celebrate the 50<sup>th</sup> anniversary of the founding of the IAH and the 150<sup>th</sup> anniversary of the publication of Darcy's book, *The Public Fountains of Dijon*.

XXXIV<sup>th</sup> IAH Congress, Beijing, China, October 9-13, 2006: *Groundwater- Present Status and Future Tasks*.

XXXV<sup>th</sup> IAH Congress, Lisbon, Portugal, September 17-21, 2007: *Groundwater and Ecosystems*  
**International Mine Water Association – go to <http://www.imwa.info>**





IMWA Symposium 2007: May 27-31, Cagliari, Sardinia – Italy

The International Mine Water Association, founded in 1979, is concerned with all aspects of mine water, mine drainage, mining hydrology, and the conduct of effective mining operations in an environmentally safe and acceptable manner. It holds congresses every three years and symposia annually, in many different areas of the world. Membership is open to anyone with an interest in mine water and mine hydrology. The association's refereed journal, *Mine Water and the Environment*, is published quarterly through Springer and welcomes submission of articles on mine water or any aspect of mining hydrology: Please access the journal information through the IMWA website <http://www.imwa.info>. [CB]

**NGWA: go to "Events and Education" at [www.ngwa.org](http://www.ngwa.org) or contact Cliff Treyens at 800-551-7379, ext. 554, or [ctreyens@ngwa.org](mailto:ctreyens@ngwa.org).**

July 6-7: Chicago, Illinois - 2006 NGWA Ground Water and Environmental Law Conference: presentations including ground water contamination litigation cases, permitting issues, emerging contaminants, risk assessments and a mock Daubert hearing on admissibility of scientific evidence.

August 21-22: Columbus, Ohio - NGWA Geothermal Heat Pump Conference and Workshops: opportunities for ground water professionals to diversify into geothermal and geexchange systems/services in light of rising energy costs and demands.

September 18-19: Portland, Maine - NGWA Focus Conference on Eastern Regional Ground Water Issues Including Fractured Rock. Eastern U.S. ground water issues and concerns will be addressed, including Boston's Big Dig, remediation and challenges posed by fractured rock.

October 12-13: Costa Mesa, California - 21st Century Ground Water Systems Conference. As competition for potable water resources intensifies, where will our water come from? Will 20th century solutions continue to work?

November 6-7: Houston, Texas - Petroleum Hydrocarbons and Organic Chemicals in Ground water. Site characterization and monitoring, gasoline oxygenates, and natural attenuation processes are just a few of the subjects explored at this conference.

December 5-8: Las Vegas, Nevada -- NGWA's Ground Water Expo. Professionals from all sectors of the ground water industry—contractors, scientists and engineers, manufacturers, and suppliers—gather to better understand issues affecting the industry through workshops, lectures and presentations. The Expo also features more than 60,000 square feet of exhibition space.

***American Ground Water Trust: go to <http://www.agwt.org>***

Aquifer Storage and Recovery 6: October 16-17, 2006, Orlando, Florida.  
Co-sponsored by IAH: reduced registration rate for IAH members.

***Geological Society of America: go to <http://www.geosociety.org>***

Annual Meeting, October 22-25, 2006, Philadelphia  
Abstract deadline: July 11

***Groundwater Resources Association of California***

The Groundwater Resources Association of California (GRA) and IAH developed an allied partnership in 2001 and this alliance has included IAH's participation as a cooperating organization for many of GRA's educational events and training workshops. Four upcoming GRA events for which the USNC/IAH is a cooperating organization are described below. As members of a cooperating organization, IAH members enjoy GRA member rates to attend these events.



September 13-15, 2006

*Model Calibration and Predictive Uncertainty Analysis Using PEST*

Savoy Hotel, San Francisco, California

Cooperating Organizations Include: IAH USNC

GRA is pleased to announce that the principal instructor for the three-day workshop "Model Calibration and Predictive Uncertainty Analysis Using PEST" is Dr. John Doherty, author of PEST and President of Watermark Numerical Computing. He will be assisted by Matt Tonkin of SS Papadopoulos & Associates, Inc. PEST (Parameter ESTimation) is a general-purpose, model-independent, parameter estimation and model predictive error analysis package developed by Dr. John Doherty. The workshop will provide attendees with the foundations of parameter estimation theory, an understanding of the sources of uncertainty in predictions made by models, and experience in using PEST to calibrate groundwater, surface water and other environmental models and explore their predictive uncertainty. More information about PEST, the course agenda, and registration information are available at <http://www.grac.org/pest.asp>

September 21-22, 2006

*GRA 15<sup>th</sup> Annual Meeting: Assessment, Use, and Management of Groundwater in Areas of Limited Supply*

Bahia Resort, San Diego, California

Cooperating Organizations Include: IAH USNC, NGWA

GRA will hold its annual meeting in San Diego, September 21-22, 2006, at the Bahia Resort. The theme of this year's meeting is "Assessment, Use, and Management of Groundwater in Areas of Limited Supply." In the face of rising population and potential reductions in other water sources, there is increased interest in utilizing more groundwater in basins where groundwater has been considered a marginal resource. This year's annual meeting will address the hydrologic, water-quality, ecological, transborder, and policy issues that are facing such basins. A detailed list of planned topics is included in the Call for Abstracts at <http://www.grac.org/am.html>. The meeting will be preceded on September 20 with a field trip to the Sweetwater River Watershed in southern San Diego County. The field trip will cover groundwater, surface water, and endangered species issues in the watershed. The **deadline** for submitting an abstract for a Paper or a Poster Presentation is **June 15, 2006**. Please contact Bill Pipes, Geomatrix Consultants [(559) 264-2535, [wpipes@geomatrix.com](mailto:wpipes@geomatrix.com)] or Sarah Raker, MACTEC Engineering and Consulting, Inc., [(510)-628-3234, [slraker@mactec.com](mailto:slraker@mactec.com)] for more information.

October 2-3, 2006

*Introduction to Groundwater and Watershed Hydrology: Monitoring, Assessment and Protection*

Hilton Hotel, Glendale, California

Co-Sponsored by: University of California Cooperative Extension Groundwater Hydrology Program; IAH USNC

Groundwater and watershed monitoring, assessment and protection is an integral part of many water-related programs at local, state, and federal levels designed for sustainable development and protection of water resources in California. Today, through the implementation of programs such as groundwater management plans, source water assessments, conjunctive use agreements and watershed groups, professionals with diverse backgrounds and having a wide variety of private, non-profit, and government responsibilities at local, state, and federal levels are directly or indirectly involved in the management and assessment of groundwater and surface water. This short course will review the fundamental principles of groundwater and watershed hydrology, water quality, and water contamination. It will provide an overview of the most common tools for measuring, monitoring, and assessing groundwater and surface water resources. See GRA's web site at <http://www.grac.org/hydrology.asp> for more details.

November 14-16, 2006

*High Resolution Site Characterization and Monitoring*

Westin Hotel, Long Beach, California

Cooperating Organizations Include: University of Waterloo, IAH, and NGWA  
by Murray Einarson, Geomatrix

Much has been learned about the behavior of subsurface contaminants in the last three decades of academic laboratory and field research. Yet, site assessments performed at commercial sites in North America often still follow traditional site assessment practices established in the early 1980s. Those assessment practices, which were founded on early, simplistic conceptual models of what the contamination was thought to be like, often yield equivocal data sets that prolong site characterization activities and lead to ineffective corrective action. In particular, low-resolution site assessments often fail to



provide the detailed spatial and temporal data necessary to design effective in situ remediation systems and assess the performance of the systems once they have been installed.

