



JULY 2011 NEWSLETTER

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VIEWPOINT: FIRE AND FLOOD

Over the last several weeks we have seen flooding, first along the Mississippi, and now in North Dakota and reaches of the Missouri River watershed. Too much hydrology, as Gary Burchard (long-term Tucson Chapter member) says on our AHS LinkedIn page, as the river system reworks the floodplain. We are reminded of the fundamental power of surface water to alter the physical and certainly cultural environment within the reach of the stream.

We have also seen the horrible devastation wrought by flame in the higher elevations of the semi-arid Southwest. Too little hydrology here; I heard an estimate of 1% relative humidity in the forest at the

beginning of the huge Wallow fire. Denuded slopes now dominate over half a million acres from that one fire alone, and others yet burn. The monsoon season approaches, should the standard annual cycle hold. The hydrological consequences could be profound. Where have we seen this before?

The field trips planned for this year's Annual Symposium in Flagstaff, September 18-20, will provide a unique and incredibly timely educational opportunity to visit the locale of the last major fire in northern Arizona. The Schulz Pass Fire produced debris flows and flooding, reaching farther down the fan than anyone had expected. If you want to know the answers to what is going to happen hydrologically after the fires, this field trip is your chance to see it first-hand. Plus the Beaver Creek tour will educate you on research in the watersheds of the forest. These two field trips alone make attendance at the 2011 Annual Symposium in Flagstaff an absolute must for anyone interested in the timely topic of watersheds. Yet even more will be available in the excellent technical sessions now being planned—and it isn't all surface water. A lot of topics are covered under the rubric of watersheds.

The month of July is your last opportunity to sign up at the early registration rate. If you are a consultant, you need this knowledge this year. The new fiscal year has started for state and local governmental entities. Get your training requests in now to attend this important conference. Go to <http://www.azhydrosoc.org/registration.html> to register online (the most convenient way). Now is the time.

Alan Dulaney,

AHS Corporate Board President, 2011

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GOVERNMENT GOINGS-ON

Is a breath of fresh air moving through the empty cubicles at ADWR?

Mike Lacey, a long-time AHS member and principal at Fluid Solutions, Inc., has been selected as the new ADWR Deputy Director. Mike brings a depth of hydrological and managerial expertise to the agency that should be much welcomed. As one of two Assistant Directors, Mike Johnson comes from the surface water side of the agency, and should bring a renewed focus on engineering to ADWR. Tom Buschatzke will start as the other Assistant Director on July 18, in charge of planning. Tom comes from the City of Phoenix where he was Senior Water Advisor, with a wealth of knowledge concerning the Colorado River and the Central Arizona Project. Tom has participated in almost every major water initiative over the last several years, and will bring an interesting new slant to several programs at the agency. A new supervisor for adjudications projects and a new ombudsman/legislative liaison have also been appointed.

New brooms sweep clean. It could well be that many programs at ADWR will be revised and revamped to fit current exigencies. I would look for a re-organization at ADWR sometime over the next few months, and I think the staff will welcome it. I don't think it will be business as usual—these new guys will not long tolerate stale thinking. And this is a good thing for the agency. Cruel cuts in the budget have brought ADWR to a turning point; things can never again be the same as they were in years past, and to remain vibrant, the agency must change and adapt. The new management team could just be the guys to bring that change off. I wish them much success.

Alan Dulaney,

AHS Corporate Board President, 2011

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2011 AHS SYMPOSIUM UPDATE

AHS 2011 SYPOSIUM SPONSORS – THANK YOU!



ARIZONA HYDROLOGICAL SOCIETY 24TH ANNUAL SYMPOSIUM, HIGH COUNTRY CONFERENCE CENTER, FLAGSTAFF, ARIZONA SPONSORS AND EXHIBITORS

Lake Mary Level:



Woody Mountain Level:

[Peabody Energy](#)

Exhibitors:

[Accutest Laboratories](#)

Bill Johnson Equipment Co.

