



MAY 2012 NEWSLETTER CONTENTS

[Viewpoint: Let's Fight...](#)

[Government Goings-On](#)

[AHS Scholarship announcement](#)

[Phoenix chapter news](#)

[2012 AHS Symposium: Confluences – 25 years bringing water, people, and ideas together](#)

[Arizona Science and Engineering Fair](#)

[Tucson chapter news](#)

[Kickoff meeting for the 2013 AHS Symposium planning committee](#)

[2012 SARSEF AHS/CAP Awards](#)

[WRRRC Brown Bags for April 2012](#)

[Flagstaff chapter news](#)

[AHS Sedona Sinkhole Field Trip – Saturday, 19 May 2012](#)

[Hydro-news](#)

[48th Forum on the Geology of Industrial Minerals](#)

[Invitation to WRRRC Webinar Series on May 10, 2012: “Achieving Environmental Goals through Water Utility-based Incentive Programs”](#)

[Arizona Water FESTIVAL VOLUNTEERS needed](#)

['Huge' water resource exists under Africa](#)

[Water-education program teaches kids about source of life](#)

[Golden algae toxins blamed for fish deaths in Litchfield Park](#)

[Fate of Grand Canyon tied to Tusayan](#)

[Drive to extract money threatens Arizona's premier natural wonder](#)

[Mining company lobbyists active at AZ Capitol](#)

[Waterblogged by Shaun McKinnon, Arizona Republic](#)

[Job Board](#)

[Additional Information](#)

VIEWPOINT: LET'S FIGHT...

“Whiskey is for drinking and water is for fighting” famous words that are attributed to the late great Mark Twain, well not everyone agrees that this quote is attributed to him so why wouldn't the subject of water be any less controversial then this simple quote? Water is not less controversial; in fact it seems to me that this key commodity has shaped our world and has played a key role in the rise and fall of civilizations. Now this is NOT what I want to fight about but under certain circumstances I am sure we could get into a big debate about this at the next Symposium (coincidentally - September 18-21st at the Desert Willow Conference Center). Do I have your attention?

Now what I do want to fight about is AHS and what does the Society mean to you, its members? Let

me take a step back and go over what we tell the world we are on our web site, *“an organization dedicated to advancing hydrology and water resource research, planning and development.”* What AHS has done is great and I can go on for pages on the achievements and good works we are doing, but I don't think that is enough. I think we are missing a few key elements to our puzzle. The first is our students, the second is agency representation and the third is the public in general. Agency?, Public? What the? ... Mike you have lost your mind? Let me explain and then we can fight about it.

Oh one more thing before I begin, AHS is not a lobbying organization and this is not a piece on politics. I have some observations that I believe make my point but this is not intended to be a political bend. If you disagree we can argue in September at the Desert Willow Conference Center. Oh this is a good plug for you to attend the Annual Membership meeting during the Symposium.

Students, oh students where are you? We seem to be slipping into a Society of older professionals with a smaller and smaller population of students at our events. I would make the statement that if we are not growing our next generation now what will happen in the future? This is not to say that the current chapter boards are not pressing this issue, but I would like to put this out to the general membership. We are in a new phase of reaching out to this population via the social media network and I would say this group will play a key role for our profession as well as AHS. If you have the ability to reach out to the students then do so and invite them to our meetings. It has been said we are in a water crisis and we will need hydrologist and hydrogeologist to help us, so where are all these new scientist coming from? I don't know but I do know Arizona has some excellent Community Colleges and Universities so how can we reach them and get those students to attend and participate in AHS? I want to throw one more thing in when it comes to the students, if you have not seen the work some of our high school and middle school students have been doing as it relates to water at the science fair then let me suggest you get involved, it is truly amazing.

When I started attending AHS back in 1993, I remember the chapter meetings and the chapter board being well attended by agency professionals. These members have helped to shape the organization and were instrumental in developing topics for the dinner meetings and presenting at the annual symposium. With all the cut backs in the State and local governments these professionals have almost disappeared. I am putting it out there that this is impacting our organization. How do we meet our mission without these folks? I believe that increased agency participation will not only help AHS meet our mission it will also advance the field of hydrology and water resources by having these professionals at the table during our meetings and events. Call an invite your associates from the agencies to our meetings we welcome their attendance.

Public, well I may have gone too far on this but I feel this is an area that AHS needs to take a more active role in so I am asking our membership for your input. I was standing in the grocery store the other day and I overheard two older individuals talking about water. The first person was concerned about running out of water in his life time while the other was confident that we had plenty of water and his examples were green cemeteries and golf courses coupled with the fact that his neighbor waters off his driveway to keep the dust down. Now I know this may seem funny at some level but I do feel that perhaps as an organization we may be missing a key component in our mission, education and outreach. I was reminded that we used to do this and in 1999 AHS developed an outreach series. The Tucson chapter hosted five open houses on water issues. The open houses were held at malls and community centers throughout the Tucson metro area. AHS members developed a series of posters on water supply, water-use statistics, basin hydrogeology, subsidence, groundwater, water quality, and water use and recharge. These open houses were deemed a success with 30 to 40 individuals attending for at least one hour at four of the five sessions. Attendees complemented the chapter members' volunteer efforts to provide actual and unbiased information on local water issues.

We are working on a corporate board level to address how AHS can revitalize an outreach program and suggestions and help is most definitely needed in this area. As for the outreach to the student and agency population, AHS will be revamping the Symposium ice breaker this year into a “Meet and Greet” targeted to bring in students and agency participation to a whole new level. I am really excited and this could be a new showcase event for the Society. Details for this event will be unveiled in subsequent newsletters and email blasts or if you are interested in assisting with this event please give me a call or send me an email.

GOVERNMENT GOINGS-ON

The Arizona Legislature is wrapping up the current session. The number of bills that could impact water resources and environmental quality was not large this year. Many failed. House Bill 2337 would have established continuing education requirements for licensed well drillers. But it failed, despite support from the Arizona Water Well Association. SB 1055, the “Dead Horse” bill, died early on, was resurrected, and apparently is again dead. This bill would have made huge exceptions in the Groundwater Code that would have allowed exempt wells for stock watering purposes just about anywhere—and one chicken qualifies as livestock. Funding for ADWR will be considered by a study committee with the idea that the agency should have ongoing reliable funding that reflects all interests across the entire state (General Fund, anyone?). Macro harvesting pilot projects will be regulated by ADWR, which of course currently has no funding for such projects. The same bill changed the instream flow application process to require five years of flow measurements, which was not welcomed by proponents of protecting riverine environments. For a great summary of the status of various water-related bills, check out Jeff Kros’ tracking sheet on the AMWUA Website at: http://www.amwua.org/leg_sum_tracking.html. I follow this sheet regularly, although it doesn’t truly do justice (in terms of appropriate humor) to some of the weirder ideas emanating from our legislators.

For example, SB 1507 would prohibit the state and all the political subdivisions from any involvement whatsoever with any tenet or principle of the 1992 UN Rio Declaration for sustainability. The Rio Declaration involved 27 principles on sustainable growth, many innocuous and well-intended, others the work of wild-eyed socialists from the Third World. The proponents of SB 1507 believe the Rio Declaration to be a UN plot to take over the world. Therefore they want to prohibit any sustainability efforts by cities, counties, or the state. But while the Rio Declaration has no force of law, SB 1507 would. Funding of anything related to sustainability including water and energy conservation programs would be prohibited (I shudder to think what this could mean to ADEQ). Universities would not be able to offer sustainability programs. Businesses that work with local governments on conservation matters would not be able to do so. And the impact on consulting firms working on the environment or planning issues could be drastic. Even the Greater Phoenix Chamber of Commerce opposes this bill. Yet this bill passed the Senate, apparently because members wanted to protect their ultra-conservative credentials. One can only hope that the House—such a font of reasonable consideration—will reject this legislation as too damaging to local governments and businesses. After that, the last stop is the Governor’s desk.

[Alan Dulaney](#)

City of Peoria

[Top of the Document](#)

AHS SCHOLARSHIP ANNOUNCEMENT

The Arizona Hydrological Society will award **three \$2,000 student scholarships** in 2012!

The purpose of the award is to encourage full time students in hydrology, hydrogeology, or any other water resources related fields at any Arizona university, or college to excel in their area of study. Any junior, senior or graduate student who fits into this category is qualified to apply for the Scholarship. Applications for the Scholarship must be submitted to Dr. Aregai Tecele of the School of Forestry, Northern Arizona University, by May 31, 2012. The Scholarship will be awarded during the Annual Symposium of the Society on Sept. 18-21, 2012 at the Desert Willow Conference Center (DWCC) located near 48th Street and Broadway Road in Phoenix.

