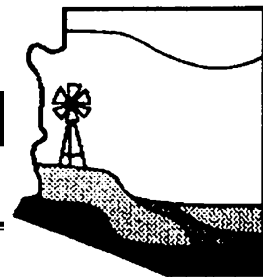


# NEWSLETTER



## Viewpoint: AHS 2007 Annual Symposium Wrap-Up

For the first time since the AHS' Sedona symposium, the Arizona Hydrological Society teamed with another organization. That early joint venture resulted in much consternation over how to divide proceeds. AHS members' feelings over that experience resulted in no further symposium joint ventures – until this year.

The award-winning trade magazine, *Southwest Hydrology*, led by its publisher and long-time AHS member, Betsy Woodhouse approached the Tucson Chapter about hosting the Arizona Hydrological Society's 20<sup>th</sup> Annual Symposium. After much discussion and careful planning, a synergistic joint venture was off and running. The result on August 29<sup>th</sup> through September 1<sup>st</sup> at the Westin La Paloma was the forward-thinking "Sustainable Water, Unlimited Growth, Quality of Life – Can We Have It All." By all accounts, the AHS/SWH 2007 Regional Water Symposium was a smashing success. The Symposium Planning Committee thanks all the attendees, presenters, sponsors, and exhibitors for making the Symposium such an enjoyable event.

The Symposium officially started with four workshops covering such varying topics as land subsidence, water well performance, scenario development, and ArcGIS hydro tools. Wednesday evening, we were able to renew old friendships and make new ones at an ice breaker at the La Paloma in and amongst the exhibitor trade show.

The symposium's theme "... Can We Have It All?" began in earnest Thursday morning with Dr. Peter Gleick of the Pacific Institute challenging our assumptions regarding water sustainability.

The Honorable Gregory Hobbs, a Colorado Supreme Court Justice, amazed us not only with tales and

photos of beautiful and ancient hydrologic sustainability practices in the Andes, but with hydrologic poetry as well.

Our technical sessions (both spoken and poster) on Thursday and Friday (August 30<sup>th</sup> and 31<sup>st</sup>) included a variety of topics: water supply vs. public policy, Arizona water policy issues, riparian issues, energy/water initiatives, and quality of life to name just a few. Many high-quality posters and sponsors' and exhibitors' booths were available for viewing all day, both days.

The annual AHS general membership meeting on Thursday evening was very well attended. With much lively discussion, AHS awarded its annual scholarships and internships. A reception Thursday evening, again held in the trade show, was an excellent networking opportunity with good food and drinks. Our all-important exhibitors and sponsors seemed quite pleased with that arrangement.

An all-day workshop for teachers on Water Education was held on Friday, courtesy of Kerry Schwartz and (Lifetime Achievement Awardee) Gail Cordy. The teachers' workshop included both classroom exercises and participation in the Friday afternoon symposium sessions.

Lunch on Friday featured LaughingStock Comedy Company poking fun at the field of hydrology and



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## Viewpoint cont...

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professional life in general.

On Saturday, the Symposium hosted three well-attended field trips: one trip hiked the Sonoita Creek Natural Area, one viewed various rainwater harvesting projects in the Tucson area, and the third visited parts of the water cycle exhibited in and around Tucson. Finally, the Symposium hosted a sold-out workshop teaching techniques of rainwater harvesting.

As is our tradition, the AHS/SWH Symposium planners believed that the 2007 Regional Water Symposium should make as much money as possible, be inclusive of many topics, encourage student participation, be planned early, and include aggressive fundraising. I believe the 20<sup>th</sup> Annual Symposium fulfilled all of these goals. The Symposium brought in a total of 540 people including registered attendees, students, sponsors, and exhibi-

tors. Preliminary accounting indicates total revenue of over \$233,000. AHS's share of the profits, after AHS receives its seed money back and receives annual membership revenue, will be approximately \$20,000. Due to the availability of on-line credit card registration, total outstanding money owed to the Symposium is less than \$4,000. Finally, preliminary accounting indicates AHS will realize 326 in-state memberships and 114 out-of-state memberships. As hoped, AHS was able to grow its 20<sup>th</sup> Annual Symposium a result of teaming with SWH's regional influence.

Thanks again to all the planners, sponsors, exhibitors, presenters, moderators, and student volunteers who made possible yet another successful Annual Symposium. We look forward to seeing you next year in Flagstaff!

