

Table of Contents

- [Viewpoint: Rough Waters](#)
- [Phoenix Chapter News](#)
- [Tucson Chapter News](#)
- [Flagstaff Chapter News](#)



Viewpoint: Rough Waters

Here in Arizona we have two agencies at the state level that deal with water. The Department of Water Resources was created by the Groundwater Management Act of 1980, and handles various aspects of water supply. The Department of Environmental Quality resulted from the passage of the Environmental Quality Act of 1986, and regulates water quality. Each agency provides a central point of contact for the regulated public and those consultants, laboratories, drillers, attorneys and other specialists who serve that public.

Each department possesses programs that are unique to Arizona, and are often looked at as cutting-edge governmental advances even though they didn't start out that way. I can think of the Aquifer Protection Program and WQARF at ADEQ as something different in the area of protection and remediation. The Recharge and Assured Water Supply Programs at ADWR stand out as innovations in water supply. All of us who have worked with these programs know their many shortcomings and the frustrations they sometimes induce. But few would deny that these programs have improved water quality and supply in Arizona in ways that other states would envy and occasionally think of emulating.

This past session of the Arizona Legislature was as bizarre as the year's economy, and about as productive. The crippled budget that emerged will require fairly draconian cuts to many state agencies, and ADEQ and ADWR will not be spared. Already rumors of 20-30% cuts have surfaced. If true, such cuts will inevitably mean that people will be laid off and programs shut down. And this will have an impact on the rest of us in the water resources community.

Most firms have already taken serious hits themselves in this troubled economy. ADEQ and ADWR will have to figure out on their own how to survive, as many amongst the membership are already doing. AHS is not a lobbying organization, but it would be in our collective best interest to individually keep an eye on which people and what programs are being cut. These two state agencies meet the specific needs of Arizona, where water is the critical component in any discussion of the future. We all need ADEQ and ADWR to come through these fiscal straits with their core functionality intact.

Alan Dulaney,

AHS Corporate Board President, 2009

Phoenix Table of Contents

- [October Dinner Meeting Announcement](#)
- [Plea for 2010 Chapter Board Nominees](#)
- [2009 Herman Bouwer Internship Experience](#)
- [Brown Bag Water Speaker Series](#)
- [Phoenix Event Calendar](#)

October Dinner Meeting

Our next dinner meeting will be held Tuesday, October 13th, at the Sun Up Brewing Co. and Brewhouse (Formerly Sonora Brewhouse) near 3rd Street east of Central Avenue on Camelback Road in Phoenix. Our speaker will be Brian Conway, Arizona Department of Water Resources (ADWR), who will give us an update on subsidence issues in Arizona.

Location:	Sun Up Brewing Co. and Brewhouse (Formerly Sonora Brewhouse) 322 E Camelback Rd Phoenix, AZ 85012
Event:	Brian Conway, Arizona Department of Water Resources, "ADWR Land Subsidence Monitoring Program"
Chapter Board Meeting:	4:30 PM – 5:30 PM
Happy Hour & Dinner:	5:30 PM – 7:00 PM
Presentation:	7:00 PM – 8:00 PM
Cost:	\$15 member, \$20 non-member, \$5 student

RSVP with Kirk Creswick at kcreswick@eecphx.com or 602-248-7702.

Plea for 2010 Chapter Board Nominees

The Phoenix Chapter is seeking nominations for the chapter board for 2010. We have only one continuing Corporate Board member, Lee-Anna Walker. Otherwise all the chapter board positions are open and need a willing and eager volunteer. Ted Lehman will be stepping down as Chapter President after a great five year tenure.

Offices on the Board include President, Vice President, Treasurer, Secretary, two Chapter Board positions, and one open Corporate Board position. There are no special requirements of board membership except you must be an AHS member (if you're not, that's easily rectified!) and have a willingness to provide input and give something back to the Society.

The Chapter Board normally meets monthly except Aug. & Sept. in advance of the chapter dinner meetings. Board members can expect to spend about 4 to 8 hours a month preparing for and participating in board meetings and other chapter activities. The Chapter President and Corporate Board members also meet quarterly with the Corporate Board members from Tucson and Flagstaff. Those meetings are held for four hours on Saturdays – once in Flagstaff (July), once in Tucson (Jan.) and twice in Phoenix (April & Oct.). Participation in the Chapter Board is a great way to learn more about the Society and help chart our path forward.