Please [click here](#) for more information!

PHOENIX CHAPTER NEWS

Phoenix Chapter's May Dinner Meeting

Please join the AHS Phoenix Chapter and the AEG (Association of Environmental and Engineering Geologists - Arizona Section) for a joint meeting **Thursday May 10, 2012** at [Monti's La Casa Vieja](#) located at the SWC of Mill Ave and 1st Street in Tempe. We will start off at 5:30 pm with a hosted happy hour, courtesy of Accutest Laboratories, followed by dinner at 6:30 pm and the presentation starting shortly after dinner. **Please note the change in day for this meeting.**

The speaker is **Harry Brenton**, RG, Principal Hydrogeologist at Matrix New World Engineering, Inc.. His presentation is titled "**Development of a Hydraulic Barrier - Phoenix-Goodyear Airport - North Superfund Site**". [Click here for flyer.](#)

Please RSVP to [Emily Corkery](#) (AEG) by Monday May 7th if you will be joining us. The cost is \$30 and includes two drink tickets.

Hope to see you there!

Winner of Survey drawing

The Survey participation winner of a free AHS monthly meeting dinner is **Haley Paul**, University of Arizona Cooperative Extension, Maricopa County. Congratulations Haley!

Future Event Calendar (see also calendar on www.azhydrosoc.org)

- ∅ June 12, 2012: Maurice Tatlow and Art Nunez, City of Scottsdale, Scottsdale Water Campus Update, SunUp Brewery (3rd St. and Camelback, Phoenix).
- ∅ July 10, 2012: Ardeth Barnhardt, UofA - Water/Power Nexus- Nellos in Tempe.
- ∅ July 26, 2012: Wine tasting fundraiser at Terrior Wine Pub for the Herman Bouwer Intern Scholarship. **Please note that we are looking for sponsors for this event – contact [Keith Ross](#) if you or your company may be interested.**
- ∅ October and beyond – maybe you or a colleague? Please contact [Tom Walker](#), Phoenix Chapter Vice President, if you would like to give us a presentation or if you know anyone else who could use an audience.

2012 AHS SYMPOSIUM: CONFLUENCES – 25 YEARS BRINGING WATER, PEOPLE, AND IDEAS TOGETHER

The next Symposium Planning committee meeting will be held at Boulder's on Broadway in Tempe on May 3. Hope you can make it! Email or call Mr. Lehman if you'd like to participate. Ted can be reached at ted@jefuller.com or 480-222-5709.

Symposium Chair, Ted Lehman, has a goal to get every AHS member involved in this years' symposium in some capacity – organize a field trip, teach a workshop, moderate a session, give a talk, exhibit your firm, sponsor a student or teacher, or just show up and see what your colleagues have been up to recently!

We still need a Workshop Program Coordinator to help coordinate the overall workshop experience for both the workshop instructors and the participants. We have four half-day workshops set up – two with surface water themes and two with a groundwater slant. We plan to have the workshop descriptions and instructors info up on the website shortly. We need someone to help track registrants and check in with instructors between now and September to make sure all goes according to plan. If you are interested helping coordinate workshop activities, please call or email Ted.

The **Call from Abstracts** is out – send a title with a brief abstract today! The Program Committee will review abstracts and help organize the technical agenda. If you are interested in helping with the abstract review and technical program organization, please contact Summer at SWaters@cals.arizona.edu or 602-827-8200 ext. 349.

Sponsorship fundraising is getting in gear too. We'd like to thank Platinum Level Sponsor, [Freeport McMoRan Copper & Gold](#), and Premium Exhibitor, [US Bureau of Reclamation](#)! Please join Freeport and USBR, and give generously when our Society President, Mike Hulst, or one of his subcommittee assistants calls you looking for your support of this year's event. Thank you!

The next planning meeting will again be at Boulder's on Broadway, April 22 at 5 pm. Email or call Mr. Lehman if you'd like to participate. Ted can be reached at ted@jefuller.com or 480-222-5709.

We're looking forward to your participation!

[Top of the Document](#)

ARIZONA SCIENCE AND ENGINEERING FAIR

By Paul Plato

On April 3, 2012, the Arizona Hydrological Society, in cooperation with the Central Arizona Project, reviewed and presented awards to deserving hydrologic and water projects at the annual Arizona Science and Engineering Fair (<http://azsef.asu.edu/>). This marks the ninth straight year that AHS and CAP have teamed up to award prizes at the AzSEF fair, and AHS would like to thank Deanne Rietz of SWCA, Inc. and Derek McGregor of Freeport-McMoran Inc. who helped me judge projects at this years' event. This marks the first year that the AzSEF event is a winner's fair, meaning that you must win at the local level to complete in the AzSEF event. The number and quality of the projects was outstanding, and the success of the AzSEF is attributable to the outstanding leadership of Mr. Phillip Huebner (Arizona Tech Council) and his team. They have done a remarkable job in making the fair a major success.

This year, there were many choices of water related projects for the judging team to review. Following our review, awards were made to the following projects, based upon merit:

Senior Division:

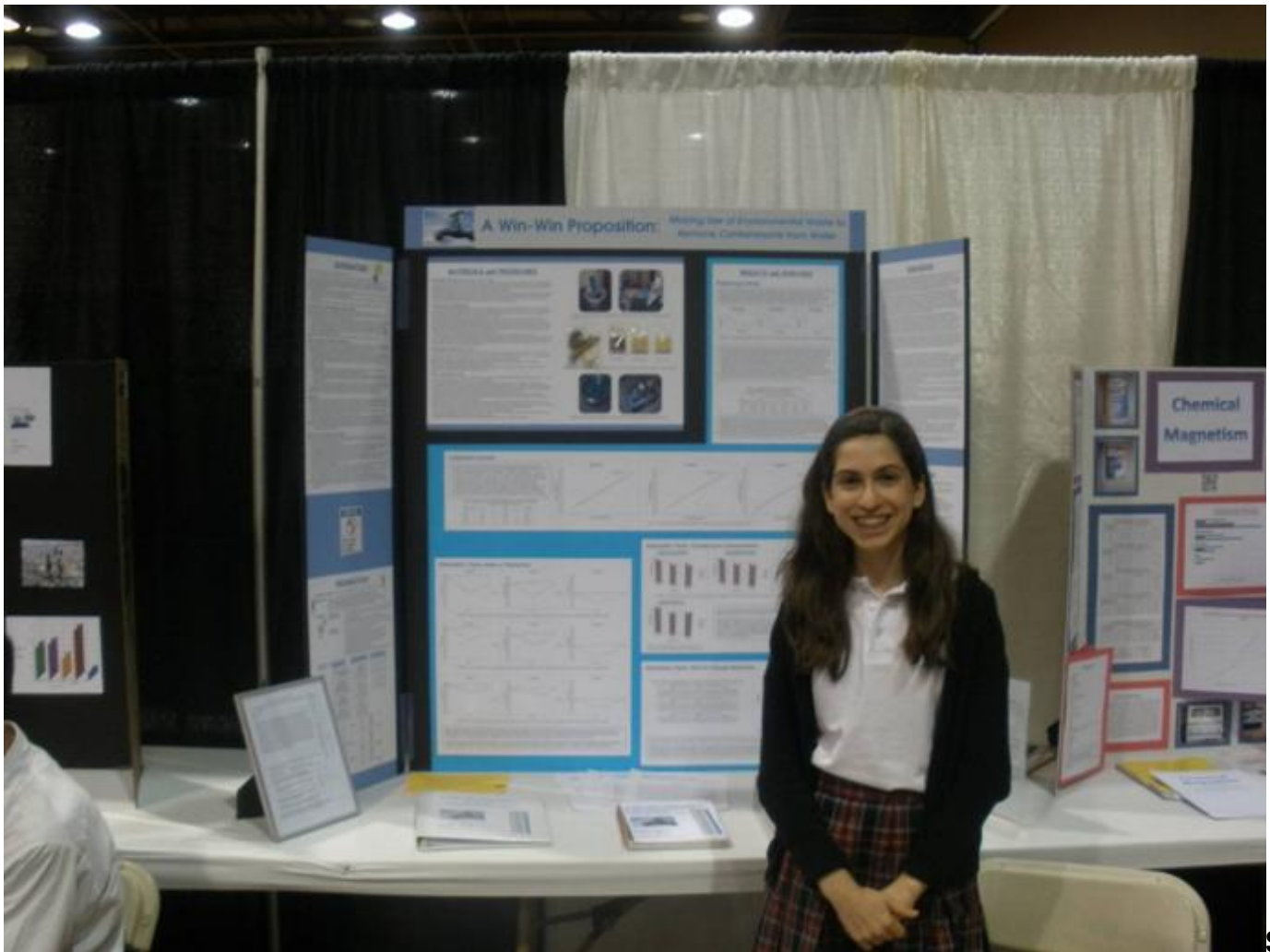


\$200

1st Place to Joshua Gates, for his project: S-EV-12 AzSEF-1306 - ***The Occurrence of Escherichia Coli in East Valley Water Sources***". Mr. Gates' project involved sampling and analysis of effluent impacted surface waters (such as effluent golf course lakes and discharges) to identify e-coli occurrences. His work included DNA testing to identify virulent strains which pose a more serious health hazard.