Recently, new technologies have been developed that allow site investigators to perform rapid, high-resolution site assessments that provide unprecedented clarity regarding the nature, extent, and migration of contaminants in the subsurface. Increasingly, these technologies, which include high-resolution geophysical methods, cone penetrometer testing (CPT), driven direct push (DP) chemical sensors, high-resolution vertical groundwater profilers, and multilevel groundwater monitoring systems, are being applied in new configurations, e.g., advanced or installed along transects orthogonal to the groundwater flow direction, that have been shown to be particularly effective at many contaminated sites.

This symposium will bring together a group of top researchers and practitioners from around the world, to describe the “state of the science” regarding efficient, high-resolution subsurface site assessments. Dr. John Cherry, from the University of Waterloo, will set the stage for the event by providing opening remarks on the importance of high-resolution measurements in field studies performed by researchers at the University of Waterloo. The third day of the symposium will consist of a hands-on outdoor field demonstration of many of the technologies discussed during the symposium presentations, and will be held at a field site near the Westin Hotel in Long Beach. Submittals of abstracts for poster presentations are welcome. Please feel free to contact Murray Einarson ([meinaron@geomatrix.com](mailto:meinaron@geomatrix.com); 650-400-0248) or Tim Parker ([tparker2@slb.com](mailto:tparker2@slb.com); 916-329-9199) if you have any questions about this upcoming event. Symposium session details and other information will soon be posted at GRA’s web site at [www.grac.org](http://www.grac.org).

---

## MEMBER NEWS

### **Michael Campana - Institute for Water and Watersheds at Oregon State University**

Dr. Michael E. Campana has been appointed the first Director of the Institute for Water and Watersheds at Oregon State University, Corvallis (<http://water.oregonstate.edu>), starting on June 1, 2006. The IWW is a campus-wide unit established to promote, facilitate, and support water resources research, teaching, inreach, and outreach at OSU, developed by OSU water faculty and selected as one of six strategic initiatives to be funded by the Provost’s Office.

Since 1989, Campana has been at the University of New Mexico, where he was the Albert and Mary Jane Black Professor of Hydrogeology and directed the UNM Water Resources Program. His specialties are water resources in developing countries, curriculum development, and transboundary water resources management. Campana received his MS and PhD degrees in hydrology from the University of Arizona and his BS in geology from the College of William and Mary, and prior to UNM was at the Desert Research Institute.

Dr. Campana’s office address is:

Institute for Water and Watersheds, 210 Strand Agricultural Hall, Oregon State University, Corvallis, OR 97331-2208. E-mail: [Michael.Campana@oregonstate.edu](mailto:Michael.Campana@oregonstate.edu)



---

## MATERIAL CONCERNING INCORPORATION OF THE IAH/USNC

### **501c3 versus 501c6**

The following is from the attorney:

"Here is a short, simple explanation of the advantages of a 501c3 versus a 501c6. You had also asked whether either would preclude the US Chapter from accepting donations.

**501(c)(3):** 501c3 status permits tax deductible gifts from individuals, foundations, and others for federal income tax purposes, and hence is typically the tax exemption choice for most nonprofits. But this status is more limiting than a 501c6. A 501(c)(3) may not attempt to influence legislation as a substantial part of its activities and may not participate at all in campaign activity for or against political candidates.

Organizations in the 501c3 category include groups whose purposes are:

- \* charitable
- \* religious
- \* scientific
- \* educational
- \* literary
- \* preventing cruelty to children or animals
- \* fostering national or international amateur sports competition

**501(c)(6):** These include associations such as business leagues with a common interest, such as chambers of commerce, trade associations, real estate boards, and boards of trade, where one can promote common interests of the members with the membership fee revenues supporting the entity. With a 501c6, one can lobby, promote individual businesses, have affiliated PACs (within certain parameters). Donations may be deducted as a business expense if they are "ordinary and necessary" in the conduct of the taxpayer's business, but contributions are not deductible as charitable donations for federal income tax purposes.

An excellent source which provides additional information on both the 501(c)(3) and the 501(c)(6) is IRS publication 557. You can find it at: <http://www.irs.gov/pub/irs-pdf/p557.pdf>



**ARTICLES OF INCORPORATION  
OF  
UNITED STATES NATIONAL CHAPTER OF THE  
INTERNATIONAL ASSOCIATION OF HYDROGEOLOGISTS**

**ARTICLE I.  
NAME**

The name of the corporation is United States National Chapter of the International Association of Hydrogeologists (the “corporation”).

**ARTICLE II.  
DURATION**

The period of duration of the corporation shall be perpetual.

**ARTICLE III.  
PURPOSES AND POWERS**

Section 3.1 Purposes. The corporation is organized and shall be operated exclusively for scientific and educational purposes within the meaning of section 501(c)(3) of the Internal Revenue Code. The corporation shall operate within the framework provided by the Rules of the International Association of Hydrogeologists (“IAH”). The IAH is an international scientific society affiliated with the International Union of Geological Sciences (“IUGS”) and incorporated as a charitable organization in the United Kingdom. Subject to the foregoing, the specific purposes and objectives of the corporation shall include but not be limited to:

- (a) Represent United States members of IAH in the activities of the parent body and in other international hydrogeological activities, as appropriate.
- (b) Promote international activities that further the science and technology of hydrogeology and of water resources science, in general.
- (c) Promote research, education, communication, and training in groundwater science.
- (d) Stimulate the interest of hydrogeologists in the United States in international hydrogeological activities and to better acquaint hydrogeologists abroad with concepts and techniques developed and used in investigations in the United States.
- (e) Coordinate interest and activities among hydrogeologists in the United States with reference to programs of the IAH and to serve as a standing organization capable of providing continuous services to this end.
- (f) Maintain liaison with other groups concerned with the international water-related activities in general and hydrogeology in particular.
- (g) Provide a link between the international groundwater community and hydrogeologists in the United States.

Section 3.2 Powers. In furtherance of the foregoing purposes and objectives (but not otherwise) and subject to the restrictions set forth in Section 3.3, the corporation shall have and may exercise all of the powers now or hereafter conferred upon nonprofit corporations organized under the laws of Colorado and may do everything necessary or convenient for the accomplishment of any of the corporate purposes, either alone or in connection





with other organizations, entities or individuals, and either as principal or agent, subject to such limitations as are or may be prescribed by law.

### Section 3.3 Restrictions On Powers.

(a) No part of the net earnings of the corporation shall inure to the benefit of or be distributable to any member of the corporation which is not then an exempt organization described in section 501(c)(3) of the Internal Revenue Code, any director or officer of the corporation or any other individual (except that reasonable compensation may be paid for services rendered to or for the benefit of the corporation affecting one or more of its purposes), and no member of the corporation which is not then an exempt organization described in section 501(c)(3) of the Internal Revenue Code, and no director or officer of the corporation or any other individual shall be entitled to share in any distribution of any of the corporate assets on dissolution of the corporation or otherwise.

(b) No substantial part of the activities of the corporation shall consist of carrying on propaganda or otherwise attempting to influence legislation. However, if the corporation is an organization to which section 501(h) of the Internal Revenue Code applies and the corporation has effectively elected to have such section apply, the corporation shall have power to carry on the activities permitted by such section, but only to the extent such activities shall not result in the denial of exemption under such section. The corporation shall not participate or intervene in (including the publishing or distribution of statements) any political campaign on behalf of or in opposition to any candidate for public office.

(c) Upon dissolution of the corporation, all of the corporation's assets remaining after payment of or provision for all of its liabilities shall be paid over or transferred to the IAH, if it is then an exempt organization described in section 501(c)(3) of the Internal Revenue Code, contributions to which are deductible under section 170(c)(2) of the Internal Revenue Code, and if not, to and among one or more other exempt organizations described in section 501(c)(3) of the Internal Revenue Code, contributions to which are deductible under section 170(c)(2) of the Internal Revenue Code, as determined by the board of directors.

