



ARIZONA HYDROLOGICAL SOCIETY

April, 2007

Viewpoint: Challenges Ahead

New year, new challenges. We want to thank our outgoing officers and board members at each Chapter and at the Corporate Board, especially Peter Kroopnick and Bill Petroustou, who did an excellent job as President and Vice-President respectively. Marla Odom stepped into the position of Secretary in her first term on the Corporate Board, and Ted Lehman is our Vice-President. Mike Geddis remains our stalwart Treasurer, and I wound up as President.

Arizona Hydrological Society saw a lot of changes in 2006. Leilani Bew departed as our newsletter editor, and we consequently went from a paper format to this electronic version that you are now reading. We hired an administrator to handle many of the tasks that Leilani had done, including getting out this newsletter and maintaining our Web site. The AHS Foundation is definitely off the ground and flying.

This year your Society looks ahead to major events. The 2007 Annual Symposium, co-hosted by *Southwest Hydrology* and SAHRA, will be held in Tucson at the Westin La Paloma Resort starting August 29 (note the earlier date this year). It promises to be one of the largest and most exciting gatherings we have ever held. On October 28, the 6th International Seminar on Managed Artificial Recharge will begin its four days in Phoenix at the Pointe South Mountain Resort. AHS is a major sponsor for this international event, a gathering of premier scientists from all over the world, focused on recharge. These two events alone make your membership in AHS worth the dues. They're not to be missed. You get a lot out of AHS, and you can get even more when you are an active participant—that's the challenge to you.

Alan Dulaney
AHS President 2007

2007 MEMBERSHIP DUES

Dues, payable to AHS (\$40.00, \$15.00 for students) should be sent to:

Arizona Hydrological Society
Jeanie Merideth, Association
Manager
PMB 139; 3305 N. Swan Road
#109
Tucson, AZ 85712
Phone: (520) 299-6787

Dues may also be paid using our "Online Payment" system. Go to www.azhydrosoc.org And click on "Join or Renew Online"



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Update on 2007 Annual AHS Symposium

2007 ANNUAL AHS SYMPOSIUM SPONSORS/ EXHIBITORS UPDATE

- Mike Block, Symposium Fundraising Co-Chair, Metro Water District

Many thanks to the incredible sponsors noted in last month's newsletter and our newest sponsors. With only five months left until the Symposium, we have about half of our exhibit spaces left. So your company still has some time remaining to join in on what will be a premier networking and educational event!

The Symposium Committee greatly appreciates Roscoe Moss Company as our newest Supporting Level sponsor.

Our newest Corporate sponsor is Layne Christensen. Many thanks to them for becoming the first time sponsor at the Symposium.

Confirmed exhibitors besides our Supporting and Corporate Sponsors include BESST, Inc., Solinst Canada, Ltd. and Boart Longyear Suppliers Division.

If your firm or agency would like to also be a sponsor (Sponsor, Supporting, Corporate, Exclusive

Event - Wednesday Night Ice-breaker, Thursday or Friday Break, Thursday Evening Mixer, or Field Trip) or an Exhibitor, please go to the Symposium AHS website at www.watersymposium.com or contact me at (520) 575-8100 or mblock@metrowater.com.

On the behalf of the Symposium Planning Committee, I would like to again thank all of our donors for your incredible generosity and support for a successful 2007 Symposium.

2007 Annual Symposium Update

- Gary Burchard, Metro Water District &

Betsy Woodhouse, Southwest Hydrology Symposium Co-Chairs

AHS' 20th Annual Symposium is shaping up to be a tremendous event. Many thanks to Asia Philbin (Tucson Water) and Fred Tillman (USGS) for completing a yeoman's job after many evenings of sorting, resorting, and fretting over the amazing number of abstracts and session proposals. Your planning committee is pleased to announce that we'll provide four concurrent sessions in addition to a plethora of poster presentations. We're excited about the technical program that has come together with a diversity of topics and speakers from across the Southwest. All of you who submitted abstracts or session proposals will be hearing from the technical sessions subcommittee soon.