\$75 for 2nd Place to Sowmaya Ravi, for her project: S-EV-12-AzSEF-1143 - ***Disaster Hits! Got Water?*** Ms. Ravi's project involved evaluating methods to treat available water for drinking in the event of an emergency.

Junior High Division:



\$75

to Katelyn Boisvert, for her project: J-EV-12-AzSEF-1442 - ***A Win-Win Proposition: Making Use of Environmental Waste to Remove Contaminants from Water***. Ms. Boisvert's project involved an assessment of the ability for commonly available waste products (such as pine bark, ground corn cobs) to absorb pesticides, herbicides and fertilizers thus preventing them from running into surface waters.

Honorable mention to Jeba Sania, for her project: J-EV-12-AzSEF-1334 - ***Dirty Business***. Ms. Sania's project evaluated natural filtration of dirty water through soil columns.

Honorable mention to Jacob Hoo, for his project: J-EV-12-AzSEF-1192 - ***Naturalis Aquae***. Mr. Hoo's project evaluated the dissolved solids content of waters.

Elementary Division:

\$50 for 1st Place to Rachel Robinson, for her project: E-EA-12-AzSEF-1242 - ***Weathering and Erosion***. Ms. Robinson's project involved measuring rates of erosion of selected samples.

Congratulations to all the winners this year, the projects were very inspiring. And congratulations to all the aspiring future scientists who I talked with this year, it was, as always, a rewarding and fun experience.

Paul R. Plato, R.G.
Senior Hydrogeologist
Clear Creek Associates
 (480) 659-7131
 (602) 750-4237 (cell)

Top of the Document

There will not be a regular meeting of the Tucson chapter in May. Instead, members are encouraged to attend the next symposium planning committee meeting (below).

KICKOFF MEETING FOR THE 2013 AHS SYMPOSIUM PLANNING COMMITTEE

On April 24th the kickoff meeting for the 2013 AHS Symposium planning committee was held at the offices of Montgomery & Associates in Tucson. Marla Odom has accepted the position of Symposium Chair. The focus of the initial meeting was limited to the following agenda items:

1. What is expected of planning committee members and what we are looking for when recruiting additional members
2. Using task management software to encourage communication between members, set tasks and deadlines, share a planning calendar, and track progress and completion of tasks
3. Review of symposium tasks and establishment of sub-committee categories
4. Preliminary sub-committee assignment for current members of the planning committee
5. Begin consideration of an event coordinator
6. Discuss overall tone of the symposium, including venue, cost, room-night obligations, and whether the "back to basics" approach will work for a Tucson venue
7. Consideration of a symposium theme
8. Review need to begin pulling together data from past symposia and setting milestone deadline dates in advance
9. Establish committee preferences for future meetings (location, time, food)

Sub-Committees identified in the meeting include:

1. Venue
2. Meals and Entertainment
3. Program Development
4. Mailings and Advertisement
5. Treasury and Registration
6. Speaker Planning
7. Fundraising and Exhibitors
8. Workshops and Field Trips
9. Website Coordination

Tasks assigned to the committee members for the next planning meeting are to:

1. Recruit additional committee members and spread the word about the committee
2. Contemplate tone of the 2013 symposium and be prepared to discuss thoughts at next meeting
3. Come up with symposium theme ideas (including soliciting suggestions) and be prepared to present and review ideas at next meeting
4. Begin pulling together local venue information (venue committee)
5. Collect and review past symposium budgets and contracts

The first planning meeting was a great success and we set the foundation for our goals of keeping meetings focused, productive, and completed in a reasonable amount of time. We strive to make this a fun process for all and encourage AHS members to consider attending the next planning meeting:

Wednesday, May 30th at 6:00 p.m.
Offices of Montgomery & Associates
1550 E. Prince Road

Pizza and beer will be provided

2012 SARSEF AHS/CAP AWARDS

On March 13, 2012, the Tucson Chapter of AHS participated in judging the Southern Arizona Regional Science and Engineering Fair (SARSEF). Judges for the event were Dick Thompson from Tucson Water, Mike Block from Metropolitan Water District, and Marla Odom from Montgomery & Associates. Awards were given to twelve hydrology-related projects, and amounts ranged from \$25 to \$150. A total of \$600 in awards were given, with funding provided by Central Arizona Project [via grant funding to the Arizona Hydrological Society Foundation (AHSF)], and the Tucson Chapter of AHS. Awards are summarized as follows:



Zoe Iacomini (Kindergarten) of Ventana Vista Elementary School was presented a \$25 award for her project "**Do All Objects Float?**" In her experiment, Zoe learned that both her hypotheses were incorrect, and that objects with holes in them can float, and that heavy objects (such as an orange) can also float, and that an object must weigh less than water to float.

Sophie Smarz (1st grade) of Winifred Harelson Elementary School was presented a \$25 award for her project "**H2O On The Go**". In her experiment, Sophie showed that location and environmental conditions affect evaporation rates.

Ty Pham-Swamm (3rd Grade) of Canyon View Elementary School was presented a \$25 award for his project "**Right as Rain? Does rain water make plants grow faster than tap or stream water?**" In his experiment, Ty tested the common perception that rain water is better for plant growth. Ty concluded that tap water actually produced more plant growth and associated the increased growth with total dissolved solid levels in the tap water.

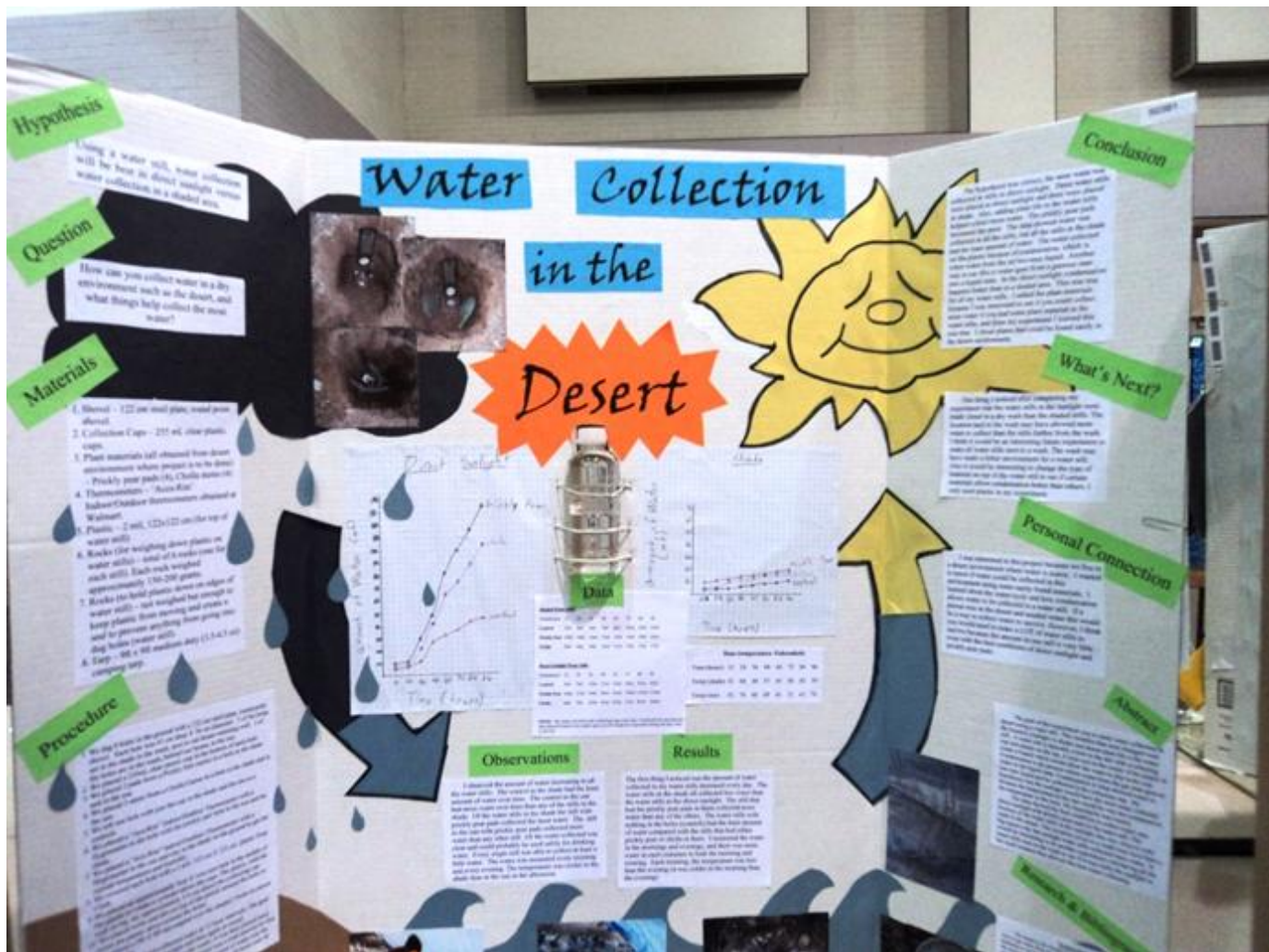
Lucy Canal (4th Grade) of Satori Charter School was presented a \$25 award for her project "**Put Water to Work - Using Hydropower to Lift a Load**". In her experiment, Lucy converted the energy of falling water into mechanical energy and determined that flow rate, volume, and height are the factors affecting hydropower output.