(d) Notwithstanding any other provision of these articles of incorporation, the corporation shall not carry on any activities not permitted to be carried on by a corporation exempt from federal income tax as an organization described in section 501(c)(3) of the Internal Revenue Code, or by a corporation, contributions to which are deductible under section 170(c)(2) of the Internal Revenue Code.

(e) All references in these articles of incorporation to provisions of the Internal Revenue Code are to the provisions of the Internal Revenue Code of 1986, as amended, and to the corresponding provisions of any subsequent federal tax laws.

## **ARTICLE IV. REGISTERED OFFICE AND AGENT/PRINCIPAL OFFICE**

The initial registered office in the State of Colorado of the corporation shall be at 3300 Penrose Place, Boulder, Colorado 80301-9140, and the initial registered agent of the corporation upon whom process may be served is the Executive Director, Geological Society of America, at the same address. The registered office and registered agent may be changed, without amendment of these Articles of Incorporation, as provided by statute. The principal office of the Association shall be: 3300 Penrose Place, Boulder, Colorado 80301-9140.



**ARTICLE V.  
MEMBERS**

The corporation shall have such classes of voting members as may be prescribed by its bylaws or the board of directors. The designation and voting powers of each class of members and their respective manner of election or appointment, qualifications, tenure, terms of membership, rights, limitations and obligations shall be as provided in the bylaws of the corporation or by the board of directors. Voting powers may be denied to any class either generally or in any limited way. The corporation shall have no capital stock. However, the corporation may issue certificates evidencing membership therein.

**ARTICLE VI.  
BOARD OF DIRECTORS**

Section 6.1 General. The management of the affairs of the corporation shall be vested in a board of directors, except as otherwise provided in the Colorado Revised Nonprofit Corporation Act, these articles of incorporation or the bylaws of the corporation. The number of directors, their classifications, their terms of office and the manner of their selection shall be as provided in the bylaws of the corporation.

Section 6.2 Liability of Directors. No director shall be personally liable to the corporation or its members for monetary damages for breach of fiduciary duty as a director, except that the foregoing shall not eliminate or limit liability of a director to the corporation or its members for monetary damages for the following: (a) any breach of the director’s duty of loyalty to the corporation or its members, (b) acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (c) acts specified in C.R.S. Section 7-128-403, as it now exists or hereafter may be amended, or (d) any transaction from which the director directly or indirectly derived an improper personal benefit. If the Colorado Revised Nonprofit Corporation Act hereafter is amended to authorize the further elimination or limitation of the liability of directors, then the liability of a director of the corporation, in addition to the limitation on personal liability provided herein, shall be further eliminated or limited to the fullest extent permitted by the Colorado Revised Nonprofit Corporation Act. Any repeal or modification of this Section 6.2 shall be prospective only and shall not adversely affect any right or protection of a director of the corporation existing at the time of such repeal or mod

Section 6.3 Initial Board. Members of the Executive Committee shall constitute the initial board of directors. Their names and addresses are as follows:

<u>Name</u>	<u>Address</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____]



**ARTICLE VIII.  
BYLAWS**

The initial bylaws of the corporation shall be as adopted by the board of directors. Except to the extent limited by the Colorado Revised Nonprofit Corporation Act, the board of directors shall have power to amend or repeal the bylaws and adopt new bylaws. The voting members at any time may also amend or repeal the bylaws and adopt new bylaws. Notwithstanding the foregoing, the bylaws of the corporation may not be amended without the approval in writing of the chairman, acting on behalf of the board of directors. The bylaws of the corporation may contain any provisions for the managing and regulating of the affairs of the corporation that are not inconsistent with law or these articles of incorporation, as these articles may be amended. However, no bylaw shall have the effect of giving any member of the corporation which is not then an exempt organization described in section 501(c)(3) of the Internal Revenue Code, or any director or officer of the corporation or any other individual any proprietary interest in the corporation's property, whether during the term of the corporation's existence or as an incident to its dissolution. The bylaws of the corporation may contain any provisions for the managing and regulating of the affairs of the corporation that are not inconsistent with law or these articles of incorporation, as these articles may be amended.

**ARTICLE VII.  
AMENDMENTS**

The board of directors shall have the power and authority at any time to amend these articles of incorporation without member approval to the extent provided in the Colorado Revised Nonprofit Corporation Act. In addition, these articles of incorporation may be amended in any other respect at any time by action of the board of directors and voting members in the manner and to the extent provided by the Colorado Revised Nonprofit Corporation Act.

\* \* \* \* \*

The name and mailing address of the individual who causes this document to be delivered for filing, and to whom the Secretary of State may deliver notice if filing of this document is refused, is Deborah M. Kelly, Esq., Faegre & Benson LLP, 1900 Fifteenth Street, Boulder, Colorado 80302.

BLDR1:50245151.02



**BYLAWS**  
**OF**  
**UNITED STATES NATIONAL CHAPTER OF THE**  
**INTERNATIONAL ASSOCIATION OF HYDROGEOLOGISTS**

**ARTICLE I.**

**OFFICES**

Section 1.1 Registered Agent. The registered agent of the United States National Chapter of the International Association of Hydrogeologists (the “corporation”) in the State of Colorado shall be as designated by the Board of Directors of the corporation (the “Board”) from time to time.

Section 1.2 Offices. The corporation may establish and maintain such offices at such other places of business either within or outside the State of Colorado as the Board may from time to time determine.

**ARTICLE II.**

**MEMBERS**

Section 2.1 Classification, Qualification, Privileges and Election of Members. The corporation shall have one class of voting members. Each voting member shall be entitled to vote in an election of directors and on any other matter requiring membership approval under the Act, the articles of incorporation or these bylaws. Voting members shall not be entitled to vote on any other matter except as required under the Act, the articles of incorporation, or these bylaws. Voting members shall also be entitled to vote on any other matter submitted to a vote of the voting membership by resolution of the board of directors. Any person may be a voting member. New voting members may be elected to membership at any time by the vote of a majority of the board of directors.

Whenever the term “members” is used herein without further modification it shall refer to all members of every class. New members of any class may be elected to membership at any time by the vote of a majority of the board of directors. Additionally, members of the corporation must be members of the International Association of Hydrogeologists (“IAH”) residing in the United States or who are citizens or permanent residents of the United States and are residing elsewhere.

Section 2.2 Dues. The dues of membership shall be determined from time to time by the Board.

Section 2.3 Termination of Membership. Membership in the corporation may be terminated for any of the following reasons:

- (a) Violation of the corporation’s Code of Ethics as determined pursuant to the disciplinary procedures adopted by the corporation; or
- (b) Failure to pay dues in a timely manner.

Section 2.4 Reinstatement of Membership. Any member whose membership in the corporation has been terminated may be reinstated, pursuant to such terms and conditions as may be established from time to time by the Board.



Section 2.5 Transfer of Membership. Membership in the corporation is not transferable. Members shall have no ownership rights or beneficial interests of any kind in the property of the corporation.

Section 2.6 Annual Meeting of Members. An annual meeting of the voting members shall be held in the months of October or November at the time and place, either within or outside Colorado, as determined by the board of directors, for the purpose of electing directors and for the transaction of such other business as may come before the meeting. If the election of directors shall not be held on the day designated herein for the annual meeting of the voting members, or at any adjournment thereof, the board of directors shall cause the election to be held at a meeting of the members as soon thereafter as conveniently may be. Failure to hold an annual meeting as required by these bylaws shall not work a forfeiture or dissolution of the corporation or invalidate any action taken by the board of directors or officers of the corporation.