We have two plenary speakers lined up for Thursday morning that you won't want to miss: Peter Gleick from The Pacific Institute and Gerry Galloway, President of the American Water Resources Association. We have many other distinguished speakers slated throughout the program, so be sure to check the schedule when it's posted later this month.

In addition to the main program, the symposium planning committee is developing five optional workshops for the day before the symposium (Wed. Aug. 29) and three field trips following it (Sat. Sept. 1). They cover a wide range of topics and range from half- to full-day, so hopefully there's something for everyone!

Online registration will open April 23rd for those paying by credit card. The symposium brochure will be hitting the mail at about the same time, and will also contain a registration form for those paying by check. When you reg-

ister, don't forget to reserve your room. The low rates (\$109 single/double, \$83 for government employees) are good three days before and after the meeting, but the room block is limited so don't wait to make your reservation.

The symposium is coming together, thanks to the hard work of our dedicated planning committee, and with the support of the greater water community, we'll be able to produce a memorable event. We continue to seek sponsors and exhibitors, although exhibitor space is filling up.

Please visit www.watersymposium.com for more information on the program, workshops, field trips, registration, or to be a sponsor. The site is updated weekly.

Finally, we would like to extend heartfelt thanks to Golder Associates for hosting nearly all of our planning sessions and providing much-needed sustenance and refreshment.

ISMAR6

ANNOUNCING REGISTRATION FOR ISMAR6 6TH INTERNATIONAL SYMPOSIUM ON MANAGED AQUIFER RECHARGE

October 28 to November 2, 2007

Phoenix, Arizona, USA

Early Registration is now available for the 6th International Symposium on Managed Aquifer Recharge (ISMAR6).

Please visit our website www.ismar2007.org and take this opportunity to save on our early registration rates available through May 4, 2007.

Join many of the worlds leading professionals in Managed Aquifer Recharge to learn what is happening throughout the world in this vitally important field. The conference will include:

- **4 Workshops** on Aquifer Recharge–related topics
- **A Plenary session** featuring Dr. Ed Bouwer of Johns Hopkins University
- **58 Professional Papers**
- **More than 100 Poster Presentations**
- **An all–day Field Trip** to key recharge sites in the Phoenix, Arizona area
- **Site–seeing excursions** to the **Grand Canyon** and other destinations in Arizona
- **A field trip** to **Las Vegas, Nevada** recharge sites

DO NOT MISS THIS OPPORTUNITY!

If your company is interested in joining the conference as an exhibitor or as a sponsor, please contact us (info@ismar2007.org).

Doug Bartlett (Co–Chairman, Organizing Committee)

Barbara Murphy (Member, Organizing Committee)

PHOENIX CHAPTER NEWS

April Phoenix Chapter Dinner Meeting

Our next meeting will occur April 10th at Pizzeria Uno's in Tempe. Our speaker will be Victoria Vargas of Archeological Consulting Services (ACS). Ms. Vargas is the Project Lead and ACS Principal Investigator for the ongoing multidisciplinary Hayden Flour Mill project in Tempe. She will present a summary of the ongoing Hayden Flour Mill project. The presentation will include an overview of the project as a whole with particular emphasis on the Hayden Canal and its role in the historic powering of the mill.

Where: Uno's Restaurant, Tempe

When: April 10th, 5:45 Dinner and Socializing, 7:15 meeting

Cost: \$15 for members and \$5 for students

RSVP with Beth Proffitt by Apr. 9th at eproffitt@transgeo.com or (602) 437-0330.

March Meeting Summary

The Phoenix Chapter enjoyed a repeat performance from Joe Zehnder, Ph.D. with his presentation of "The Onset and Development of Monsoon Thunderstorms in Southern Arizona."