Meagan Kratzer and Mia Sapone (7th Grade) of Richard B. Wilson Middle School were presented \$25 for their project "**Clean Up Your Water**". In their experiment, Meagan and Mia tested water samples around the city for sucralose (an artificial sweetener) as a substitute for pharmaceuticals. Their theory that sucralose would be found in smaller amounts outside of urban centers was confirmed.

Elisa Acosta, Daniela Diaz and Katie Tucker (8th grade) of Our Mother Of Sorrow School were presented \$25 for their project "**Weather You Like It or Not!**". In their experiment, Elisa, Daniela and Katie demonstrated that El Nino weather patterns are affected by latitude.

Anthony Hsu (4th Grade) of St. Michael's Parish Day School was presented \$50 for his project "**A Good Way to Clean Your Fishtank**". In his experiment, Anthony related water pressure to height of water using a series of six experiments. Anthony's interest in this subject started when he noticed that water pressure in an apartment building seems to be better on the lower floors. Anthony extrapolated the results of his experiments to show how the same principles can be applied to cleaning fishtanks and using water towers to deliver water.

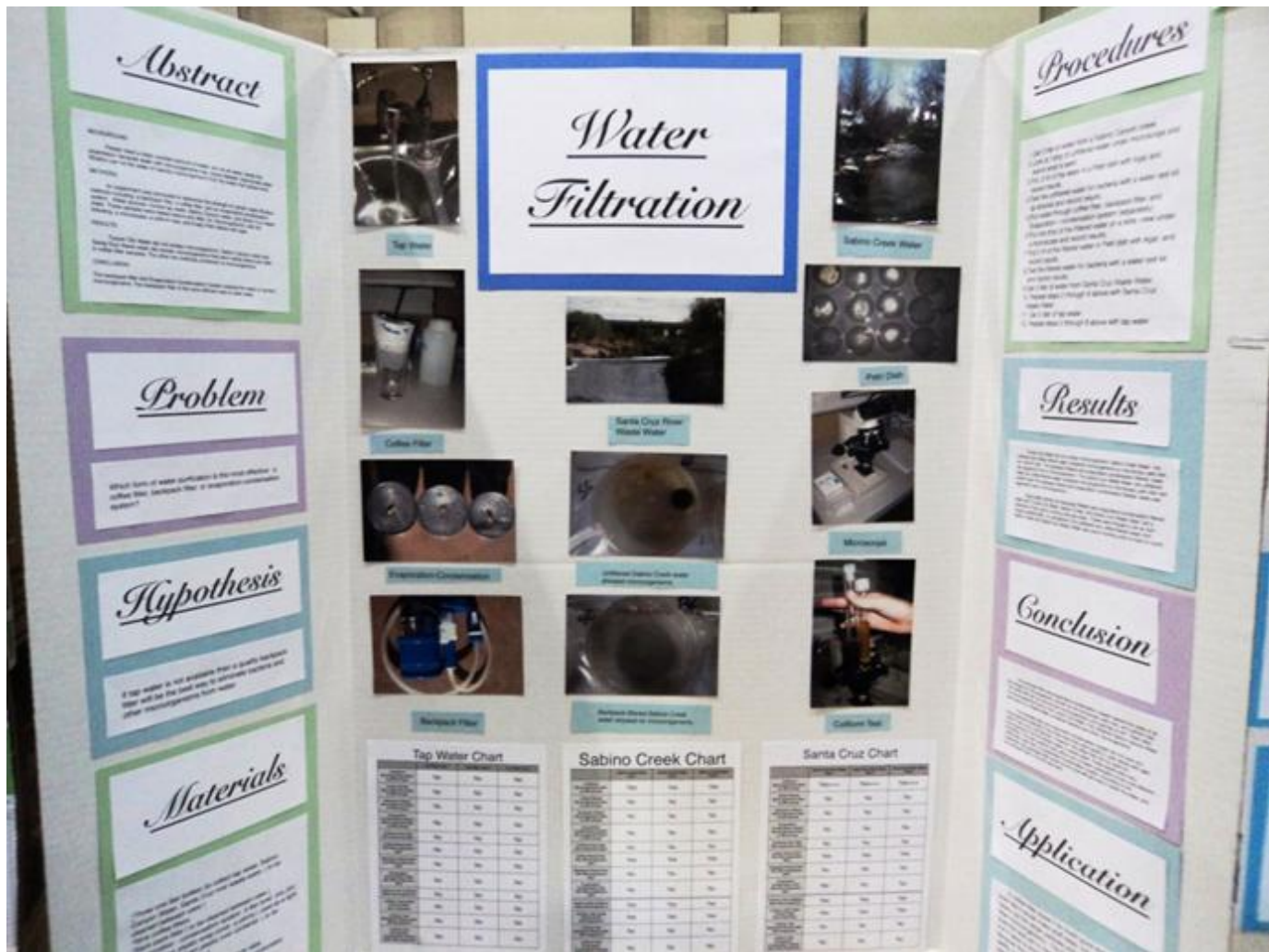
Joseph Kennedy (5th Grade) of St. Cyril School was presented \$50 for his project "**To Drink or Not to Drink**". In his experiment, Joseph proved his hypothesis that you can purify contaminated water simply by exposing the water for extended periods to solar energy. Joseph measured bacteria levels and observed the clarity of the water. Although his hypothesis was confirmed, Joseph admits the time involved for purification is problematic.