Alan Dulaney  
AHS President 2007



# TUCSON CHAPTER NEWS

Tucson Chapter Meeting  
November 13, 2007  
Social 1/2-hour starts at 7:00  
Speaker talk at 7:30

Offices of Errol L. Montgomery & Associates,  
Inc.  
1550 E. Prince Road

The AHS Tucson Chapter is pleased to announce that Ms. Laila Halaby – a recently published author residing in Tucson – will be providing Tucson AHS members a rare insight into her newly published book *“Once in a Promised Land”*. One of Laila’s main characters is a hydrologist living in Tucson who must deal with newly awakened discrimination and prejudice after post September 11 terrorist attacks in America. Laila will be providing personal insight of how she developed the novel by providing readings, in-depth character analysis, and how water issues have impacted the lives of her own family. Laila was recently recognized by Barnes and Noble Bookstore chain as a ‘Great New Author’. Please join us for this unique AHS Tucson chapter meeting. Also, books will be available for purchase and author autographing so bring your checkbook!

## Tucson Chapter Officers

### President:

MARLA E ODOM  
ERROL L MONTGOMERY & ASSOC INC  
E-Mail: modom@elmontgomery.com

### Vice President:

ROBERT MCGILL  
HYDROGEOPHYSICS  
E-Mail: rob@hydrogeophysics.com

### Treasurer:

MIKE MAHAN  
AZ GEOLOGICAL SURVEY  
E-Mail: mike-mahan22@yahoo.com

### Secretary:

DAN GUIDO  
ERROL L MONTGOMERY & ASSOC INC.  
E-Mail: dguido@elmontgomery.com

### Student Representative:

AIDA ARIK  
University of AZ  
E-Mail aarik@hwr.arizona.edu

### Corporate Board:

A MICHAEL GEDDIS  
WATER MANAGEMENT CONSULTANTS INC  
E-Mail: mgeddis@watermc.com

NICK B MELCHER  
US GEOLOGICAL SURVEY  
E-Mail: nickpaulame@msn.com

## Call for Chapter Board Nominations for 2008

The Tucson Chapter will be having its annual election of Officers soon and YOU are needed. The positions that need to be filled are: President, Vice President, Secretary, Treasurer, Chapter Directors and Student Representative.

If you would be interested in giving back to AHS in this capacity please contact: Marla Odom (520-881-4912 or modom@elmontgomery.com)

Time commitment is approximately 4 to 8 hours per month.

## PHOENIX CHAPTER NEWS

### October Meeting Summary

On October 9, Andy Laurenzi, Regional Director of the Sonoran Institute's Southwest Regional Office, gave a presentation on a March 2007 Report published by the Sonoran Institute, *Sustainable Water Management: Guidelines for Meeting the Needs of People and Nature in the Arid West*. Andy shared with the group the process used to create the report as well as some of the key findings from the report.

The report begins with a basic overview of water resources, water issues, and water law, which Andy breezes through with AHS's technical crowd. He then focused his talk more on the report's framework and recommendations. To create the report the Sonoran Institute brought together a team of technical experts in science and policy to recommend a framework for Sustainable Water Management in Arizona. They started out by first agreeing what Sustainable Water Management (SWM) means. The definition they agreed to was:

*"sustainable management of water resources is defined as managing the development and use of surface water and groundwater in a manner that can be maintained for an indefinite time, without causing unacceptable environmental, economic or social consequences"*

Then their task was to develop a solution framework to meet the 3 goals of SWM:

- 1) provide for current and future human demand,
- 2) preserve stream-aquifer system conditions, and
- 3) preserve restorative flood flows.

Andy put this framework in context with one of the three case studies presented in the report – the Verde River. He presented some of the baseline conditions and current water management and compared them to the proposed SWM framework. He then covered some of

the overall recommendations from the report, which are as follows: 1) resolve uncertainty over surface water rights, 2) create new water-management authorities to implement SWM strategies, 3) pursue more recharge and reuse projects and implement an EPA, ADEQ, and ADWR task force, and 4) promote more international and/or regional cooperation. Andy ended his presentation with an update on 2007 Legislation that he hopes is a step in the right direction for Sustainable Water Management in Arizona.

For more information about the Sonoran Institute or to download a copy of the [report](http://sonoran.org), visit <http://sonoran.org>.

### November Meeting Announcement

Our speaker will be Lori LePat from Geomatrix, Inc.. She will be discussing perchlorate contamination and remediation in Arizona and the Southwest.