Nominations can be made to current Chapter President, Ted Lehman, at ted@jefuller.com or 480-222-5709. I look forward to hearing from you!

Chapter Board nominations will be the primary focus of the October chapter board meeting which precedes happy hour at the Sun Up Brewing Co. and Brewhouse ('formerly known as' Sonora Brewhouse). If you are interested in learning more about the various board positions, you're encouraged to join us at 4:30 pm Oct. 13th.

2009 Herman Bouwer Internship Experience



My name is Brad Vance, and I was selected as the 2009 Arizona Hydrological Society Herman Bouwer Intern Scholarship recipient. Not having worked in the field, my experience in hydrology was relegated to a class or two. I had no idea what to expect from this internship. On one hand I had notions of practicing uninhibited creative science, wandering aimlessly in the backcountry, jotting down thoughtful commentary at every outcrop. On the other hand, my practical business experience suggested that I may be in for tedious administrative hackwork. The reality of the experience fell far from these two extremes. What I had was a dose of applied science firmly rooted in both policy and practicality. Each experience introduced me to a new aspect of water; its management, politics, behavior, and the consequences of all of these, and the summer couldn't have been better.

My first stop was at AMEC Earth and Environmental. My host, Emily Stevenson, provided me with a wide variety of tasks and projects that kept my interested at every turn. Nearly every day was something new; site assessments, well logging, EPA report reviews, and other smaller tasks that not only exposed me to what an environmental scientist does on the consulting side, but gave me a healthy mix of office and field work as well. I was taken out to collect sediment samples in Glendale one day, and Ben King introduced me to vapor extraction setup in Mesa the next. At AMEC, there was that sense of comfortable urgency to finish a project and take on the next, unique to the private sector, that I am used to and enjoy. Ed Latimer and Emily Stevenson were nothing less than gracious and accommodating, and I hope I proved myself useful to their organization during my short stay.

My experience with the City of Peoria proved perhaps to be the most varied, and challenging. My mentor, Alan Dulaney, did a standup job ensuring I had a variety of meaningful, results-based projects. The most interesting task I was given occupied time within the entire three weeks, and involved a perching layer beneath two recharge basins at one of the wastewater treatment plants. Very little direction was given to me, other than to evaluate the reports, examine the piezometer cuttings, and render a written opinion. A daunting task indeed, particularly when I was surrounded by experienced professionals who could do it much better and faster than I could. However, it was simply assumed I would research what I needed to, learn what I didn't know, ask questions when necessary, and present my findings accordingly. Another project I worked on drew more from my business and accounting background. I developed a spreadsheet over the course of two weeks that accounted for incoming and outgoing water for the city, with the ultimate goal of predicting, based on past years usage and surplus, a timeframe for the city to establish a drought buffer of any given length of time. I had to quickly learn the administrative language of water - debits and credits, incoming and outgoing, real and imaginary – in order for the calculations to have value. Could the city survive a 3 year drought in, say, 2012? Can current water credits translate into revenue for the cash-strapped city? These were questions Alan and his boss, Robin Bain, truly needed answered, and I was fortunate to be an active participant.

The last agency was the Arizona Department of Water Resources. Brian Conway and Paul Ivanich in the subsidence unit introduced me to gravity and GPS surveying throughout the west valley. They did a terrific job explaining the technicalities of each process, and we spent ample time in the field. Discovering I had never actually seen an earth fissure, Brian insisted we immediately visit a few in the east valley, and describing both what was known about them and the difficulties in predicting them. I spent my down time reading reports directly related to subsidence.

Dave Christiana took a different approach in organizing my second week at ADWR. He exposed me to all aspects of water management at the state level. Wes Hipke spent an entire afternoon discussing groundwater flow modeling, and Placido dos Santos delivered a fascinating lecture of sorts on international water law. I was introduced to a number of scientists during this week who were kind enough to show me what they did on a daily basis, from wastewater treatment permits to dam safety and flood warning. As a geologist, I was especially interested in the work they were doing with revising the subsurface geological interpretation of the upper Hassayampa Basin.