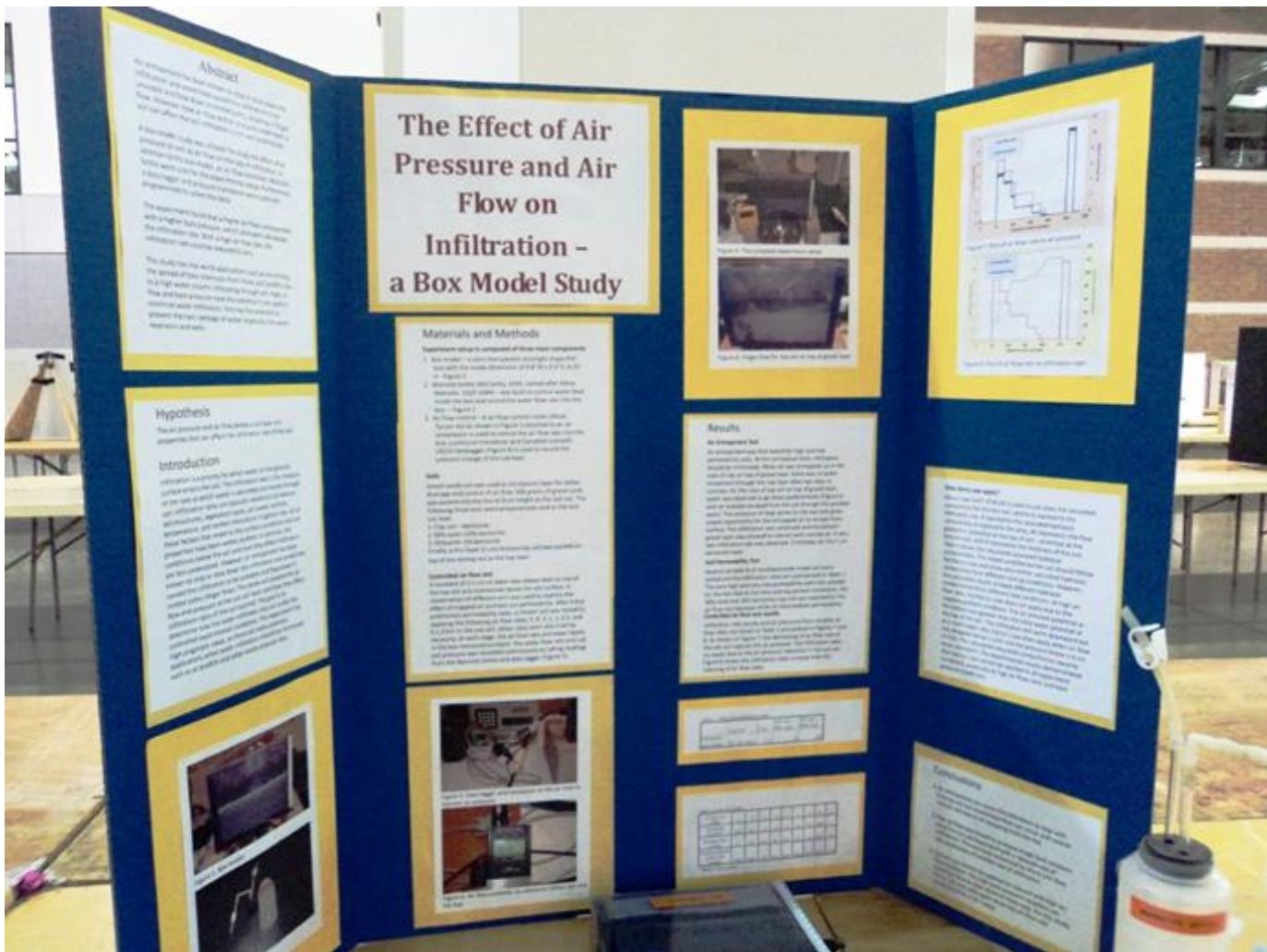
Ryan Foley (5th Grade) of Richard B. Wilson Middle School was presented \$50 for his project "**Water Collection in the Desert**". In his experiment, Ryan constructed a water still, which captures condensation, and evaluated the best conditions to extract water from two different species of cactus cuttings. Ryan concluded that condensed water could most effectively be captured from prickly pear cactus in direct sunlight.

Sabina Shysh (High School) of Arizona State School For The Deaf And Blind was presented \$50 for

her project "**Water Quality in Tucson Lakes**". In her experiment, Sabina tested her pre-conception that a particular lake had the best water quality by testing four area lakes for a variety of parameters.



Claire Hughes (5th Grade) of Legacy Traditional School was presented \$100 for her project "**Water Filtration**". In her experiment, Claire tested three types of filtration systems on three types of water (ranging from tap water to effluent discharge). She evaluated which filtration system was most effective by running filtration output under a microscope, by performing a coliform test, and by using Petri dishes.



Stephen Yao (High School) of University High School, was presented \$150 for his project "**The Effect of Air Pressure and Air Flow on Infiltration - a Box Model Study**". In his experiment, Stephen explored the idea of air entrapment slowing flow and/or causing finger flow during infiltration. He used a box model to determine the effect of air pressure and air flow on infiltration rate. The experiment found that a higher air flow corresponded with a higher back pressure, which in turn increased the infiltration rate.

[Top of the Document](#)

WRRC BROWN BAGS FOR APRIL 2012

Unless otherwise noted, all seminars are held at the Sol Resnick Conference Room, Water Resources Research Center, 350 N. Campbell Ave., Tucson.

If you have any questions, contact Jane Cripps at jcripps@cals.arizona.edu or 520-621-2526

Wednesday, May 9

Time: 12:00 - 1:30

Speaker: Joanna Nadeau, Research Analyst, Water Resources Research Center, University of Arizona

Title: Exploring Strategies for Managing Water and the Environment in an Arid Land

Arizona's physical setting and water law framework present a unique set of technical and policy challenges for water management and planning. The University of Arizona Water Resources Research Center (WRRC) is developing a suite of policy tools and demonstration projects aimed at securing water for Arizona's ecosystems. The WRRC is exploring what it means to consider the environment in water planning and what the options are for the environment as a water customer in its own right.

Come learn about the progress the WRRC is making and the variety of strategies being employed - including technical assessments, public education, voluntary actions, and innovative policy

mechanisms - to address Arizona's environmental challenges.

Thursday, May 17

Time: 12:00 - 1:30 pm

Speaker: Tony Sedgwick, landowner and 2012 recipient of the National Wetlands Award for Landowner Stewardship. The President of Santa Fe Ranch, a nonprofit providing out of doors opportunities for the people of Santa Cruz County.

Title: Las Lagunas de Anza - The story of the transformation of a dump into lovely wetlands in the City of Nogales, Arizona

In a poor and seemingly hopeless community, Las Lagunas de Anza is the story of hope, of high school kids laughing and wading in murky waters, of Anglos and Hispanics joining forces, having fun while they restore pride and the vulnerable wetlands in the heart of their city.

The future of our desert ecologies lies in the often indifferent hands of our electorate and of economic "realities", read sustainability. This project, and the theme of the presentation, is about how we can bring together coalitions that provide a hope of conservation and of educating the generations of tomorrow.

The views, opinions, advice or other content expressed by the author(s) or speaker(s) are their own and do not represent those of the Water Resources Research Center.

[Top of the Document](#)

FLAGSTAFF CHAPTER NEWS

Macro-Rainwater Harvesting/Evaporation Interception Presentation

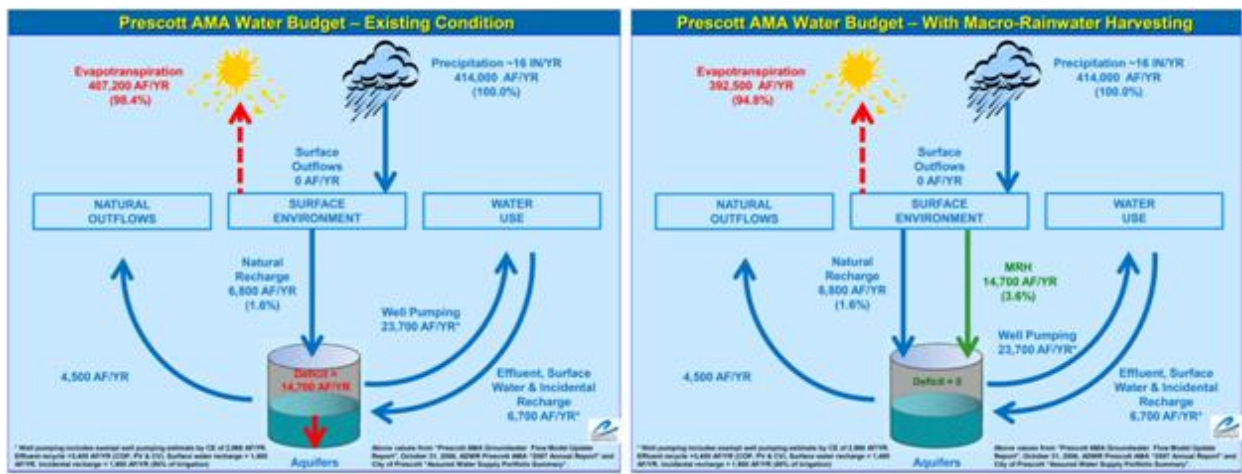
by Doug McMillan & Rick Shroads (Civiltec Engineering, Inc.)