The October meeting at El Penasco was such a success that we will have our November meeting there as well. See you there!

Location: El Penasco Mexican Kitchen  
19 E. Broadway Road  
Tempe, AZ 85282

Speaker: Lori LePat, Geomatrix

Chapter Board Meeting: 4:30 PM – 5:40 PM  
Happy Hour & Dinner: 5:45 PM – 7:00 PM  
Dinner Speaker: 7:00 PM – 8:00 PM

Cost: \$15 member, \$20 non-member, \$5 student

All chapter members (and non-members) are welcome to attend the board meeting too!

*(Continued on page 5)*

## Phoenix Chapter continued

(Continued from page 4)

### What are the Challenges of In-Situ and Ex-Situ Bioremediation of Perchlorate-Contaminated Soil?

**Laurie LaPat-Polasko** (Geomatrix Consultants, Scottsdale, Arizona, USA)

A series of bench-scale studies were performed to evaluate the potential benefit of using biostimulation and/or bioaugmentation for the complete biodegradation of perchlorate in vadose zone contaminated soil. The first phase of the bench-scale study evaluated the effectiveness of the indigenous microbial population to biodegrade perchlorate when amended with various electron donor sources in both in-situ and ex-situ microcosms.

The in-situ microcosm set-up involved placing approximately 1,200 grams of soil, spiked with approximately 1,000 milligrams per kilogram perchlorate, in six 1,000 milliliter polyethylene columns. During the first seven months, periodic additions of hexene, a semi-gaseous carbon substrate, and minimal moisture were injected into the soil columns. A second set of in-situ soil columns was amended with yeast and sodium acetate to evaluate the potential of an established carbon substrate to promote biodegradation of perchlorate. The ex-situ microcosm set-up included placing perchlorate-contaminated soil in sealed glass containers within a glove bag under nitrogen conditions. This soil was amended with periodic additions of corn syrup, sodium acetate, moisture, and/or yeast.

The results of the first bench-scale study indicated that there was an extremely low concentration of indigenous heterotrophic microbes in the vadose zone soil. Likewise, the PCR assay showed that the native soil contained non-detectable concentrations of the chlorite dismutase gene. The addition of amendments eventually increased the anaerobic heterotrophic microbial population after a three

month amendment period. Likewise, the soil that had been amended with corn syrup and sodium acetate showed positive results for the chlorite dismutase gene. However, even though the amended soil contained perchlorate reducing bacteria, perchlorate removal was not significant in the in-situ columns.

The second phase of the study involved setting up four microcosms amended with sodium acetate at two different moisture contents. Two of the microcosms were bioaugmented with commercial microbes and microbes from wastewater treatment plant (WWTP). The results of the second phase indicated that the commercial microbial population did not significantly increase the perchlorate biodegradation rate. However, when the ex-situ microcosms were amended with waste activated sludge from a WWTP and the moisture conditions were above 37%, greater than 99.98% perchlorate degradation occurred within about two weeks.

A field-scale study was performed using site soil and activated sludge from a local wastewater treatment plant. Perchlorate-contaminated soil was amended with activated sludge and water to promote a moisture content level of at least 20%. After approximately four weeks the perchlorate concentration had decreased by about 47 to 87 percent in the wastewater amended containers and after about 2.5 months, some of the soil containers showed as high as 95% perchlorate reduction.

### Planning to Begin for 2009 Symposium in Phoenix

The Phoenix Chapter has kicked off its planning for the 2009 AHS Symposium. We are currently working on a joint symposium with the 2009 national conference of the American Institute of Hydrology

#### Phoenix Chapter Officers

**President:**  
TED LEHMAN  
JE FULLER HYDROLOGY & GEOMORPHOLOGY  
E-Mail: ted@jefuller.com

**Vice-President:**  
MIKE HULST  
EEC INC  
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**Treasurer:**  
BETH PROFFITT  
TRANSWEST GEOCHEM INC  
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**Secretary:**  
MATTHEW BEVERSDORF  
ADWR  
E-Mail: [mabeversdorf@azwater.gov](mailto:mabeversdorf@azwater.gov)

## Phoenix Chapter cont.

(Continued from page 5)

(AIH). Our next meeting is scheduled for Nov. 7<sup>th</sup> at 5 pm. If you are interested in helping with the planning process or just listening in, please contact Ted Lehman at [ted@jefuller.com](mailto:ted@jefuller.com) or 480-222-5709, Lee-Anna Walker at [LeeAnna.Walker@arcadis-us.com](mailto:LeeAnna.Walker@arcadis-us.com) or Christie O'Day at [coday@acstempe.com](mailto:coday@acstempe.com) or 480-894-5477.