I encourage all subsequent winners of the internship to diversify their choices of agencies as much as

possible, even if you think you know already what you want to do. By diversifying your experiences, you have the opportunity discover not only your likes, but your dislikes as well. Maybe you have an idea that you want to be in the field all day, but three days alongside a screeching drill rig in the blistering sun may change your mind. Perhaps you feel a desk job is the way to go; until that is, a week of staring at the computer leaves you antsy for the field.

I want to thank my mentors at each agency for taking the time out of their very busy schedules to provide me with tasks, projects, and guidance that were relevant to all aspects of hydrology: Emily Stevenson and Ed Latimer at AMEC, Alan Dulaney at the City of Peoria, and Dave Christiana and Brian Conway at ADWR. Many others donated their time and energy to making sure I felt comfortable yet challenged, and I hope I did not inundate them with questions ad nauseam.

I want to extend a hearty thank you to Dr. Herman Bouwer and the scholarship board for making this possible. A special thank you goes to Steve Aquafredda for guiding me through the process from beginning to end. Steve routinely contacted me for updates, and demonstrated a genuine concern that my experience was a good one.

Brown Bag Water Speaker Series

Date: October 28, 2009
Noon - 1:30 PM

Speaker : Gregg Garfin

Presentation: "Water and Climate: Through the Looking Glass"

Location: The University of Arizona Cooperative Extension,
Maricopa County, Palo Verde Room at
4341 E. Broadway, Phoenix.

Free and open to the public. Bring your lunch. There will be time for questions and answers. Please RSVP to Nancy Crocker at 602-827-8200 ext. 335 or NCrocker@cals.arizona.edu.

Future Brown Bag WSS Events can be found on this [Calendar](#).

Event Calendar (you may also see AHS calendar events at <http://www.azhydrosoc.org>)

- October 13 - Oktoberfest meeting at Sonora Brewhouse! - Dinner Speaker: Brian Conway, ADWR. "Arizona Department of Water Resources Land Subsidence Monitoring Program"
- November - Dinner Speaker: [Timothy Bray, CAP Board of Directors](#)

Tucson Chapter

Tucson Table of Contents

- [October Meeting Announcement](#)
- [SAVSARP Field Trip Announcement](#)
- [Call for Nominees for Corporate Board/Tucson Chapter Officers](#)
- [2010 Symposium Planning](#)
- [Southwest Hydrology Workshop](#)
- [WRRC Brown Bag Seminars](#)
- [HydroNews](#)

October Meeting Announcement

The next chapter meeting will be held on Tuesday October 13th, 2009. Food and beverages are provided.

- Location:** Offices of Montgomery and Associates, Inc
1550 E Prince Rd
Tucson, AZ 85719
- Event:** To Be Announced
- Social half-hour:** 6:00 PM
- Presentation:** 6:30 PM
- Speakers:** Wally Wilson and Dick Thompson, Tucson Water

Wally Wilson has over 20 years experience as a hydrogeologist performing all levels of environmental investigations and remediation involving groundwater, surface water and soils. Mr. Wilson combines extensive experience in regulatory compliance in half a dozen western states with strong knowledge of Arizona environmental laws and permits. He has been an integral part of Tucson Water's long-range planning process and water resources development for the past 6 years. Mr. Wilson is currently the Lead Hydrologist overseeing the Recharge and Special Projects Unit. This group of hydrologists monitors and optimizes the Utilities four major recharge and recovery projects which provide the City with both renewable drinking water and reclaimed water.