16 May 2012, Wednesday, 1800 – 2000 MST

Council Conference Room – 1st Floor, Flagstaff City Hall

211 West Aspen Avenue, Flagstaff, AZ 86001

Macro-Rainwater Harvesting/Evaporation Interception (MRH/EI) is a three step process involving: 1) harvesting of enhanced rainwater runoff and subsurface infiltration that otherwise would have been lost to evaporation, 2) transporting the harvested rainwater to natural or artificially constructed areas with relatively high infiltration rates, and 3) recharging the harvested rainwater. During this process, the potential for harvested rainwater to evaporate is minimized. The goal of MRH/EI is to supplement natural groundwater recharge to achieve safe yield but to not harvest rainwater that potentially could leave the AMA boundary as surface flow. Unlike conventional harvesting techniques applied on relatively small parcels for on-site use (micro-rainwater harvesting), MRH/EI would be applied on a larger scale potentially involving cumulative multiple parcels of land at various locations. Rainwater runoff could be harvested from impervious surfaces in developed areas and modified pervious surfaces in undeveloped and low density areas.



There will be a brief business meeting of the AHS-Flagstaff Chapter prior to the presentation. All visitors are welcome and encouraged to attend to learn a little more about the Flagstaff Chapter of the Arizona Hydrological Society. The presentation will last about one hour and there will be time after the presentation for questions. While there is no charge for attending this presentation, we would greatly appreciate a small donation in support of the Charles C. Avery Intern Scholarship. This \$3,000 scholarship is offered every year by the Flagstaff Chapter to a deserving student who will work for a total of 200 hours for up to three different host employers.

[Top of the Document](#)

AHS SEDONA SINKHOLE FIELD TRIP – SATURDAY, 19 MAY 2012

The Flagstaff Chapter of AHS will be hosting a one-day field trip to visit sinkholes and related geologic features in the Sedona area. This field trip will be led by Mr. Paul Lindberg of the Flagstaff Chapter. [Click here for the full announcement!](#)

We will meet at 0930 MST on Saturday 19-May-2012 at the first parking area at the crest of Sedona's Airport Mesa for overview and car-pooling. The field trip stops follow:



Stop #1 at Devils Kitchen sinkhole on north side of Sedona (0.25 mile hike on trail) - Click here to see Paul's contributed AZGS report, [Geologic Report of the Devils Kitchen Sinkhole](#)

Stop #2 at Devils Dining Room on southeast side of Sedona (0.4 mile walk on easy road)

Stop #3 at Verde graben fault just west of Dry Creek Bridge on Highway 89A to southwest of Sedona (description of basin and range Verde graben and drainage reversals)

Stop #4 will be west of the Spring Creek bridge on Highway 89A southwest of Sedona (we drive south for 0.6 miles to

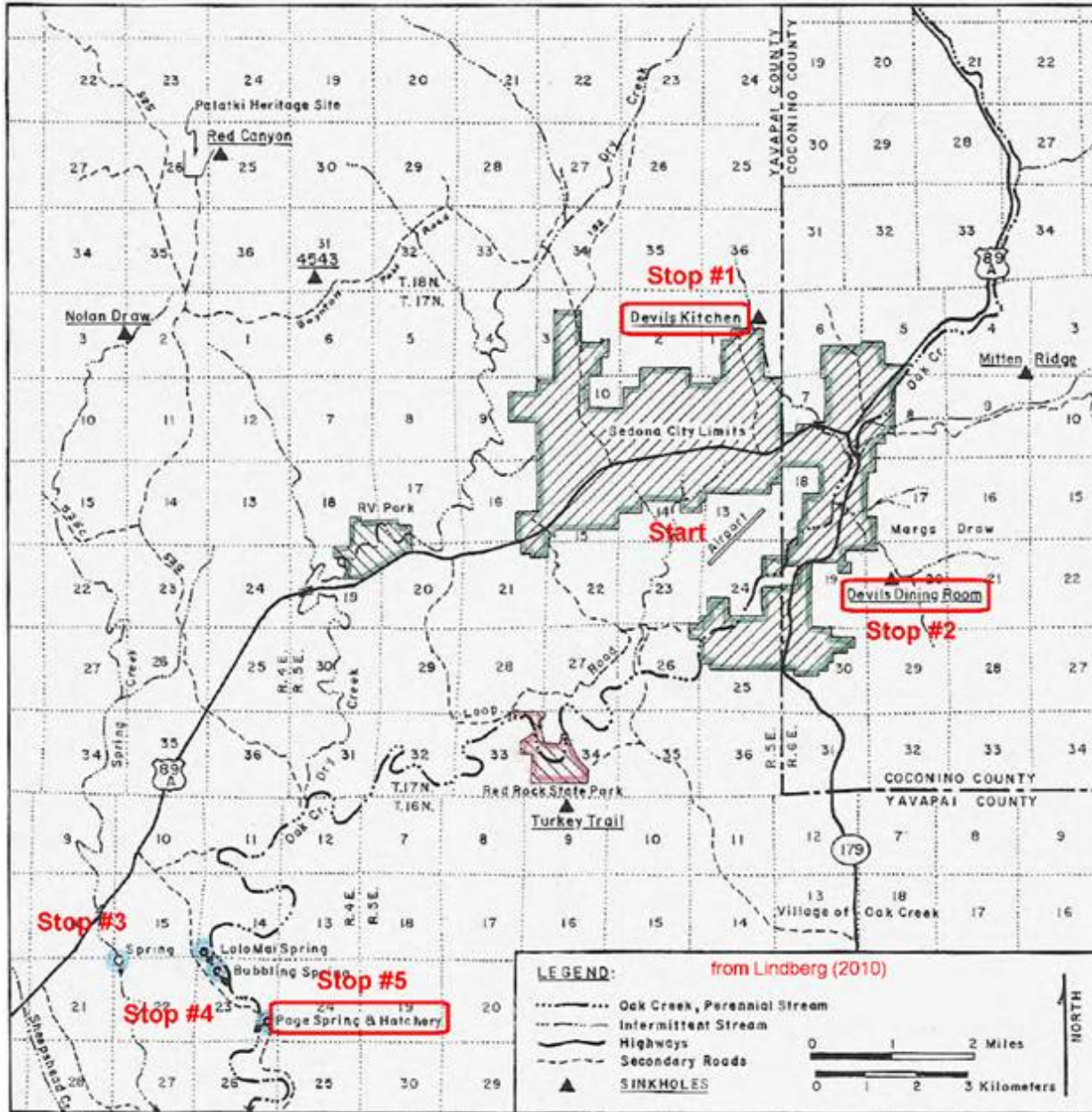
Willow Road where we look at the core of the Verde graben)

Stop #5 is at Page Springs Fish Hatchery that closes at 3:30 pm (here we see the outflow of groundwater passing beneath the Sedona area that is responsible for sinkhole development) Located on the Cornville Road.

We will have a post-tour stop at either one of two new wineries just opposite the hatchery at 1530. One is the Javelina Leap and the other is called Oak Creek Vineyards.

Because of limited parking at most of the sites, we will need to carpool and cap the number of attendees at 30 on a first come, first served basis. Please **RSVP** via e-mail not later than **04-May-2012** to Dana Downs Heimes (Dana.Downs-Heimes@CH2M.com). In your e-mail, please include your phone number and state how many will be in your party, indicate if you have a larger vehicle to drive other

field trip attendees, and how many people besides yourself you can accommodate. The registration fee for this trip is \$10 which covers chilled soft drinks provided by AHS, gratuity for the field trip leader, and a raffle ticket for a Verde Valley winery prize.



Top of the Document

HYDRO-NEWS

48TH FORUM ON THE GEOLOGY OF INDUSTRIAL MINERALS

You are invited to the 48th Forum on the Geology of Industrial Minerals 2012

Hosted by: Arizona Geological Survey

Event Date: **Tuesday, May 1, 2012 – Saturday, May 5, 2012**

geologyofindustrialminerals.org

Location: The Scottsdale Cottonwoods Resort & Suites

6160 North Scottsdale Road Scottsdale, AZ 85253

scottsdalecottonwoods.com

EVENT DETAILS

Registration Information:

Full registration for three days: \$250.00

One-day registration: \$100.00 (does not include banquet)

On-site registration at the Scottsdale Cottonwoods conference center:

Tuesday, May 1, 2012, 5:30pm – 9:00pm

Wednesday, May 2, 2012, 7:30am – 7:00pm

Hotel Information, Ground Transportation, and Parking:

Scottsdale Cottonwoods Resort & Suites

Phone: 480-991-1414

Registrants must contact the conference hotel for their reservations. The conference hotel rate is \$84.00 for single/double occupancy for the Tucson Suites and \$94.00 for single/double occupancy for the Phoenix Suites. Ask for the 48th Forum on the Geology of Industrial Minerals rate.