### 2007 Event Calendar

November – Lori LaPat, Geomatrix – Perchlorate Talk  
 December – Tim Fitzpatrick, Laboratory Data Consultants  
 January – Kick-off meeting  
 February – Paul Westerhoff – ASU, Endocrine disruptor talk

## FLAGSTAFF CHAPTER NEWS



The Flagstaff Fall Field Trip to the Inner Basin was a spectacular time! Luckily the windy conditions did not dampen the days hike but only added some excitement at days end. We had a nice mix of disciplines attend the field trip: NAU students and professionals from Camp Navajo, USGS, ADWR, City of Flagstaff, and several groundwater consulting firms.

Randy Pellatz, the Utilities Director for the City of Flagstaff, was the trip leader. Our first stop was to the Northern Reservoirs Filtration Plant, which is at the base of Shultz Pass Road north of Highway 180, at an elevation of about 7,100 feet. Water from the Inner Basin has been piped to these reservoirs for almost a century. The reservoirs at this location provided the water supply for Flagstaff until 1930. In the 1970's the reservoir use ceased due to the high organic carbon and in turn high trihalomethanes due to treatment. In the early 1980's the UV radiation filtration plant was built. Today the plant can treat up to 2.2 million gallons per day (mgd) of water from the Inner Basin, which is just about the same daily volume the basin produces following a good winter.

After a bumpy ride up Shultz Pass Road and across the Waterline Road we arrived to the base of the Inner Basin at an elevation of approximately 9,200 feet. Randy led the group to several wells, the highest at just over 9,700 feet elevation, all completed in glacial till. The two wells visited are 352 and 485 feet deep and pump 600 and 700 gallons per minute (gpm), respectively. Randy also took the group to the Snotel Snowslide Canyon weather station managed by the NRCS. Remote access to snow depth allows the City to better calculate and predict Inner Basin contribution to the City's demand during warmer months.



After a healthy lunch Randy provided the group with an update on the City's water supply, which

(Continued on page 7)

## Flagstaff Chapter News cont.

*(Continued from page 6)*

opened into a discussion of the hydrogeologic and ecological setting of the Flagstaff area and future well locations. And just before the day was over the drive along Waterline Road was interrupted by a falling ponderosa, which was witnessed by many in the vehicles. The group quickly jumped to the task of clearing the debris to make a path for the vehicles.

The Flagstaff Chapter of AHS would like to thank Randy and the City of Flagstaff for leading the field trip and providing a van for transportation. The Chapter would also like to thank those who attended, making for a more interesting trip and discussion regarding the City's water resources! Let it snow!



### Flagstaff Chapter Officers

**President**  
**Aregai Tecle**  
Northern Arizona University  
[aregai.tecle@nau.edu](mailto:aregai.tecle@nau.edu)

**Vice President**  
**Corporate Board Member**  
**Margo Truini**  
USGS  
[mtruini@usgs.gov](mailto:mtruini@usgs.gov)

**Secretary**  
**Erin Young**  
Fluid Solutions  
[eyoung@flusol.com](mailto:eyoung@flusol.com)

**Treasurer**  
**Dana Downs-Heimes**  
[d downshe@ch2m.com](mailto:d downshe@ch2m.com)

## SYMPOSIUM WRAP-UP

### AHS 2007 Annual Symposium Wrap-Up

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*(Continued on page 10)*

### AHS Newsletter Articles

**Anyone wishing to submit articles of interest to AHS members may do so by emailing your article to [jgmerideth@aol.com](mailto:jgmerideth@aol.com). Deadline is the 15th of the month prior to publication.**

**The AHS Editorial team reserves the right to publish or not publish your article.**

## Announcements

**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.  
AHS Foundation  
A. Michael Geddis,  
Treasurer  
3845 N Business  
Center Dr #115  
Tucson, AZ 85705**

The AHS web site has a new document posted for your information. "A Strategy for Federal Science and Technology to Support Water Availability and Quality in the United States". The document was prepared by the Executive Office of the President of the United States.

Did you know that AHS has a

# JOBS

page on our web site? Visit:

Www.azhydrosoc.org and then click on JOBS to view the most recent postings. If you would like to post an opening just email it to jgmerideth@aol.com and Jeanie will post it for you.