Section 2.7 Special Meetings. A special meeting of the voting members, for any purpose or purposes may be called by the chair and shall be called by the chair upon the written request of voting members having at least half of the votes entitled to be cast at such meetings. The chair may present business for consideration at a special meeting regardless of whether the business pertains to a purpose described in the notice of such meeting.

Section 2.8 Place of Meeting. Each meeting of the members shall be held at such place, either within or outside Colorado, as may be designated in the notice of meeting, or, if no place is designated in the notice, at the principal office of the corporation in Colorado. Any or all members may participate in any meeting through the use of any means of communication by which all persons participating in the meeting may hear each other during the meeting.

Section 2.9 Notice of Meeting. Except as otherwise prescribed by statute, written notice of each meeting of the members stating the place, date and time of the meeting, and, in the case of a special meeting, the purpose or purposes for which the meeting is called, shall be delivered no fewer than ten (10) days (or if notice is mailed by other than first class, certified or registered mail, no fewer than thirty (30) days) nor more than sixty (60) days before the date of the meeting, either personally, by mail or private carrier, or by facsimile, electronic transmission or any other form of wire or wireless communication, by or at the direction of the chair, or the secretary, or the other officer or person calling the meeting, to each member entitled to attend such meeting. If mailed, such notice shall be deemed delivered when deposited in the United States mail, addressed to each member at such member's address as it appears in the records of the corporation, with postage thereon prepaid. If delivered by private carrier, such notice is deemed delivered upon deposit with the carrier. If transmitted by facsimile, electronic transmission or by any other form of wire or wireless communication, such notice shall be deemed to be given when the transmission is complete. If the foregoing methods of personal notice are impracticable, notice may be communicated by a newspaper of general circulation in the area where published. Any member may waive notice of any meeting before, at or after such meeting. The attendance in person or by proxy of a member at a meeting shall constitute a waiver of notice of such meeting, unless the member at the beginning of the meeting objects to holding the meeting or transacting business at the meeting because of lack of notice or defective notice. A member's attendance at a meeting also waives objection to consideration of a particular matter at the meeting that





is not within the purpose or purposes described in the meeting notice, unless the member objects to considering the matter when it is presented.

**Section 2.10 Quorum and Action of the Members.** Except as otherwise required by the Act or the articles of incorporation, 25 percent of the voting members entitled to vote on a matter shall constitute a quorum of the members with respect to such matter. With respect to all matters other than the election of directors, action is approved if a quorum exists and if the votes cast in favor of the action exceed the votes cast in opposition to the action, unless otherwise required by the Act. In an election of multiple directors, that number of candidates equaling the number of directors to be elected, having the highest number of votes cast in favor of their election, are elected to the board of directors. When only one director is being voted upon, the affirmative vote of a majority of the members represented at a meeting at which a quorum is present shall be required for election to the board of directors. If less than a quorum of the members are represented at a meeting, a majority of the members so represented may adjourn the meeting from time to time for a period not to exceed sixty (60) days at any one adjournment without further notice other than an announcement at the meeting. At such adjourned meeting, at which a quorum shall be represented, any business may be transacted which might have been transacted at the meeting as originally notified.

**Section 2.11 Voting Rights; Proxies.**

(a) Each voting member is entitled to one vote on each matter submitted to a vote of the voting members. Cumulative voting shall not be allowed.

(b) At each meeting of the voting members, a member entitled to vote thereat may vote by proxy executed in writing by the member or by such member's duly authorized attorney in fact. Such proxy shall be delivered to the corporation before or at the time of the meeting in any manner permitted by C.R.S. Section 7-127-203. No proxy shall be valid after eleven (11) months from the date of its execution, unless otherwise provided in the proxy.

(c) The right to vote of any member which is a corporation or unincorporated association may be exercised by such officer, agent or proxy as the bylaws, constitution or other governing instrument of such corporation or association may prescribe or, in the absence of such provision, as the board of directors or other governing body of such corporation or association may determine.

(d) The board of directors is not required to prepare a members' list in connection with any meeting of the members.

(e) Members may vote pursuant to a voting agreement only if such agreement is filed with the secretary of the corporation prior to such vote.

**Section 2.12 Committees.** The board of directors or the voting members at any time and from time to time may establish one or more committees of members for any appropriate purposes and may dissolve any such committee. The members of the committee shall elect a chair who shall preside at all meetings of the committee and generally supervise the conduct of the committee's affairs. Rules governing procedures for meetings of any such committee and for the conduct of such committee's affairs shall be the same as those set forth in these bylaws or the Act for the board of directors unless the voting members or the committee itself determines otherwise.



Section 2.13 Action Without a Meeting. Any action required or permitted to be taken at a meeting of the members or any committee thereof may be taken without a meeting either by unanimous written consent or by written ballot. Action by unanimous written consent is taken when a consent in writing, setting forth the action to be taken, is signed by all of the voting members entitled to vote with respect to the subject matter thereof. Such consent (which may be signed in counterparts) shall have the same force and effect as a unanimous vote of the members entitled to vote thereon. Action by written ballot may be taken as provided under the Act. A written ballot may not be revoked.

### ARTICLE III.

#### **BOARD OF DIRECTORS**

Section 3.1 General Powers. Except as otherwise provided in the Act, the articles of incorporation or these bylaws, all corporate powers shall be exercised by or under the authority of, and the business and affairs of the corporation shall be managed by, its board of directors.

#### Section 3.2 Qualifications, Number, Classification, Election and Tenure.

(a) Qualifications. Each director must be a natural person who is eighteen years of age or older. A director need not be a resident of Colorado. Each director must be a member in good standing of the IAH.

(b) Number. The number of directors of the corporation shall be at least four (4) but not more than ten (10), as determined by the members or the board of directors from time to time. Any action of the members or board of directors to change the number of directors, whether expressly by resolution or by implication through the election of additional directors, shall constitute an amendment of these bylaws, provided such action otherwise satisfies the requirements for amending these bylaws as provided in the Act, the articles of incorporation or these bylaws.

(c) Election and Tenure. Directors shall be elected by the voting members at the annual meeting of the members held in the year of a General Assembly of the IAH for a term that begins at the adjournment of the General Assembly of the IAH and shall continue to the adjournment of the General Assembly occurring approximately four (4) years hence. Each director so elected shall hold office until such director's term expires and thereafter until such director's successor shall have been elected and qualified, or until such director's earlier death, resignation or removal. No director may serve as a director for more than two consecutive four-year terms, except that any initial term of one or two years, any partial term served by reason of an increase in the number of directors or an election to fill a vacancy for an unexpired term, and any terms followed by a period out of office in excess of one year, shall not be counted.

Section 3.3 Resignation; Removal; Vacancies. Any director may resign at any time by giving written notice to the chair of the board, to the chair or to the secretary of the corporation. A director's resignation shall take effect at the time specified in such notice, and unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective. A director shall be deemed to have resigned in the event of such director's incapacity as determined by a court of competent jurisdiction. Any director may be removed at any time, with or without cause, by the



affirmative vote of a majority of the other directors then in office. Any vacancy of an elected director may be filled by the voting members. A director elected, appointed or designated to fill a vacancy shall hold the office for the unexpired term of such director's predecessor in office. Any directorship to be filled by reason of an increase in the number of directors shall be filled by the affirmative vote of a majority of the directors then in office, and a director so chosen shall hold office until the next election of directors and thereafter until such director's successor shall have been elected and qualified, or until such director's earlier death, resignation or removal. A vacancy that will occur at a specific later date may be filled before the vacancy occurs, but the new director may not take office until the vacancy occurs.