[Top of the Document](#)

INVITATION TO WRRC WEBINAR SERIES ON MAY 10, 2012: “ACHIEVING ENVIRONMENTAL GOALS THROUGH WATER UTILITY-BASED INCENTIVE PROGRAMS”

The second installment in The University of Arizona Water Resources Research Center’s webinar series focused on innovative approaches to link water use and the environment will take place on **May 10, 2012 at 1:00pm MST/12:00pm PST**.

The theme for this webinar is, “*Achieving Environmental Goals through Water Utility-based Incentive Programs.*” Featured speakers include:

Drew Beckwith, Water Policy Manager, Western Resource Advocates

Dale Lyons, Water Resources Coordinator, City of Santa Fe Water Division

Candice Rupprecht, Applied Programs Coordinator, University of Arizona Water Resources Research Center

To participate, follow this link on May 10, 2012 at 1:00pm MST/12:00pm PST:

<http://illuminate.oia.arizona.edu/scheduleMeetingnochair.php?sessionId=739657>

If you plan to attend, please RSVP to Brittany Choate at bchoate@email.arizona.edu by May 8, 2012.

We also invite you to join us for future installments in this five-part webinar series:

Establishing a User Contribution Program (June 2012)

Accounting Mechanisms for Tracking Water Conservation and User Contributions (July 2012)

Program Evaluation and Expansion in Your Community (August 2012)

Sincerely,

Brittany Choate

University of Arizona

Water Resources Research Center

Graduate Research Assistant

bchoate@email.arizona.edu

520-621-39826

[Top of the Document](#)

ARIZONA WATER FESTIVAL VOLUNTEERS NEEDED

Potential volunteers,

I direct the Arizona Project WET program out of the UA Water Resources Research Center. We'd like to inform you about an opportunity to engage 4th graders in exploration that leads to new understanding about the world we live in. We invite you to become a facilitator at the Arizona Water Festival in Discovery Triangle on Friday, May 11th, 2012 at Benedict Sports Park, 490 Guadalupe Rd, Tempe.

Volunteer Commitment: A 1-hour training to be scheduled for AmeriCorps teams and a day's work on May 11th (7 am to 2 pm).

We hope you'll jump at the chance to participate in this extraordinary event. More than 45,000 Arizona fourth graders have participated in Water Festivals since the first festival in 2000. **Please notify me of your group's interest by Monday, April 23.** You can contact me at [\(520\) 621-1092](tel:5206211092), cell [\(520\) 235-9647](tel:5202359647), or by sending an email to kschwartz@cals.arizona.edu.

More Information: In the 2010-11 school year, festivals served 6,484 children around the state! We are excited to again bring this program to Central Phoenix! The festival is part of the water curriculum that teachers need to teach to meet science standards. The goal of this Water Festival is to engage Tucson fourth graders in an educational and interactive celebration of water. Students will learn about their local water resources, watersheds, groundwater, the hydrologic cycle, water related careers and more. Students will travel to five areas within their color-coded area for twenty-five minutes each. Each tent has a different educational activity, and be hosted by trained facilitators from the community. A morning group of students and an afternoon group have two hours of fun learning about one of the Earth's most valuable resources--water.

Thanks very much, Kerry

--
Kerry Schwartz
Director, Arizona Project WET
Associate Specialist
Arizona Cooperative Extension
[520.621.1092](tel:5206211092)
kschwartz@cals.arizona.edu
<http://ag.arizona.edu/arizonawet/>

[Top of the Document](#)

'HUGE' WATER RESOURCE EXISTS UNDER AFRICA

By Matt McGrath, Science reporter, BBC World Service

Scientists say the notoriously dry continent of Africa is sitting on a vast reservoir of groundwater.

They argue that the total volume of water in aquifers underground is 100 times the amount found on the surface.

The team have produced the most detailed map yet of the scale and potential of this hidden resource.

[Writing in the journal Environmental Research Letters](#), they stress that large scale drilling might not be the best way of increasing water supplies.

Across Africa more than 300 million people are said not to have access to safe drinking water.

Demand for water is set to grow markedly in coming decades due to population growth and the need for irrigation to grow crops.

[Continue reading the main story](#)

Related Stories

[Water map shows billions at risk](#)

[Water - another global 'crisis'?](#)

[Mapping future water stress](#)

[Top of the Document](#)

WATER-EDUCATION PROGRAM TEACHES KIDS ABOUT SOURCE OF LIFE

by **Shaun McKinnon** - Apr. 28, 2012 12:02 AM
The Republic | azcentral.com

WICKENBURG - Aaron Levels held a green viewing tray up to his eyes, studying what looked like a tadpole

squirring in an inch or so of water.

The possible tadpole had most recently squirmed in the Hassayampa River, which cut a quiet path under a footbridge where a group of sixth-graders panned the shallow water like riparian prospectors searching for aquatic life and, perhaps, higher marks.

"It has a tail ... no shell ... no legs," he said, reciting from a checklist that guided the students through an exercise no classroom could duplicate.



"It looks like a leech," another classmate suggested. What they sought was proof for their theory that rivers support the widest range of riparian life, a premise that emerged from a water-education program offered at a growing number of Valley schools.

Tracy Thunem, Aaron's teacher at Ryan Elementary School in Chandler, consulted a laminated chart and eyed the specimen, listening as another student wondered if it might be a midge pupa. Thunem leaned toward the tadpole, but either way, it was better-received than the spiders from the first scoop of sediment.

"Hey, guys," said Chris Gammage, standing in the river, his feet and legs protected by oversize wading bots. "I think I got something here."

For the rest of the morning, Thunem's students and about 100 others from Ryan and cross-town neighbor Frye Elementary School conducted their own investigation at the Hassayampa River Preserve, an area maintained by the Nature Conservancy just off U.S. 60.

Read more: <http://www.azcentral.com/news/articles/2012/04/30/20120430water-education-program-teaches-kids.html#ixzz1tV6jiSE3>

[Top of the Document](#)

GOLDEN ALGAE TOXINS BLAMED FOR FISH DEATHS IN LITCHFIELD PARK

by **David Madrid** - Apr. 27, 2012 09:46 AM
The Republic | [azcentral.com](#)

Tierra Verde Lake, Litchfield Park's popular fishing lake, lost more than 400 fish after the lake was infected with golden algae, fish-killing one-celled aquatic organisms.

Chuck Ransom, Litchfield Park director of field operations, said that on April 9, dead fish were spotted floating in the 4.5-acre lake near Indian School and Old Litchfield roads.

Tests determined that the culprit causing the deaths was golden algae, which releases toxins that affect gill-breathing aquatic organisms, mainly fish and clams.

A golden algae bloom is an explosive growth of algae that releases enough toxins into the water to kill fish and other gill-breathers that come in contact with it, according to the Arizona Game and Fish Department. The toxins cause fish gills to bleed internally, so they lose their ability to exchange water and absorb oxygen. The fish die of a lack of oxygen.

Ransom said in the 12 years he has worked for the city, this is the first time he has seen golden algae in the lake. It cost the city about \$2,500, including manpower, to take care of the problem.

Golden algae aren't harmful to humans or non-gill-breathing animals, the Game and Fish Department said.

Read more: <http://www.azcentral.com/community/westvalley/articles/2012/04/16/20120416litchfield-park-golden-algae-toxins-blamed-fish-deaths.html#ixzz1tV89Q3sZ>

[Top of the Document](#)

FATE OF GRAND CANYON TIED TO TUSAYAN

If ambitious project developed, tiny town will be transformed -- raising a host of potential threats to a treasured national park

by **Kathleen Ingle** - Apr. 14, 2012 04:23 PM
The Republic | [azcentral.com](#)

A tiny town of barely 500 people is overseeing a giant project next to Grand Canyon National Park.

Tusayan, just a mile from the park entrance, has approved zoning for Stilo Development Group's multifaceted proposal: hotels, restaurants, shopping, spas, housing, conference centers, a Native American cultural center, an "edutainment" complex and a dude ranch.

Without knowing the water supply. With a full-time government staff of one (the town manager). With a town council in which four of the five members are employed by the developer or its partners.

What happens next will shape the experience of millions of visitors to the Grand Canyon. It raises a long list of potential threats to the national park, including lights, noise, effect on wildlife, pollution and, most of all, water.

Tusayan, on the main road into the national park, is anything but grand: a nondescript strip of hotels, eateries and a few basic tourist-oriented services. It has no churches, playgrounds or libraries. School and a medical clinic are in the national park. The nearest shopping is in Williams, 50 miles away, or Flagstaff, 75 miles.

Stilo promises to change all that. Its major partner is an Italian real-estate powerhouse, Percassi Group, that's been trying to develop at the Grand Canyon for some two decades.