Dr. Zehnder introduced his talk explaining how the "Sky Islands" in southern Arizona provide a natural cloud laboratory in which one can study thunderstorm development. By using advances in technologies, he was able to look at thunderstorm development in finer detail than the standard sounding measurements by the National Weather Service used in today's weather forecast models. With funding and resources from the National Science Foundation, Joe was able to observation cloud formation using stereo digital photography on the ground, nearby weather stations, weather balloons, and a Doppler radar mounted on a small aircraft flying around the clouds. With these Joe collected weather observations in fine three dimensional detail over the development of a thunderstorm. His 3D reconstructions of the cloud formations using the stereo photographs gave him about 10 meter resolution, which was much better than the National Weather Service Radar maps. With his weather observations, Joe was able to observe a shift between early cloud development, when air is being lifted due to orographic effects (shallow convection), versus thunderstorm development, when air is rapidly rising due to atmospheric conditions (deep convection pulling regional air upwards). This shift ties into a change in temperature profiles that starts with a temperature inversion profile but changes to a "straightened" temperature profile due to local evaporative cooling. This change leads to rapid cloud development that could lead to severe storms. The results of Joe's project could help improve weather forecast models, and thus can help improve severe storms predictions.

The Chapter enjoyed Joe's presentation and was fascinated by his time lapse videos of cloud development. If you are interested in finding out more about Joe's research project, visit his website at <http://geography.asu.edu/zehnder/cupido/>. There he has more information on the project as well as videos showing cloud development.

Joe's project also caught some attention last summer and was reported in the news. You can hear a NPR news report on Zehnder's research at <http://www.npr.org/templates/story/story.php?storyId=5662521&sc=emaf>.

AHS-AEG Student Night

On April 25th, (please note the date has move forward one week from the announcement in last month's newsletter) AHS will jointly host the 2nd Annual Student Night at the University of Arizona Memorial Union. The event will bring together students and professionals to share interests, network, and discuss employment opportunities. The event will feature a social networking hour followed by dinner and then the main event, presentations by students of their work. The best presenter(s) will receive cash in recognition of their efforts!

Soil Gas Technical Session

The Phoenix AHS Chapter is hosting a Soil Gas Technical Session on May 17, 2007 at the Arizona Department of Water Resources, Verde Conference Room, in Phoenix. The technical session will be a full day event, lunch and snacks are included.

Morning Session:

Phil McNeely (ADEQ): Soil Gas and the New Soil Remediation Rule. This talk will update the role of soil gas in the new soil remediation rule from ADEQ.

Peter Mock: VLEACH Model

Mike Geddis (Water Management Consultants): Remediation Objectives Based on Soil Gas Concentrations.

Lunch Break

Afternoon Session:

Wendy Pierce (Aerotech Environmental Laboratories): Vapor Intrusion: Ensuring Data Quality/ Measurement Techniques *Review of VI pathway and regulatory history
*Measurement of VOCs & SVOCs
Soil Gas, Indoor and Ambient Air
Collection and analytical techniques
*TO-15

(Continued on page 5)

Phoenix Chapter cont.

(Continued from page 4)

- *SVOC methods
- *Use of Forensic techniques
- *Data Quality Objectives
 - Meeting target levels
 - Method QA/QC
 - Ensuring legally, regulatory defensible

data

Nadine Weinberg (Arcadis): A Practitioner's Approach: Sampling and Analysis of the Vapor Intrusion Pathway.

This talk will focus on developing a strategic plan for the collection of data to evaluate the vapor intrusion pathway. How much and what types of data do you need. What are the options for evaluating the vapor intrusion pathway. How can you use the Johnson and Ettinger model as part of your analysis strategy.

Blaine Hartman (HP Mobile Geochemistry): Overview of Soil Gas Emplacement and Sampling Methods.

Open Panel discussion for further discussions.

Seating is limited to 55 participants on a first come basis. Registration is \$85 and includes lunch and snacks. ADWR cannot offer or validate parking, but paid parking lots are available nearby, at a rate of \$7 for the day. Car-pooling is encouraged.

Register Online at www.azhydrosoc.org

Speakers Needed

We are looking for dinner speakers for future meetings. If you are interested in speaking at a dinner meeting sometime next year, or know someone who could give a good talk, please contact Mike Hulst at mhulst@eecphx.com or 602-248-7702.