SAVSARP Field Trip Announcement

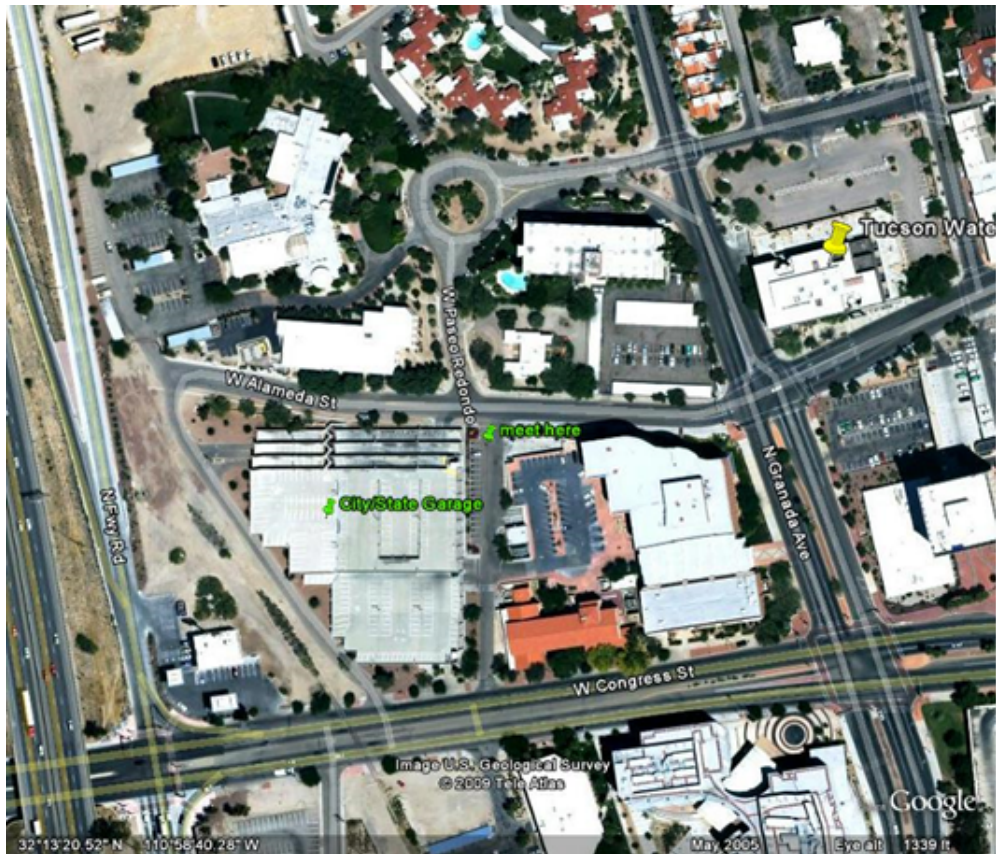
AHS and Tucson Water Present: Southern Avra Valley Storage and Recovery Project (SAVSARP) Tour.

- When:** Saturday, October 24th 2009
8:00 AM – 2:00 PM
- Where :** Meet near the offices of Tucson Water (see attached map)
310 W Alameda Street Tucson, AZ 85701
- Cost:** Free
- Description:** The Southern Avra Valley Storage and Recovery Project (SAVSARP) was constructed on about 3-½ square miles of former agricultural land near the intersection of Sandario Road and Snyder Hill Road. The project is designed to allow Tucson Water to make productive use of the City of Tucson's full allocation of Central Arizona Project (CAP) water. This field trip will be a tour of the recharge facility. What a great way to follow up the October meeting. Thanks to Wally Wilson and Dick Thompson for providing this tour!

Please come prepared to be outdoors. Bring closed toed shoes, plenty of water, and a sack lunch. Transportation will be provided for the first 20 people.

Reservations: Please contact Jeff Gawad to RSVP (jgawad@elmontgomery.com) 881-4912.

We hope to see you there!



Call for Officer/Corporate Board Nominees

The Tucson Chapter is seeking nominees for all positions on the Chapter Board, including President, Vice President, Secretary, and Treasurer for 2010. Voting for these positions will take place in November of 2009. We are also seeking nominations for two open positions on the Corporate Board. One position is vacant, and could be filled immediately. The other will be available beginning in January, 2010. Please send any nominations to Jeff Gawad (jgawad@elmontgomery.com).

2010 Symposium Planning Committee

Planning for the 2010 symposium is underway. We have had several folks express interest so far. We have at least one high profile speaker who has agreed to speak. If you would like to get involved with planning, please contact Kate Duke of Montgomery and Associates (kduke@elmontgomery.com) or Jeff Gawad of Montgomery and Associates (jgawad@elmontgomery.com). Any help is greatly appreciated! Thanks!

Southwest Hydrology Workshop

Renewable energy is coming to the Southwest—How will it impact our natural resources?

Clear skies and the prevailing hot, dry southwestern climate makes this region an attractive site for the production of solar energy, but limits the water available for its production.

Join other water and land managers, hydrologists, consultants, water attorneys, environmentalists, researchers, planners, utilities, and developers in learning what demands solar and other renewable energy sources will have on our natural resources. Explore the incentives, barriers, and opportunities for sustainable development. Get the facts about land and water requirements, permitting, and the costs and benefits of various technologies!