The group first hit on the Grand Canyon's potential when it was trying to site an outlet mall -- a project quickly dropped after raising a furor.

Next came a much larger mixed-use project, called Canyon Forest Village. Stilo had to spell out all the details because it required a federal land trade. The company spent years and millions of dollars doing all the work to get approval from the U.S. Forest Service and Coconino County (Tusayan hadn't incorporated yet). Then voters shot it down in a referendum in 2000.

This time, Stilo is keeping everything close to the vest. The overall project, which involves three pieces of property, doesn't even have a name.

The company's proposal for its 374 acres is disturbingly short on concrete information and filled with fluffy terms like lively, dynamic, interesting and world-class.

The most glaring omission: Stilo hasn't revealed where it's getting water.

Read more: <http://www.azcentral.com/arizonarepublic/opinions/articles/2012/04/03/20120403fate-grand-canyon-tied-tusayan.html#ixzz1tV9cxLOZ>

[Top of the Document](#)

DRIVE TO EXTRACT MONEY THREATENS ARIZONA'S PREMIER NATURAL WONDER

by **Kathleen Ingley** - Apr. 7, 2012 04:45 PM
The Republic | [azcentral.com](http://www.azcentral.com)

Americans understood two things about the Grand Canyon from the start: This was a place to protect, and this was a place to make money.

Even before John Wesley Powell's historic trip down the Colorado River in 1869, prospectors were staking claims for silver, copper and zinc at the eastern and western ends of the Canyon. But entrepreneurs quickly realized the real gold was in tourism.

By the early 1890s, an adventurous traveler could find tents, meals and mule trips. A rail spur reached the South Rim in 1901, and business took off. Enterprising business people found opportunities on all sides: The popular Bright Angel Trail was a lucrative enterprise, charging tolls until 1928.

The Canyon inspires grandiose schemes for self-promotion and profit. A stunt motorcyclist jumped it (well, actually a side canyon outside the national park), a "jetman" flew over it, and an artist wanted to string bras across it. One company constructed a major operation to mine bat guano, only to go bust because the deposits were too small.

The push to preserve the Grand Canyon came almost as early as the rush to exploit it. Set aside as a forest reserve in 1893, it became a game preserve (1906) and monument (1908) before being designated as a national park in 1919.

Now, Grand Canyon National Park is "one of the most protected pieces of real estate on the planet," park Superintendent David Uberuaga says.

But protection and profit are in conflict.

Read more: <http://www.azcentral.com/arizonarepublic/viewpoints/articles/2012/04/07/20120407business-ventures-threaten-grand-canyon.html#ixzz1tVAeH5Ga>

MINING COMPANY LOBBYISTS ACTIVE AT AZ CAPITOL

By Tony Davis, Arizona Daily Star

Arizona Daily Star | Posted: Saturday, April 7, 2012 2:01 pm

Two bills that would help Arizona's mining industry — and in one case numerous other industries — with environmental matters are moving through the Legislature.

A third such bill already sits on Gov. Jan Brewer's desk.

The bills would:

- Let Freeport McMoRan Copper and Gold store Central Arizona Project water underground in the Tucson area without affecting its right to pump other groundwater.
- Let mines and other industries conduct secret environmental audits of their operations.
- Loosen some requirements of the state's 26-year-old groundwater protection program on mining.

Read the rest of this story Sunday, exclusively in the print edition of the Arizona Daily Star.

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Read more: http://azstarnet.com/business/local/mining-company-lobbyists-active-at-az-capitol/article_b1e699e8-8077-11e1-ad5c-001a4bcf887a.html#ixzz1tgubUXYz

[Top of the Document](#)

WATERBLOGGED BY SHAUN MCKINNON, ARIZONA REPUBLIC

Tribe, enviro groups can defend uranium ban

Wednesday, April 25, 2012 at 03:53 PM

A federal judge will allow an Arizona Indian tribe and four conservation groups to intervene in a lawsuit seeking to overturn a federal ban on uranium mining on public land near **Grand Canyon National Park**.

U.S. District Judge **Frederick Martone** cleared the way for the **Havasupai** tribe, the **Grand Canyon Trust**, the **Center for Biological Diversity**, the **Sierra Club** and the **National Parks Conservation Association** to defend the ban in a suit filed in November by **Gregory Yount**, a uranium prospector.

Interior Secretary **Ken Salazar** in January banned new [mining activity](#) on 1 million acres of public land near the canyon, siding with claims that extracting ore so close to the canyon and the **Colorado River** could contaminate water supplies.

Yount's suit was one of the first seeking to overturn the ban. Several more have been filed since, including [one earlier this month](#) by **Mohave County** and an Alaskan mining [company](#). The same conservation groups say they will seek to intervene in those suits as well.

Read more: <http://www.azcentral.com/members/Blog/ShawnMcKinnon/160663>

Drought: Denver asks residents to cut water use

After a dry winter and a windy spring, the [Denver Board of Water Commissioners](#) has declared a Stage 1 drought and is asking customers to voluntarily reduce water use by 10 percent.

In a [resolution](#), the board said it was trying to shore up reserves in the event that this past winter was the first in a series of dry years, which is what happened in 2002, the start of a decade-long drought across the interior West.

"We're seeing conditions very similar to the drought that began in 2002, where we learned that reservoir storage is only one indicator of drought, and those reservoir levels can drop quickly when we don't get much rain and snow," said **Greg Fisher**, manager of demand planning for [Denver Water](#), the largest water provider on the front range.

During the last dry period, Denver Water nearly experienced shortages in part of its service area, according to a [story](#) by **Bob Berwyn**, who [reported](#) the water board's action in the **Summit County Citizens Voice**.

Read more: <http://www.azcentral.com/members/Blog/ShawnMcKinnon/160661>

[Mohave County sues feds over mining ban](#)

Mohave County sued the federal government on Tuesday over a decision to prevent new mining claims on about 1 million acres of public land near **Grand Canyon National Park**.

The lawsuit claims that Interior Secretary **Ken Salazar** failed to follow the law or scientific findings in closing the land to mineral extraction, a decision the county alleges cost the state and the local communities both revenue and jobs.

The county wants the court to stop Salazar from closing the land and clear the way for new mining claims and operations.

"It's a sorry state of affairs when this county government has to sue the federal government," said **Buster Johnson**, chairman of the Mohave County Board of Supervisors. "We are using our finite resources to pay for a lawsuit to stop the feds from taking our land and our economic future."

Although the 20-year moratorium applies to any new hardrock mining activity, the focus has been on uranium extraction. As prices for the ore rose in recent years, mining companies began filing claims on land near the canyon and one company resumed production in December 2010.



Read more: <http://www.azcentral.com/members/Blog/ShawnMcKinnon/159917>

[Two AZ snails earn protected status](#)

Tuesday, April 17, 2012 at 11:54 AM

[Throwing out the first quagga of the season](#)

Friday, April 6, 2012 at 04:21 PM

[Worsening drought clear in maps](#)

Here's further evidence that Arizona's drought deepened steadily over the last year. The [National Weather Service](#) in [Flagstaff](#) paired the latest [drought monitor](#) map from the [National Drought Mitigation Center](#) with the map from this time a year ago.

Last year, there were parts of Arizona that weren't even abnormally dry. Now, the center reports that 100 percent of the state is either dry or in some level of drought. The worst of it right now is in **Maricopa** County and parts of **Pinal** and **La Paz** counties:

Read more: <http://www.azcentral.com/members/Blog/ShawnMcKinnon/156791>

For associated links and other timely water and environmental blogs on Shaun McKinnon's Arizona Republic site – **Waterblogged** visit <http://www.azcentral.com/members/Blog/ShawnMcKinnon>.

[Top of the Document](#)

JOB BOARD

Check these jobs out on the [AHS Jobs web page](#):

[Stormwater Management Project Manager - City of Flagstaff](#)

[Senior Geohydrologist/Groundwater Modeler - SRP](#)

[Principal Geohydrologist/Groundwater Modeler - SRP](#)

[Water Resources Engineer - MWH](#)

[Top of the Document](#)

ADDITIONAL INFORMATION

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

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

Membership may be renewed by credit card through the AHS website or by mailing a check to the Arizona Hydrological Society, P.O. Box 1882, Higley, AZ 85236. Dues remain at \$45.00 year for regular membership and \$15.00 for students. Please remember that your 2012 membership was included in the 2011 Symposium registration fee!

The AHS Newsletter is edited by [Christie O'Day](#), AHS Executive Director.