Section 3.4 Regular Meetings. A regular annual meeting of the board of directors shall be held immediately after and at the same place as the annual meeting of the members, or as soon as practicable thereafter at the time and place, either within or outside Colorado, determined by the board, for the purpose of electing officers and for the transaction of such other business as may come before the meeting. The board of directors may provide by resolution the time and place, either within or outside Colorado, for the holding of additional regular meetings.

Section 3.5 Special Meetings. Special meetings of the board of directors may be called by or at the request of the chair of the board or any director. The person or persons authorized to call special meetings of the board of directors may fix the time and place, either within or outside Colorado, for holding any special meeting of the board called by them.

#### Section 3.6 Notice of Meetings.

(a) Requirements. Notice of each meeting of the board of directors stating the date, time and place of the meeting shall be given to each director at such director's business or residential address at least five (5) days prior thereto by the mailing of written notice by first class, certified or registered mail, or at least two (2) days prior thereto by personal delivery or private carrier of written notice or by telephone, facsimile, electronic transmission or any other form of wire or wireless communication (and the method of notice need not be the same as to each director). Written notice, if in a comprehensible form, is effective at the earliest of: (i) the date received; (ii) five (5) days after its deposit in the United States mail, as evidenced by the postmark, if mailed correctly addressed and with first class postage affixed; and (iii) the date shown on the return receipt, if mailed by registered or certified mail, return receipt requested, and the receipt is signed by or on behalf of the addressee. Oral notice is effective when communicated in a comprehensible manner. If transmitted by facsimile, electronic transmission or other form of wire or wireless communication, notice shall be deemed to be given when the transmission is complete.

(b) Waiver of Notice. A director may waive notice of any meeting before or after the time and date of the meeting stated in the notice. Except as otherwise provided in this Section 3.6(b), the waiver shall be in writing and signed by the director entitled to the notice. Such waiver shall be delivered to the corporation for filing with the corporate records, but such delivery and filing shall not be conditions of the effectiveness of the waiver. A director's attendance at or participation in a meeting waives any required notice to that director of the meeting unless: (i) at the beginning of the meeting or promptly upon the director's later arrival, the director objects to holding the meeting or transacting business at the meeting because of lack of notice or defective notice and does not thereafter vote for or assent to action taken at the meeting; or (ii) if special notice was required of a particular purpose pursuant to the Act or



these bylaws, the director objects to transacting business with respect to the purpose for which such special notice was required and does not thereafter vote for or assent to action taken at the meeting with respect to such purpose.

Section 3.7 Quorum and Voting. A majority of the directors in office immediately before a meeting begins shall constitute a quorum for the transaction of business at any meeting of the board of directors, and the vote of a majority of the directors present in person at a meeting at which a quorum is present shall be the act of the board of directors, unless otherwise required by the Act, the articles of incorporation or these bylaws. If less than a quorum is present at a meeting, a majority of the directors present may adjourn the meeting from time to time without further notice other than an announcement at the meeting, until a quorum shall be present.

Section 3.8 Voting by Proxy. For purposes of determining a quorum with respect to a particular proposal, and for purposes of casting a vote for or against a particular proposal, a director may be deemed to be present at a meeting and to vote if the director has granted a signed written proxy to another director who is present at the meeting, authorizing the other director to cast the vote that is directed to be cast by the written proxy with respect to the particular proposal that is described with reasonable specificity in the proxy. Except as provided in this Section 3.8 and as permitted by Section 3.13, directors may not vote or otherwise act by proxy.

Section 3.9 Compensation. Directors shall not receive compensation for their services as such; however, the reasonable expenses of directors of attendance at board meetings may be paid or reimbursed by the corporation. Directors shall not be disqualified to receive reasonable compensation for services rendered to or for the benefit of the corporation in any other capacity.

Section 3.10 Committees. By one or more resolutions adopted by the vote of a majority of the directors present in person at a meeting at which a quorum is present, the board of directors may designate from among its members one or more other committees, each of which, to the extent provided in the resolution establishing such committee, shall have and may exercise all of the authority of the board of directors, except as prohibited by the Act. The delegation of authority to any committee shall not operate to relieve the board of directors or any member of the board from any responsibility or standard of conduct imposed by law or these bylaws. Rules governing procedures for meetings of any committee shall be the same as those set forth in these bylaws or the Act for the board of directors unless the board or the committee itself determines otherwise.

(a) Nominating Committee. The Nominating Committee shall consist of at least three (3) but not more than seven (7) members designated by the chair of the board no less than eight (8) months prior to a vacancy on the board of directors. The Nominating Committee shall nominate candidates to fill the vacancies on the board of directors which arise as a result of the expiration of terms or otherwise. The list of nominated candidates shall be presented to the voting members not less than thirty (30) days prior to the date of election of the directors. The voting members may elect directors who are not included on the list submitted by the Nominating Committee.

(b) Finance Committee. The Finance committee of the corporation shall consist of at least three (3) but not more than seven (7) members designated by the board of directors. The Finance Committee shall be responsible for the oversight of all of the corporation's financial affairs and of investments made by the corporation and shall verify that investments are made in accordance with the investment



policies and guidelines of the corporation. The Finance Committee, or a subcommittee thereof, shall also serve as the audit committee.

Section 3.11 Advisory Boards. The board of directors may from time to time form one or more advisory boards, committees, auxiliaries or other bodies composed of such members, having such rules of procedure, and having such chair, as the board of directors shall designate. The name, objectives and responsibilities of each such advisory board, and the rules and procedures for the conduct of its activities, shall be determined by the board of directors. An advisory board may provide such advice, service, and assistance to the corporation, and carry out such duties and responsibilities for the corporation as may be specified by the board of directors; except that, if any such committee or advisory board has one or more members thereof who are entitled to vote on committee matters and who are not then also directors, such committee or advisory board may not exercise any power or authority reserved to the board of directors by the Act, the articles of incorporation or these bylaws. Further, no advisory board shall have authority to incur any corporate expense or make any representation or commitment on behalf of the corporation without the express approval of the board of directors or the chair of the corporation.

Section 3.12 Meetings by Telephone. Members of the board of directors or any committee thereof may participate in a regular or special meeting by, or conduct the meeting through the use of, any means of communication by which all directors participating may hear each other during the meeting. A director participating in a meeting by this means is deemed to be present in person at the meeting.

Section 3.13 Action Without a Meeting.

(a) Any action required or permitted to be taken at a meeting of the board of directors or any committee thereof may be taken without a meeting if each and every member of the board or committee in writing either: (i) votes for such action; (ii) votes against such action; or (iii) abstains from voting. Each director or committee member who delivers a writing described in this Section 3.13(a) to the corporation shall be deemed to have waived the right to demand that action not be taken without a meeting.

(b) Action is taken under this Section 3.13 only if the affirmative vote for such action equals or exceeds the minimum number of votes that would be necessary to take such action at a meeting at which all of the directors then in office were present and voted.

(c) No action taken pursuant to this Section 3.13 shall be effective unless writings describing the action taken and otherwise satisfying the requirements of Section 3.13(a), signed by all directors and not revoked pursuant to Section 3.13(d), are received by the corporation. Any such writing may be received by the corporation by electronically transmitted facsimile or other form of wire or wireless communication providing the corporation with a complete copy of the document, including a copy of the signature on the document. Action taken pursuant to this Section 3.13 shall be effective when the last writing necessary to effect the action is received by the corporation unless the writings describing the action taken set forth a different effective date.