Location : Marriott University Park Hotel in Tucson, adjacent to the University of Arizona campus.

Date & Time: Thurs., Oct. 22: 8:00 AM - 7:00 PM
workshop (includes lunch and reception)

Fri., Oct. 23: 8:00 AM - noon
symposium

For more information...[Click Here](#)

WRRC Brown Bag Seminars

"Achieving True Water Sustainability: A Case Study of Chino Valley's efforts within the Prescott AMA"

Date: Friday, October 2nd, 2009

Time: Noon to 1:30

Speaker: Mark Holmes, Town of Chino Valley

The word sustainability is mentioned in virtually every presentation pertaining to water resources, but what is true water resource sustainability? It means different things to different people. How can we agree on a definition and what strategies will achieve it? Chino Valley is at the tipping point; it must come up with a water resource sustainability plan for the community's current and future health, welfare, and quality of life. Chino Valley recognizes that one size does not fit all regarding the dynamic and critical management of water resources throughout the State, but we would like to share our sustainability strategies and lessons-learned as one of the most critically water challenged communities in the State. We hope that others may find specific ideas useful in their current or future water resource planning.

"Urban Heat Island and Residential Outdoor Water Demand"

Date: Wednesday, October 21st, 2009

Time: Noon to 1:30

Speakers: Christopher A. Scott, Stephen Yool, Eve B. Halper, and Andrew Comrie, School of Geography and Development, University of Arizona

Urban water demand in the Southwest is influenced by the type, age, and structure of residential and public landscaping. Urban heat island (UHI) coupled with regional climate change have important impacts on urban water demand. This brownbag seminar focuses on Tucson, Arizona and presents the results of research supported by a 104B grant from the Water Resources Research Center and the U.S. Geological Survey. We characterize Tucson's UHI in temporal terms based on climate station data, and spatially using Landsat Thematic Mapper satellite imagery. We relate the UHI to residential outdoor water use and discuss the implications of urban landscaping for UHI mitigation.

All seminars and events are held at the Sol Resnick Conference Room, Water Resources Research Center, 350 N. Campbell Ave.

Information for additional seminars can be found on the WRRC web site: www.cals.arizona.edu/azwater

Tucson HydroNews

Solar Plan Ignites Some Environmental Concerns

By Jeff Brady

An Obama administration plan to build huge new solar energy plants in the Southwest is causing heartburn in the environmental community.

The Interior Department has proposed allowing two dozen solar energy study areas on public land in

California, Nevada, Arizona, New Mexico, Utah and Colorado. These would be industrial facilities that would require huge amounts of land and water to operate. They wouldn't allow room for other uses on the land such as recreation.

While conservation groups generally support the president's campaign for more renewable forms of energy, some local groups are concerned about putting industrial-scale solar projects on public land.

<http://www.npr.org/templates/story/story.php?storyId=112860913&ft=1&f=1006>

Consumer's guide: Hot water from the sun

TEP program seeking to put solar systems in nonprofits, low-income households with aid of federal stimulus funds

By Dale Quinn
Arizona Daily Star
Tucson, Arizona | Published: 09.27.2009

Tucson Electric Power Co. is expecting \$1.3 million in federal stimulus funds to help get solar water heaters into low-income residences and the offices of nonprofit groups. And that means local installers also are looking to get the energy-saving appliances into more homes.

Jeff Shoemaker, the owner of Custom Solar and Leisure, said he's seen demand for solar water heaters increase recently. He said his company installed 30 in the last month, and competition has also been increasing among solar installers.

The main impediment for most people is expense, Shoemaker said, as it can cost \$3,000 upfront to buy the water heater. State and federal tax credits offset some of those costs. The cost for non-solar systems varies, but it can run about \$600 to \$800, he said. Solar water heaters don't work well in cool and cloudy weather, but people still don't have to worry about running out of hot water. Each has a backup gas- or electricity-fueled system that kicks in if the water gets too cold.

Still, with solar, most of the water is sun-heated, Shoemaker said.

<http://www.azstarnet.com/allheadlines/310696.php>

Explosives firm agrees to pay EPA \$1.2M Apache settles claims for cost of cleaning soil and water contamination near Benson

By Enric Volante
The Arizona Republic
Tucson, Arizona | Published: 09.26.2009

Apache Nitrogen Products Inc. has agreed to pay \$1.2 million to the EPA to settle claims for the cost of responding to water and soil pollution near Benson.