2007 Tentative Schedule

- April 25th – AHS-AEG Student Night in UA Memorial Union, Tucson
- May 17th – Soil Vapor Technical Seminar, ADWR, Phoenix
- May 8th – Mason Bolitho, ADEQ - EPA Underground Injection Control (UIC) Program
- June 12th – Syed Amanatullah, AMMTEC



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TUCSON CHAPTER NEWS

The Tucson Chapter of AHS will be co-sponsoring the Kisiel Lecture featuring Dr. Edward Sudicky, University of Waterloo, Department of Earth Sciences on March 28, 2007. The title of Dr. Sudicky's lecture is: "Insights from Coupled Surface/Subsurface Hydrological Simulations: From the Scale of a Rainfall-runoff Experiment to the Continental Scale Over an Ice Age"

Location: Center for English as a Second Language (CESL), room 103

<http://iiewww.ccit.arizona.edu/uamap/staticLarge/24.html>

Time: 2:00

ABSTRACT

Over the past several years, increasing attention has been directed towards understanding flow and solute transport processes occurring over the land surface and in the subsurface in a discipline- and computationally-integrated framework. Issues that have driven the development of such an integrated framework range from forecasting the impacts of climate change, to computing solute fluxes across groundwater/surface water interfaces in order to estimate changes in the quantity and quality of water resources. Climate change models, for example, typically ignore the dynamics of groundwater flow in subsurface aquifers although groundwater comprises the bulk of the Earth's freshwater and it forms the base flow that maintains streams, lakes and wetlands and the ecosystems within them. This presentation will first briefly describe the underlying theoretical basis of the *HydroGeoSphere* model, a fully-integrated surface/subsurface numerical model designed to simulate water flow and advective-dispersive solute transport on the 2D land surface and in the 3D subsurface under variably-saturated conditions. Full coupling of the surface and subsurface flow regimes is accomplished implicitly by simultaneously solving one system of

non-linear discrete equations describing flow and transport processes in both flow regimes, as well as the natural exchange of water and solutes between continua. Several 3D illustrative applications of the model over various spatial and temporal scales will then be presented in order to demonstrate its utility for process understanding. The examples range from the scale of a controlled rainfall-runoff experiment ($\sim 1500\text{m}^2$) performed at Borden, Ontario, to that of a watershed of about 300 km^2 in area, to the continental scale that comprises a simulation of the impact of the Wisconsinian glaciation on groundwater flow system and groundwater age evolution (-120 k-year to present) over the entire Canadian land mass. Results from the analysis of the rainfall-runoff experiment suggest that the "old water paradox", as it is commonly referred to in the literature, may largely be the result of the explicit neglect of dispersive/diffusive mixing in a traditional tracer-based approach for stream hydrograph separation. The watershed-scale example is presented to demonstrate the utility of an integrated surface/subsurface modelling approach for water resources management and protection. For the final example, a state-of-the-art glacial systems model is used to drive *HydroGeoSphere*, and includes the effects of ice sheet loading and unloading, sea-level change, isostasy, permafrost formation and thawing, and the surficial routing and drainage of proglacial lakes. It is shown that groundwater recharge from subglacial meltwater production during the ice-sheet retreat following the last glacial maximum ($\sim 23\text{ k-years BP}$) may have been as large as 20% of the total meltwater produced, that the Pleistocene meltwater may have penetrated as deep as one kilometre into the subsurface in some recharge areas, and that remnant over-pressurized zones due to glacial loading should still be present at depth.

Donations to AHS Foundation are considered charitable 501(c)(3) for tax purposes.

Donations of any amount may be sent to the AHSF Treasurer or the AHSF President.

AHSF; A. Michael Geddis, Treasurer; 3845 N Business Center Dr #115; Tucson, AZ 85705

Tucson Chapter cont.