### Is agriculture eroding civilization's foundation?

David R. Montgomery

Quaternary Research Center and Department of Earth and Space Sciences, University of Washington, Seattle, Washington 98195-1310, USA

Recent compilations of data from around the world show that soil erosion under conventional agriculture exceeds both rates of soil production and geological erosion rates by from several times to several orders of magnitude. Consequently, modern agriculture—and therefore global society—faces a fundamental question over the upcoming centuries. Can an agricultural system capable of feeding a growing population safeguard both soil fertility and the soil itself? Although the experiences of past societies provide ample historical basis for concern about the long-term prospects for soil conservation, data compiled in recent studies indicate that no-till farming could reduce erosion to levels close to soil production rates. Similarly, organic farming methods have been shown to be capable of preserving—and in the case of degraded soils, improving—soil fertility. Consequently, agricultural production need not necessarily come at the expense of either soil fertility or the soil, even if recent proposals to rely on conventionally grown corn for biofuels exemplify how short-term social and economic trade-offs can deprioritize soil conservation. Like the issues of climate change and loss of biodiversity, ongoing global degradation and loss of soil present fundamental social challenges in which the slow pace of environmental change counter-intuitively makes solutions all the more difficult to adopt.

*They're making more people every day but they ain't makin' any more dirt.—Will Rogers*

<http://www.gsajournals.org/perlserv/?request=get-abstract&doi=10.1130%2FGSAT01710A.1>

*This article was submitted by one of our members who thought our other members would enjoy. Please follow the link at the bottom of the article to view the complete article online.*

## Symposium Wrap-Up cont.

(Continued from page 8)

afternoon symposium sessions.

Lunch on Friday featured LaughingStock Comedy Company poking fun as the field of hydrology and professional life in general.

On Saturday, the Symposium hosted three well-attended field trips: one trip hiked the Sonoita Creek Natural Area, one viewed various rainwater harvesting projects in the Tucson area, and the third visited parts of the water cycle exhibited in and around Tucson. Finally, the Symposium hosted a sold-out workshop teaching techniques of rainwater harvesting.

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Thanks again to all the planners, sponsors, exhibitors, presenters, moderators, and student volunteers who made possible yet another successful Annual Symposium. We look forward to seeing you next year in Flagstaff!

### How to visit the AHS Members Only area:

- Go to: [www.azhydrosoc.org](http://www.azhydrosoc.org)
- Located on the far right side of your screen click on Members Only
- Type in your username and password:  
Your username is the first initial of your first name and then your last name (ie Flo Waters would be FWaters).  
Your password is your zip code (that we have on file for you).

Once there you have access to documents that are not available on the public site.

**REMEMBER** you must be a currently paid member of AHS to have access.

### 2008 MEMBERSHIP DUES

**If you did not attend the AHS Annual Symposium you were recently emailed an invitation to renew your AHS Membership dues for 2008.**

**Your membership is very important to us and we hope you will consider renewing promptly.**

Dues, payable to AHS (\$45.00, \$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

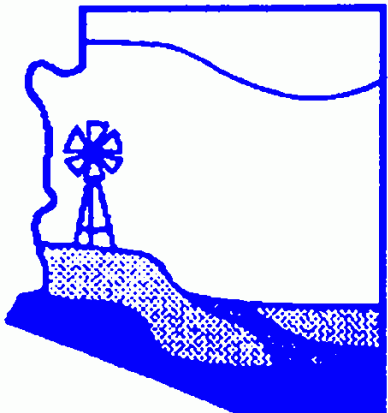
*Dues may also be paid using our "Online Payment" system.*

*Go to*

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

*And click on "Join or Renew Online" and have your credit card ready. AHS accepts Visa, MasterCard and American Express.*

# MEMBERSHIP APPLICATION



## Arizona Hydrological Society

Jeanie Merideth  
Association Manager  
PMB #139; 3305 N. Swan Rd. #109  
Tucson, AZ 85712  
(520)299-6787  
Fax: (520)299-6431  
[azhydro@comcast.net](mailto:azhydro@comcast.net)

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

ARIZONA HYDROLOGICAL SOCIETY c/o Jeanie Merideth Association Manager  
PMB #139; 3305 N. Swan Rd #109, Tucson, AZ 85712  
Membership Application (Dues: 1 year \$45, \$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