Under a proposed consent agreement lodged Thursday in U.S. District Court, the company would also continue the ground-water cleanup it has been carrying out for years.

Nearly 20 years ago, the company site outside St. David became a federal Superfund site due to contaminated soil and groundwater.

The Justice Department this week filed a lawsuit on behalf of the Environmental Protection Agency seeking to recover the costs.

The company, formerly known as Apache Powder Co., began manufacturing industrial chemicals and explosives at the site in 1922, the suit says.

<http://www.azstarnet.com/allheadlines/310683.php>

Arizona's water future is cloudy, worried experts agree

By Tom Beal
Arizona Daily Star
Tucson, Arizona | Published: 09.24.2009

Arizona's water future won't be like its past, and the past is bad enough.

Water managers only recently came to terms with the fact that their predictions of future water supply were based on incomplete historical records that did not reckon with periodic decade-long droughts and at least one that lasted half a century.

At a conference of water and climate scientists put on by the University of Arizona on Wednesday, water managers from Arizona's major cities said the future seems even more uncertain with predictions that climate change will further reduce flow from Arizona's watersheds.

New sources of water will be needed, but they won't be available in time for the coming crunch, said David Modeer, general manager of the Central Arizona Water Conservation District.

Read more at: <http://www.azstarnet.com/allheadlines/310359.php>

CAP wants public's ideas on region's water future

By Carol Zimmerman
Special to the Arizona Daily Star
Tucson, Arizona | Published: 09.22.2009

The importance of water has been a topic of discussion in the Tucson region for decades. We can be proud of the planning and forethought that has been a hallmark of our water policy, and the commitment of our local leaders to support water conservation.

But in an era of competing demands for resources, economic uncertainty and the potential impacts of climate change, it's critical that we continue to prepare for the future.

Thursday and Friday, the Central Arizona Project board of directors and staff will hold meetings to review and update the CAP Strategic Plan — the blueprint for where the organization will focus its attention in the years ahead.

<http://www.azstarnet.com/allheadlines/309945.php>

Flagstaff Chapter

Next Meeting: October 1st, NAU Ground Water Lecture

On October 1, at 4:00PM, Peter Cook of CSIRO Land and Water (Australia) will present the 2009 National Ground Water Association Henry Darcy Distinguished Lecturer.

Location: Room 103 of the Geology Building (building 12) at NAU.

There will be a reception after the presentation at a location to be determined.

ENVIRONMENTAL TRACERS IN MODERN HYDROGEOLOGY

Abstract: Groundwater flow rates are most frequently determined as the product of measured hydraulic gradients and hydraulic conductivities, the latter determined using aquifer tests. However, estimation of aquifer hydraulic conductivity remains a significant source of uncertainty, particularly in heterogeneous environments. Within the past few decades, environmental tracer methods which can provide independent estimates of groundwater flow rates have been developed. Because environmental tracers integrate over

the entire groundwater flow path, they may be less sensitive to heterogeneity than hydraulic methods. However, when water of different ages mixes, the apparent age of the mixture is not necessarily equal to the mean age of the components forming the mixture. This complicates interpretation of environmental tracers in heterogeneous systems. Fractured rocks represent one of the most complex aquifer systems, and here diffusive mixing occurs between young water moving through the fractures and old water stored in the matrix. In these systems, joint interpretation of hydraulic and environmental tracer data may allow us to correct for the effects of matrix diffusion on apparent tracer ages. Environmental tracers thus may be able to provide estimates of groundwater flow in systems that cannot be reliably characterized hydraulically.

Please contact Abe Springer at abe.springer@nau.edu for more information.

For more information about the Arizona Hydrological Society, or to view current job listings and announcements, please visit our web site at:

<http://www.azhydrosoc.org/>

Your membership may be renewed for 2009 by credit card through the AHS website or by mailing a check to the Arizona Hydrological Society, c/o Matthew Beversdorf, 1753 East Broadway Road, Suite #101, Box 106 Tempe, Arizona 85282. Dues remain at \$45.00 year for regular membership and \$15.00 for students. Thank you all for a great 2009 and for your continuing support in 2010. For those who attended the 2009 Water Symposium, be reminded that membership dues for 2010 were included in the registration fee.