The Water Resources Research Center at The University of Arizona is pleased to announce its 2007 statewide conference agenda. Together with the Arizona Department of Environmental Quality and the Arizona Water Institute, we have developed an excellent program to commemorate 20 years of water quality regulation:

**The 20th Anniversary of the Environmental Quality Act and ADEQ:
Assessing and Protecting Arizona's
Water Quality
Hyatt Regency, Phoenix at Civic Plaza,
June 5, 2007**

The one-day conference will feature panels on the History of the Environmental Quality Act and ADEQ, the Water Quality Assurance Revolving Fund (WQARF), Emerged and Emerging Contaminants, Emerging Policy Challenges, and the Future of ADEQ. Also included will be a luncheon presentation on the State of ADEQ by Director Steve Owens and insights from former directors. Governor Napolitano has been invited to kick-off the day.

Further information and the agenda can be found on our web site at <http://ag.arizona.edu/AZWATER/conf2007/index.html>

Registration will start at the beginning of April.



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FLAGSTAFF CHAPTER NEWS

The Flagstaff Chapter of AHS is excited to announce two upcoming field trips. Both trips will be held in Bellemont, approximately 12 miles west of Flagstaff. The first will be to the National Weather Service Center April 14, 2007. A presentation by the NWS will begin at 9:00 AM, across the street from their Bellemont facility at the Camp Navajo security building conference room. This will be followed by a tour of the NWS facility, which always promises to be interesting!

The second field trip will be held at the Camp Navajo Army Depot on May 12, 2007. Don Bills, of the Flagstaff USGS, will begin the day at 9:00 AM with a presentation on northern Arizona regional hydrogeology. Randall Wilkinson, of the National Guard Bureau, and Matt Nation of Brown and Caldwell, will provide a presentation of the geologic information gained from wells and springs at Camp Navajo as well as results from many years investigating the hydrogeology of the area. Following a tour of the Depot, Phil Paski, of HydroSystems Inc. will provide discussion on the hydrogeologic investigation and production well siting techniques in support of development just north of Camp Navajo. If attendees are interested, we can mobilize over to the Harley bar for little lunch before visiting the HydroSystems production well sites. The cost for this field trip will be \$5.00 per person.

The next Flagstaff Chapter meeting will be on April 10th, time and location TBA.



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ANNOUNCEMENTS & OPPORTUNITIES

Soil Gas Technical Session

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**Register Online at
www.azhydrosoc.org**

JOBS

Visit the AHS website
Members Only section to
see the latest JOB postings.

[Www.azhydrosoc.org](http://www.azhydrosoc.org)

More Opportunities

Call for Volunteers

to assist with

Rehabilitation of Northeast Spring Collection System at Quitobaquito Springs, Organ Pipe Cactus National Monument April 2 – 6, 2007 and April 9-10, 2007

(help is needed all or part of this time)

Project Overview

Declines in spring flow rates and pond levels threaten the habitat of endangered Quitobaquito pupfish during periods of drought. The northeast spring water delivery system was installed in 1989 and has lost efficiency over the years. The monument is planning to excavate and reconstruct the spring collection system and is seeking a few hardy volunteers to help with the manual labor such as digging and moving earth materials with wheelbarrows. This is a rare opportunity to visit a unique desert oasis and to contribute to the long-term survival of the endangered Quitobaquito pupfish and other endemic wetland plant and animal species. This area is closed to the public due to issues arising from its proximity to the international border.

Information about the site may be found by doing a web search for "Quitobaquito".

Participants will gain hands-on experience with construction of a spring collection system using

drainage-enhancing methods and materials.

Project Schedule

Monday April 2 – Wednesday April 3: Excavation Phase. Field crew will excavate the northeast spring using hand tools.

Thursday April 5 – Tuesday April 10 (excluding weekend): Reconstruction Phase. Field crew will transport new materials from the parking area to the spring, build a new cutoff wall, reclaim gravel from the excavation phase, install a new drainage system and reconstruct the surface.