[Zonge Engineering](#)

[Golder](#)

[WDC Exploration](#)

[Electronic Data Solutions](#)

[Engineering and Environmental Consultants, Inc. \(EEC\)](#)

[SonTec/YSI](#)

[Yellowjacket Drilling](#)

[Boart Longyear](#)

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WORKSHOP & COURSE OFFERED BY DR. DENNIS HELSEL, PRACTICAL STATS

[Making Sense of Nondetects and Data Analysis](#)

Conducted by Dennis Helsel, PhD

<http://www.practicalstats.com>

2011 Arizona Hydrological Society 24th Annual Symposium Workshop

1:30 pm to 5:00 pm MST, September 20, 2011

High Country Conference Center

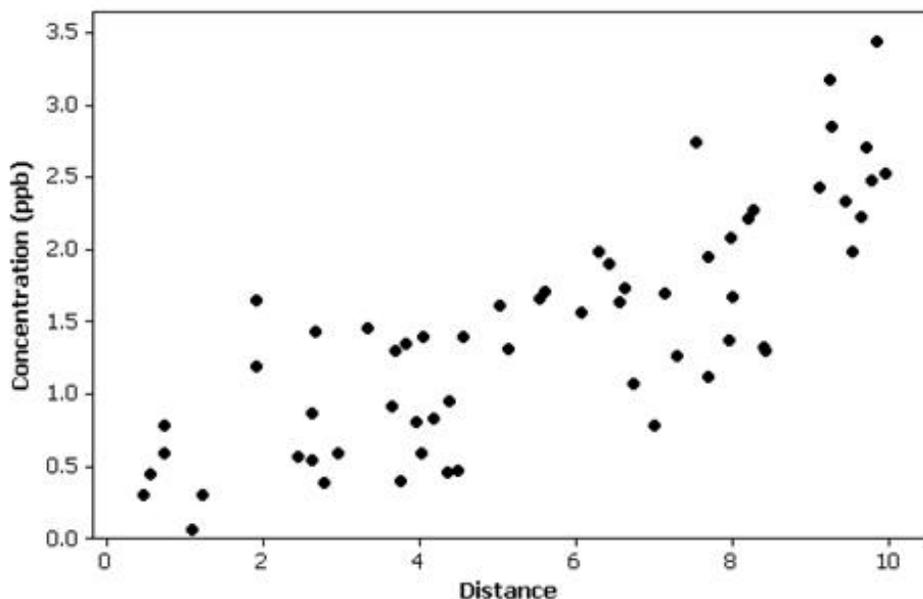
201 West Butler Avenue

Flagstaff, AZ 86001

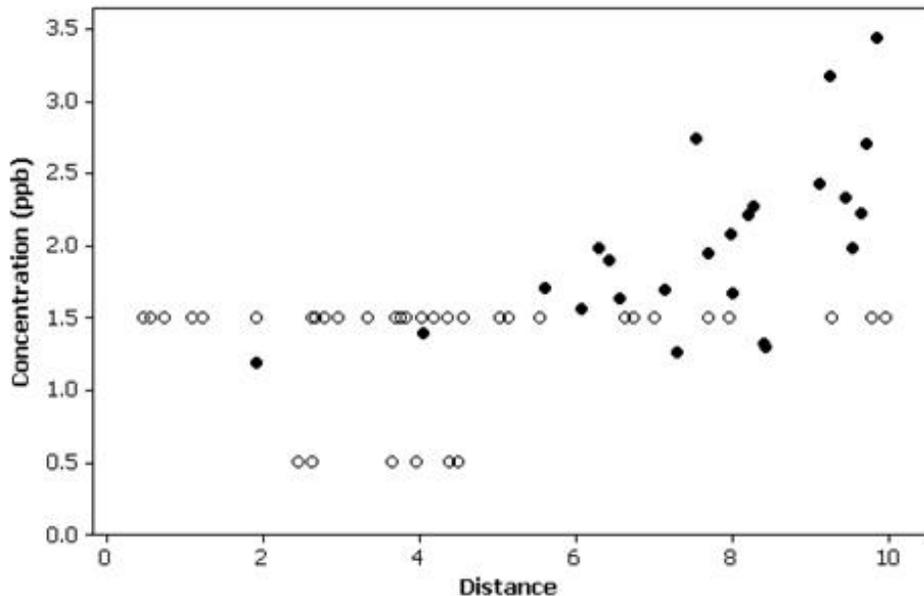
Measurements of trace chemicals in environmental media (water, air, soils, biota) frequently result in values reported only as less than the laboratory reporting limit (“less-thans”, “nondetects”, and “qualified values”). The most commonly used method for incorporating nondetects is to substitute one-half the reporting limit and continue as usual. Unfortunately, this approach may obscure patterns and trends that are present or create patterns and trends that are not actually present in the original data. This approach is fraught with error.