(d) Any director who has signed a writing pursuant to this Section 3.13 may revoke such writing by a writing signed and dated by the director describing the action and stating that the director's prior





vote with respect thereto is revoked, if such writing is received by the corporation before the last writing necessary to effect the action is received by the corporation.

(e) Action taken pursuant to this Section 3.13 has the same effect as action taken at a meeting of directors and may be described as such in any document.

(f) All signed written instruments necessary for any action taken pursuant to this Section 3.13 shall be filed with the minutes of the meetings of the board of directors.

## ARTICLE IV.

### OFFICERS

Section 4.1 Designation and Qualifications. The elected officers of the corporation shall be a chair of the board, a secretary-treasurer, a past-chair, and at least two (2) directors.. The board of directors may also appoint, designate or authorize such other officers, assistant officers and agents, including an executive director, a chief financial officer, a controller, assistant secretaries and assistant treasurers, as it may consider necessary or useful. One person may hold more than one office at a time. Officers need not be directors of the corporation. All officers must be natural persons who are eighteen years of age or older.

Section 4.2 Election and Term of Office. The chair of the board shall elect or appoint the officers at or in conjunction with each annual meeting of the board of directors. If the election and appointment of officers shall not be held at or in conjunction with such meeting, such election or appointment shall be held as soon as convenient thereafter. Each officer shall hold office from the end of the meeting at or in conjunction with which such officer was elected or appointed until such officer's successor shall have been duly elected or appointed and shall have qualified, or until such officer's earlier death, resignation or removal. If a vacancy occurs in the chair's position, it shall be filled by one of the officers elected by a majority of the board of directors.

Section 4.3 Compensation. The compensation, if any, of each officer shall be as determined from time to time by the board of directors, or by an officer or a committee to which such authority has been delegated by the board of directors. To the extent reasonably feasible, the person or persons determining compensation shall obtain data on the compensation of officers holding similar positions of authority within comparable organizations, shall set the compensation based on such data and an evaluation of the officer's performance and experience as related to the requirements of the position, and shall document the basis for the determination, including the comparison data used, the requirements of the position, and the evaluation of the officer's performance and experience. No officer shall be prevented from receiving a salary by reason of the fact that the officer is also a director of the corporation. However, no payment of compensation (or payment or reimbursement of expenses) shall be made in any manner so as to result in the imposition of any liability under either section 4941 or section 4958 of the Internal Revenue Code.

Section 4.4 Removal. Any officer or agent may be removed by the board of directors at any time, with or without cause, but removal shall not affect the contract rights, if any, of the person so removed. Election, appointment or designation of an officer or agent shall not itself create contract rights.



Section 4.5 Vacancies. Any officer may resign at any time, subject to any rights or obligations under any existing contracts between the officer and the corporation, by giving written notice to the chair or to the board of directors. An officer's resignation shall take effect upon receipt by the corporation unless the notice specifies a later effective date, and unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective. An officer shall be deemed to have resigned in the event of such officer's incapacity as determined by a court of competent jurisdiction. A vacancy in any office, however occurring, may be filled by the board of directors, or by any officer or committee to which such authority has been delegated by the board of directors, for the unexpired portion of the term. If a resignation is made effective at a later date, the board of directors may permit the officer to remain in office until the effective date and may fill the pending vacancy before the effective date with the provision that the successor does not take office until the effective date, or the board of directors may remove the officer at any time before the effective date and may fill the resulting vacancy.

Section 4.6 Authority and Duties of Officers. The officers of the corporation shall have the authority and shall exercise the powers and perform the duties specified below and as may be additionally specified by the chair, the board of directors or these bylaws, except that in any event each officer shall exercise such powers and perform such duties as may be required by law.

(a) Chair of the Board. The chair of the board shall (i) preside at all meetings of the members and of the board of directors; (ii) see that all resolutions of the members and of the board of directors are carried into effect; and (iii) perform all other duties incident to the office of chair of the board and as from time to time may be assigned to the chair by the board of directors. The chair of the board is also the chair of the corporation's Executive Committee.

(b) Vice-Chairs. The vice-chair or vice-chairs shall assist the chair of the board and shall perform such duties as may be assigned to them by the chair or by the board of directors. The vice-chair (or if there is more than one, then the vice-chair designated by the board of directors, or if there be no such designation, then the vice-chairs in order of their election) shall, at the request of the chair, or in the chair's absence or inability or refusal to act, perform the duties of the chair and when so acting shall have all the powers of and be subject to all the restrictions on the chair. The Directors of the Executive Committee may serve as the vice-chair.

(c) Secretary. The secretary shall (i) keep the minutes of the proceedings of the members, the board of directors and any committees of the members or the board; (ii) see that all notices are duly given in accordance with the provisions of these bylaws or as required by law; (iii) be custodian of the corporate records and of the seal of the corporation; (iv) keep at the corporation's registered office or principal place of business within or outside Colorado a record containing the names and addresses of all members; and (v) in general, perform all duties incident to the office of secretary and such other duties as from time to time may be assigned to such office by the chair or by the board of directors. Assistant secretaries, if any, shall have the same duties and powers, subject to supervision by the secretary. The offices of secretary and treasure can be combined upon approval of the majority of the board of directors.

(d) Treasurer. The treasurer shall (i) be the chief financial officer of the corporation and have the care and custody of all its funds, securities, evidences of indebtedness and other personal property and deposit the same in accordance with the instructions of the board of directors; (ii) receive and give



receipts and acquittances for moneys paid in on account of the corporation, and pay out of the funds on hand all bills, payrolls and other just debts of the corporation of whatever nature upon maturity; (iii) unless there is a controller, be the principal accounting officer of the corporation and as such prescribe and maintain the methods and systems of accounting to be followed, keep complete books and records of account, prepare and file all local, state and federal tax returns and related documents, prescribe and maintain an adequate system of internal audit, and prepare and furnish to the chair and the board of directors statements of account showing the financial position of the corporation and the results of its operations; (iv) monitor compliance with all requirements imposed on the corporation as a tax-exempt organization described in section 501(c)(3) of the Internal Revenue Code; (v) upon request of the board, make such reports to it as may be required at any time; and (vi) perform all other duties incident to the office of treasurer and such other duties as from time to time may be assigned to such office by the chair or the board of directors. Assistant treasurers, if any, shall have the same powers and duties, subject to the supervision by treasurer. The offices of secretary and treasure can be combined upon approval of the majority of the board of directors.

Section 4.7 Surety Bonds. The board of directors may require any officer or agent of the corporation to execute to the corporation a bond in such sums and with such sureties as shall be satisfactory to the board, conditioned upon the faithful performance of such person's duties and for the restoration to the corporation of all books, papers, vouchers, money and other property of whatever kind in such person's possession or under such person's control belonging to the corporation.

## ARTICLE V.

### FIDUCIARY MATTERS

#### Section 5.1 Indemnification.

(a) Scope of Indemnification. The corporation shall indemnify each director, officer, employee and volunteer of the corporation to the fullest extent permissible under the laws of the State of Colorado, and may in its discretion purchase insurance insuring its obligations hereunder or otherwise protecting the persons intended to be protected by this Section 5.1. The corporation shall have the right, but shall not be obligated, to indemnify any agent of the corporation not otherwise covered by this Section 5.1 to the fullest extent permissible under the laws of the State of Colorado.

(b) Savings Clause; Limitation. If any provision of the Act or these bylaws dealing with indemnification shall be invalidated by any court on any ground, then the corporation shall nevertheless indemnify each party otherwise entitled to indemnification hereunder to the fullest extent permitted by law or any applicable provision of the Act or these bylaws that shall not have been invalidated. Notwithstanding any other provision of these bylaws, the corporation shall neither indemnify any person nor purchase any insurance in any manner or to any extent that would jeopardize or be inconsistent with the qualification of the corporation as an organization described in section 501(c)(3) of the Internal Revenue Code, or that would result in the imposition of any liability under either section 4941 or section 4958 of the Internal Revenue Code.