The daily work schedule will be approximately 0630 – 1700. Field crews will meet at Organ Pipe Cactus National Monument headquarters for daily briefings before moving to the work site. Volunteers will need to sign a Volunteers-in-Parks waiver form. Limited camping with showers and cooking facilities are available for out of town volunteers. Travel time from Tucson to the park is about 3 hours. A limited number of volunteers are needed.

If you are interested in participating for a day or more, please contact Biological Technician Ami Pate at 520-387-6849, x. 7111 or by emailing ami_pate@nps.gov.

Spring planting time is here!

Desert Landscaping: Plants for a Water-Scarce Environment CD, produced by the University of Arizona Water Resources Research Center, is the perfect resource for the home gardener or water miser.

This interactive web tool features over 600 low-water use plants for the Southwest. Search by plant name, browse award-winning landscapes or use the "Plant Selector" to find the plants best suited to your needs. Sun and soil requirements, irrigation needs, place of origin, wildlife interactions, invasive species, and plant trivia can also be found. Book reviews, a plant trivia quiz and much more is available in this fun, easy to use, interactive resource.

To order: contact the Water Resources Research Center, College of Agriculture and Life Sciences, University of Arizona, 350 N. Campbell Ave., Tucson, AZ 85719; Phone: 520-792-9591 or visit the web site <http://cals.arizona.edu/AZWATER/> for a walk through and ordering info. The cost is \$30 per CD including shipping and tax. Call for bulk pricing.



of

More Opportunities



Delivering More Than Power.™

Summer Internship Opportunity

Groundwater Hydrology

Phoenix-based Salt River Project, the nation's third-largest public power and water utility is seeking an undergraduate or graduate student pursuing a degree in geology or civil engineering with an emphasis in groundwater hydrology for a full-time summer internship starting in May 2007.

Position Details:

Full time (40 hours/week)

Located in Central Phoenix

Pay will range from \$13/hr to \$15/hr depending on credit hours accrued

Possible extension of internship through school year

Job Description:

Assist staff geohydrologists with the management of over 250 deep, large diameter production wells and groundwater resources within the Salt River valley and greater Phoenix area. Responsibilities will include both office and field work. Office work typically includes compilation and organization of data to support geohydrology staff. Field work typically includes assistance in drilling and installation of new water supply wells, rehabilitating old wells, aquifer and water chemistry testing, and analyzing geophysical logs, well videos, and spinner surveys. Evening and weekend work may be required.

"EOE - We encourage workforce diversity."

How to apply:

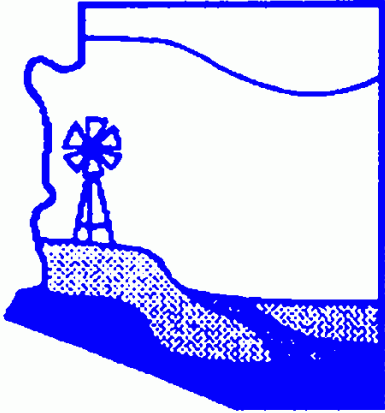
Apply on-line at www.srpnet.com

(Refer to job # 1811)

Remember to attach your resume to your on-line profile

Deadline: Respond by Sunday, April 15th, 2007

MEMBERSHIP APPLICATION



Arizona Hydrological Society

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ARIZONA HYDROLOGICAL SOCIETY, c/o Jeanie Merideth Association Manager
PMB #139; 3305 N. Swan Rd #109, Tucson, AZ 85712
Membership Application (Dues: 1 year \$40, \$15 for students)

Name: _____ Position: _____

Company: _____ Email: _____

Mailing Address: _____

Work Phone: _____ Home Phone: _____ Fax: _____

In addition to my dues, I am enclosing

\$ _____ Herman Bouwer Intern Scholarship fund (Phoenix),
\$ _____ Leonard C. Halpenny Intern Scholarship fund (Tucson),
\$ _____ for the SARSEF Scholarship fund,
and/or \$ _____ for the state-wide AHS General Scholarship fund.

Total amount enclosed: \$ _____

Chapter Affiliation:
_____ Tucson
_____ Phoenix
_____ Flagstaff