Two easily implemented methods that avoid the problems with substitution produce summary statistics (mean, median), perform hypothesis tests, and compute regression models for data with nondetects. These will be discussed in detail. More complex procedures from the field of survival analysis will also be introduced. These procedures explicitly handle data with multiple detection limits. This workshop is based on Dr. Helsel’s new textbook *Statistics for Censored Environmental Data* (first edition was titled *Nondetects And Data Analysis*), published by Wiley. A CD including a presentation file and other relevant materials will be provided at the workshop.

Below is just one example of the problems inherent in substituting one-half or other fractions of the detection limit for nondetects. These fabricated values are “invasive data” unlike the original values. They can take over and obscure the signal present in the original observations. Substitution is not neutral.



Original data prior to censoring. True correlation equals 0.81. From *Statistics for Censored Environmental Data* (Helsel, 2012).



Data after censoring at detection limits of 1 and 3 ppb and substituting $\frac{1}{2}$ DL (shown as open circles). These invasive data form flat lines at one-half the detection limits, lowering the correlation to 0.55. From *Statistics for Censored Environmental Data* (Helsel, 2012).

Workshop Cost: \$50

PLEASE NOTE: You do not need to be registered for the AHS Symposium to attend this workshop!

An additional, in-depth 2-day Course will be offered by Dr. Helsel after the Symposium!

[Untangling Multivariate Relationships](#) – register online!

Turn confusion into recognizable patterns

UMR covers the multivariate methods of primary interest to environmental science, focusing on what each method is designed to do, when to use them, and when not to. Methods include principal component analysis (PCA), multidimensional scaling, cluster analysis, correspondence analysis, and tests for group differences and trend analysis based on multiple variables. Included are procedures for incorporating nondetects without substitution. Example data sets are analyzed by each student in class. By the end, the choice of which method to use, and how to use it, simply makes sense.

September 21-22, 2011

Flagstaff, Arizona

[Course Outline](#)

A special discount is being offered to AHS Symposium registrants – Registration cost for the 2-day course is normally \$795, but for AHS Symposium registrants it will be \$650!

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PHOENIX CHAPTER NEWS

In place of our standard (and usually illuminating) dinner presentation, the Phoenix chapter is having

a Wine Tasting Fundraiser on **Thursday, July 14, 2011**, hosted by the Terroir Wine Pub in the Scottsdale Seville shopping area at the northeast corner of Scottsdale and Indian Bend roads. Please come and join us for this unique AHS event!

FIRST ANNUAL AHS WINE TASTING FUNDRAISER!

Why: To Raise funds for the **Herman Bouwer Scholarship/Internship Program**



When: Thursday July 14, 2011 (Bastille Day)

6:00 pm to 7:30 pm

Where: Terroir Wine Pub

7001 N. Scottsdale Rd. #157

Scottsdale, AZ 85253

What: Tasting five fine wines selected by the co-owner of Terroir Wine Pub (Rich Petrus, a long-time AHS member) and accompanying appetizers to help fund the Herman Bouwer Scholarship/Internship program.

Who: AHS Members, Students (must be 21 years of age) and Non-members

Cost: \$30 per person donation (you can donate additional funds)

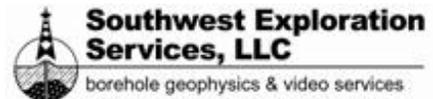
(If you wish to take the tax deduction please make your Check out to the Arizona Hydrological Society Foundation)

The event is limited to the **first 30** people who sign up!



Raffle: As a bonus we are having a canned food drive to help the food banks in the Metro Area. Anybody who brings nonperishable food items (cans, pasta, peanut butter etc) will receive a raffle ticket for some gifts. (one ticket per item)

This event is being sponsored by [Terroir Wine Pub](#), [WDC Exploration](#), [Accutest Labs](#) and [Southwest Exploration Services](#). Thank you!



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

- September 18-20 – The 24th Annual Arizona Hydrological Symposium at the High Country Conference on the NAU Campus in Flagstaff, AZ.
- October 11 – Marie Pearthree, Central Arizona Project, *Navajo Generating Station & related issues* (rescheduled).
- November or December, 2011 – Marnie Greenbie, ADEQ, AZPDES.

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

Do you have a great picture of a confluence you would be willing to share? The 2012 Symposium Committee is actively developing a logo graphic, website, program, and other details and we would love to incorporate your photos. Please contact 2012 Symposium chairperson, Ted Lehman at ted@jefuller.com or 480-222-5709, if you are interested in helping with any of these activities or sharing your photos!

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TUCSON CHAPTER NEWS

There will be no July speaker presentation.