#### Section 5.2 General Standards of Conduct for Directors and Officers.

(a) Discharge of Duties. Each director shall discharge the director's duties as a director, including the director's duties as a member of a committee of the board, and each officer with



discretionary authority shall discharge the officer's duties under that authority (i) in good faith; (ii) with the care an ordinarily prudent person in a like position would exercise under similar circumstances; and (iii) in a manner the director or officer reasonably believes to be in the best interests of the corporation.

(b) Reliance on Information, Reports, Etc. In discharging duties, a director or officer is entitled to rely on information, opinions, reports or statements, including financial statements and other financial data, if prepared or presented by: (i) one or more officers or employees of the corporation whom the director or officer reasonably believes to be reliable and competent in the matters presented; (ii) legal counsel, a public accountant or another person as to matters the director or officer reasonably believes are within such person's professional or expert competence; or (iii) in the case of a director, a committee of the board of directors of which the director is not a member if the director reasonably believes the committee merits confidence. A director or officer is not acting in good faith if the director or officer has knowledge concerning the matter in question that makes reliance otherwise permitted by this Section 5.2(b) unwarranted.

(c) Liability to Corporation or Its Members. A director or officer shall not be liable as such to the corporation or its members for any action taken or omitted to be taken as a director or officer, as the case may be, if, in connection with such action or omission, the director or officer performed the duties of the position in compliance with this Section 5.2.

(d) Director Not Deemed to Be a "Trustee." A director, regardless of title, shall not be deemed to be a "trustee" within the meaning given that term by trust law with respect to the corporation or with respect to any property held or administered by the corporation including, without limitation, property that may be subject to restrictions imposed by the donor or transferor of such property.

### Section 5.3 Conflicts of Interest.

(a) Definition. A conflict of interest arises when any "responsible person" or any "party related to a responsible person" has an "interest adverse to the corporation." A "responsible person" is any individual in a position to exercise substantial influence over the affairs of the corporation, and specifically includes, without limitation, directors and officers of the corporation. A "party related to a responsible person" includes his or her extended family (including spouse, ancestors, descendants and siblings, and their respective spouses and descendants), an estate or trust in which the responsible person or any member of his or her extended family has a beneficial interest or a fiduciary responsibility, or an entity in which the responsible person or any member of his or her extended family is a director, trustee or officer or has a financial interest. "An interest adverse to the corporation" includes any interest in any contract, transaction or other financial relationship with the corporation, and any interest in an entity whose best interests may be impaired by the best interests of the corporation including, without limitation, an entity providing any goods or services to or receiving any goods or services from the corporation, an entity in which the corporation has any business or financial interest, and an entity providing goods or services or performing activities similar to the goods or services or activities of the corporation.

(b) Disclosure. If a responsible person is aware that the corporation is about to enter into any transaction or make any decision involving a conflict of interest, (a "conflicting interest transaction"), such person shall: (i) immediately inform those charged with approving the conflicting interest transaction on behalf of the corporation of the interest or position of such person or any party related to



such person; (ii) aid the persons charged with making the decision by disclosing any material facts within the responsible person's knowledge that bear on the advisability of the corporation entering into the conflicting interest transaction; and (iii) not be entitled to vote on the decision to enter into such transaction.

(c) Approval of Conflicting Interest Transactions. The corporation may enter into a conflicting interest transaction provided either: (i) The material facts as to the responsible person's relationship or interest and as to the conflicting interest transaction are disclosed or are known to the board of directors or to a committee of the board of directors that authorizes, approves or ratifies the conflicting interest transaction, and the board or committee in good faith authorizes, approves or ratifies the conflicting interest transaction by the affirmative vote of a majority of the disinterested directors on the board or committee, even though the disinterested directors are less than a quorum; or (ii) The material facts as to the responsible person's relationship or interest and as to the conflicting interest transaction are disclosed or are known to the members, and the conflicting interest transaction is specifically authorized, approved, or ratified in good faith by a vote of the members entitled to vote thereon; or (iii) The conflicting interest transaction is fair as to the corporation.

#### Section 5.4 Liability of Directors for Unlawful Distributions.

(a) Liability to Corporation. A director who votes for or assents to a distribution made in violation of the Act or the articles of incorporation of the corporation shall be personally liable to the corporation for the amount of the distribution that exceeds what could have been distributed without violating the Act or the articles of incorporation if it is established that the director did not perform the director's duties in compliance with the general standards of conduct for directors set forth in Section 5.2.

(b) Contribution. A director who is liable under Section 5.4(a) for an unlawful distribution is entitled to contribution: (i) from every other director who could be liable under Section 5.4(a) for the unlawful distribution; and (ii) from each person who accepted the distribution knowing the distribution was made in violation of the Act or the articles of incorporation, to the extent the distribution to that person exceeds what could have been distributed to that person without violating the Act or the articles of incorporation.

Section 5.5 Loans to Directors and Officers Prohibited. No loans shall be made by the corporation to any of its directors or officers. Any director or officer who assents to or participates in the making of any such loan shall be liable to the corporation for the amount of such loan until the repayment thereof.

## ARTICLE VI.

### **RECORDS OF THE CORPORATION**

Section 6.1 Minutes, Etc. The corporation shall keep as permanent records minutes of all meetings of the members and board of directors, a record of all actions taken by the members or board of directors without a meeting, a record of all actions taken by a committee of the board of directors in place of the board of directors on behalf of the corporation, and a record of all waivers of notices of meetings of the members and of the board of directors or any committee of the board of directors.





Section 6.2 Accounting Records. The corporation shall maintain appropriate accounting records.

Section 6.3 Membership List. The corporation, or its agent, shall maintain a record of the members in a form that permits preparation of a list of the names and addresses of the members in alphabetical order, by class, showing the number of votes each member is entitled to vote.

Section 6.4 Records In Written Form. The corporation shall maintain its records in written form or in another form capable of conversion into written form within a reasonable time.

Section 6.5 Records Maintained at Principal Office. The corporation shall keep a copy of each of the following records at its principal office:

- (a) The articles of incorporation;
- (b) These bylaws;
- (c) Resolutions adopted by the board of directors relating to the characteristics, qualifications, rights, limitations and obligations of the members or any class of the members;
- (d) The minutes of all meetings of the members, and records of all action taken by the members without a meeting, for the past three years;
- (e) All written communications within the past three (3) years to the members generally as the members;
- (f) A list of the names and business or home addresses of the current directors and officers;
- (g) A copy of the most recent corporate report delivered to the Colorado secretary of state;
- (h) All financial statements prepared for periods ending during the last three (3) years that a member of the corporation could have requested under section 6.6(c): (i) The corporation's application for recognition of exemption and the tax-exemption determination letter issued by the Internal Revenue Service; and (ii) All other documents or records required to be maintained by the corporation at its principal office under applicable law or regulation.

Section 6.6 Inspection of Records by Members.

(a) Records Maintained at Principal Office. A member (including a beneficial owner whose membership interest is held in a voting trust and any other beneficial owner of a membership interest who establishes beneficial ownership) shall be entitled to inspect and copy, during regular business hours at the corporation's principal office, any of the records of the corporation described in Section 6.5, provided that the member gives the corporation written demand at least five (5) business days before the date on which the member wishes to inspect and copy such records.

(b) Other Records. A member is entitled to inspect and copy, during regular business hours at a reasonable location specified by the corporation, any other records of the corporation, provided that the member gives the corporation written demand at least five business days before the date on which the



member wishes to inspect and copy such records, and satisfies the following requirements: (i) The member has been a member for at least three (3) months immediately preceding the demand to inspect or copy or is a member holding at least five percent of the voting power as of the date the demand is made; (ii) The demand is made in good faith and for a proper purpose reasonably related to the demanding member's interest as a member; (iii) The member describes with reasonable particularity the purpose and the records the member desires to inspect; and (iv) The records are directly connected with the described purpose.

If the member demands to inspect the record of members pursuant to this Section 6.6(b), the corporation may comply with such demand by furnishing to the member a membership list that complies with Section 6.3 and that was compiled no earlier than the date of the member's demand.

(c) Financial Statements. Upon the written request of any member, the corporation shall mail to such member its most recent annual financial statements, if any, and its most recently published financial statements, if any, showing in reasonable detail its assets and liabilities and results of its operations.

### Section 6.7 Membership List

(a) Preparation of Membership List. After fixing a record date for a notice of a meeting or for determining the members entitled to take action by written ballot, the corporation shall prepare an alphabetical list of the names of all members who are entitled to notice of, and to vote at, the meeting or to participate in such action by written ballot. The list shall show the address of each member entitled to notice of, and to vote at, the meeting or to take such action by written ballot and the number of votes each member is entitled to vote at the meeting or by written ballot.

(b) Right of Inspection. If prepared in connection with a meeting of the members, the membership list shall be available for inspection by any member entitled to vote at the meeting, beginning the earlier of ten days before the meeting for which the list was prepared or two business days after notice of the meeting is given and continuing through the meeting, and any adjournment thereof, at the corporation's principal office or at a place identified in the notice of the meeting in the city where the meeting will be held. The corporation shall make the membership list available at the meeting, and any member entitled to vote at the meeting is entitled to inspect the list at any time during the meeting or any adjournment. If prepared in connection with action to be taken by the members by written ballot, the membership list shall be available for inspection by any member entitled to cast a vote by such written ballot, beginning on the date that the first written ballot is delivered to the members and continuing through the time when such written ballots must be received by the corporation in order to be counted, at the corporation's principal office. A member entitled to vote at the meeting or by such written ballot is entitled upon written demand to inspect and, subject to the requirements of Section 6.6(b) and the provisions of Sections 6.6(e)(i) and (ii), to copy the list, during regular business hours, at the member's expense, and during the period it is available for inspection.

(c) Limitation on Use of Membership List. Without consent of the board of directors, a membership list or any part thereof may not be obtained or used by any person for any purpose unrelated to a member's interest as a member. Without limiting the generality of the previous sentence, without the consent of the board of directors a membership list or any part thereof may not be: (i) used to solicit money or property unless such money or property will be used solely to solicit the votes of the



members in an election to be held by the corporation; (ii) used for any commercial purpose; or (iii) sold to or purchased by any person.

#### Section 6.8 Scope of Members' Inspection Rights.

(a) Agent or Attorney. The member's duly authorized agent or attorney has the same inspection and copying rights as the member.

(b) Right to Copy. The right to copy records under this Article VI includes, if reasonable, the right to receive copies made by photographic, xerographic, electronic or other means.

(c) Reasonable Charge for Copies. Except for requests for financial statements pursuant to Section 6.6(c), the corporation may impose a reasonable charge, covering the costs of labor and material, for copies of any documents provided to a member. The charge may not exceed the estimated cost of production and reproduction of the records.

(d) Litigation. Nothing in this Article VI shall limit the right of a member to inspect records to the same extent as any other litigant if the member is in litigation with the corporation, or the power of a court to compel the production of corporate records for examination.

### ARTICLE VII.

#### AMENDMENT OF BYLAWS

Section 7.1 Amendment of Bylaws by Board of Directors. Proposals to amend the Bylaws may be made by any director or by a petition to the Secretary or Treasurer signed by at least five (5) members. Subject to the specific requirements for amendment of certain bylaws as set forth herein, the board of directors may amend the bylaws at any time to add, change, or delete a provision, unless:

(a) The Act or the articles of incorporation reserve such power exclusively to the members in whole or part; or

(b) A particular provision of these bylaws expressly prohibits the board of directors from doing so; or

(c) Such addition, change or deletion would result in a change of the rights, privileges, preferences, restrictions or conditions of a membership class as to voting, dissolution, redemption or transfer or by changing the rights, privileges, preferences, restrictions or conditions of another class of members.

### ARTICLE VIII.

#### MISCELLANEOUS

Section 8.1 Fiscal Year. The fiscal year of the corporation shall be as established by the board of directors.

Section 8.2 Conveyances and Encumbrances. Property of the corporation may be assigned, conveyed or encumbered by such officers of the corporation as may be authorized to do so by the board of directors, and such authorized persons shall have power to execute and deliver any and all



instruments of assignment, conveyance and encumbrance; however, the sale, exchange, lease or other disposition of all or substantially all of the property and assets of the corporation shall be authorized only in the manner prescribed by applicable statute.

Section 8.3. Designated Contributions. The corporation may accept any contribution, gift, grant, bequest or devise that is designated, restricted or conditioned by the donor, provided that the designation, restriction or condition is consistent with the corporation's general tax-exempt purposes. Donor-designated contributions will be accepted for special funds, purposes or uses, and such designations generally will be honored. However, the corporation shall reserve all right, title and interest in and to and control over such contributions, and shall have authority to determine the ultimate expenditure or distribution thereof in connection with any such special fund, purpose or use. Further, the corporation shall acquire and retain sufficient control over all donated funds (including designated contributions) to assure that such funds will be used exclusively to carry out the corporation's tax-exempt purposes.

Section 8.4 References to Internal Revenue Code. All references in these bylaws to provisions of the Internal Revenue Code are to the provisions of the Internal Revenue Code of 1986, as amended, and to the corresponding provisions of any subsequent federal tax laws.

Section 8.5 Principles of Construction. Words in any gender shall be deemed to include the other gender; the singular shall be deemed to include the plural and vice versa; the words "pay" and "distribute" shall also mean assign, convey and deliver; and the table of contents, headings and underlined paragraph titles are for guidance only and shall have no significance in the interpretation of these bylaws.

Section 8.6 Severability. The invalidity of any provision of these bylaws shall not affect the other provisions hereof, and in such event these bylaws shall be construed in all respects as if such invalid provision were omitted.

---

CERTIFICATE

The undersigned certifies that he or she is the Secretary-Treasurer of United States National Chapter of the International Association of Hydrogeologists, a Colorado nonprofit corporation, and that, as such, the undersigned is authorized to execute this certificate on behalf of said corporation, and further certifies that attached hereto is a complete and correct copy of the presently effective bylaws of said corporation.

Dated: \_\_\_\_\_, 2006.

---

---

Secretary-Treasurer



## BALLOT

Please mark the box corresponding to your vote.

YES, I vote in favor of adopting the revised Articles of Incorporation and revised bylaws, and The US. National Chapter of the International Association of Hydrogeologists becoming a non profit 501-C-3 corporation

NO, I vote against adopting the Articles of Incorporation and revised bylaws and The US. National Chapter of the International Association of Hydrogeologists becoming a non profit 501-C-3 corporation

NOTE: This ballot is available electronically at: <http://www.zoomerang.com/survey.zgi?p=WEB225DPGZGJKJ>. You are encouraged to use this voting format if possible. If not, please mail your ballot to:

**Jack Sharp**  
**Department of Geological Sciences**  
**The University of Texas**  
**1 University Station – C1100**  
**Austin, Texas, 78712-0254 USA.**