May 2011 Meeting Summary

- Write up provided by Shane T. Clark. Shane has been an AHS member since 2009 and has been the Tucson Chapter Secretary (since January 2010). He is soon to graduate from the University of Arizona with a B.S. in Watershed Hydrology.

"Beneficial Use of Storm Water"

On Tuesday, May 10th, 2011, the Tucson Chapter hosted a special guest lecture by Evan Canfield who is the Chief Hydrologist for the Planning & Development Division of Pima County Regional Flood Control District (PCRFCDD). This talk was held at the offices of Montgomery and Associates, 1550 East Prince Road, Tucson. Here is a brief summary of his lecture for those AHS members unable to attend:

Evan Canfield gave a presentation on optimizing recharge efficiency. Evan spoke about the concerns of water scarcity, storm water quality, the urban heat island, groundwater recharge, and flood mitigation which have resulted in greater interest in beneficially using storm water.

Evan provided an assessment of the beneficial use of storm water for the City/County study and found that lot and neighborhood scales provide the greatest opportunities for storm water harvesting. These opportunities provide primarily a source of water to grow drought-tolerant deep-rooted plants. The results of the study recommended a shift toward more decentralized storm water management practices, such as water harvesting in right-of-ways and greater use of passive water harvesting on individual lots. Along with other interested parties, the PCRFCDD recently conducted a Low Impact Development (LID)/Green Infrastructure (GI) workshop to begin the process of integrating decentralized storm water management techniques into our environment. The workshop events agenda items were: 1.) Dialog, 2.) Current efforts, 3.) Discuss/brainstorm, 4.) Planning for future work. Evan jokingly summarizes these efforts by stating "Thou shall implement LID". Additional suggestions were to implement AZPDES permits, more wide-spread use of the City of Tucson's water harvesting ordinance, and active flood control management.

Since the current methods were developed to address water quality concerns in more humid areas, such as the eastern United States, integrating them into an arid environment is a challenge. However, the District PCRFCDD is planning to integrate these methods into an upcoming neighborhood-scale water harvesting manual and an update of the detention/retention manual.

The AHS Tucson Chapter extends a very warm thanks to Evan Canfield for his informative presentation!

Additionally, the Tucson Chapter would like to thank Montgomery and Associates for providing the space so that this monthly talk could be held!

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FLAGSTAFF CHAPTER NEWS

The next Flagstaff Chapter 2011 Symposium Planning Meeting:

Date: Wednesday, July 20, 2011

Time: 6:00 PM

Location: Peabody Energy
3001 W. Shamrell Blvd., Suite 110
Flagstaff, AZ 86001

Please contact [Brad Hill](#) or [Dana Downs-Heimes](#) for additional information.

2012 ARIZONA HYDROLOGICAL SOCIETY COLORADO RIVER TRIP!!!!

**Guided by Wayne Ranney, Geologist and
Author of "Carving Grand Canyon"**

Dates: June 10 to 16, 2012 (7 days and 6 nights) with a mandatory orientation meeting in Flagstaff on the evening of June 9.

Outfitter: Canyoneers, Flagstaff, AZ

Type of Trip: A two-boat, motorized "Geology Charter Trip" with Wayne Ranney, from Lees Ferry to Peirce Ferry at Lake Mead.

And Day-hikes too: Possible places we might hike are North Canyon, Stanton's Cave, Redwall Cavern, Little Colorado River, Carbon Canyon, Shinumo Creek, Elves Chasm, Blacktail Canyon, Deer Creek Canyon, Havasu Canyon, and National Canyon. Wayne can also make request to the boatmen that we camp at a side canyon so that people are free to hike from camp (typically set up at 3:30 or 4:00 each day).

Total Cost: \$2,395 per person, Flagstaff to Flagstaff inclusive

Included: All boating equipment and guides, all food, use of waterproof bags and ammo cans, tent, sleeping pad, and transportation to and from the river from Flagstaff.

Not Included: Sleeping bag (can be rented from Canyoneers); transportation to and from Flagstaff, hotel costs (special rates will be available to you at the Holiday Inn Express in Flagstaff for this trip), \$12 entrance fee per person to Grand Canyon N.P. (unless you have a National Park Access card), gratuities to the guides, and any items of a personal nature.

Deposit: \$500 per person and is due upon making your reservation - space for you and any accompanying guests cannot be reserved until the deposit is made. The deposit is fully refundable (minus a \$50 cancellation fee per person) up to 90 days prior to the start of the trip (March 10, 2012).

Please be sure you fully understand the deposit requirements before making your deposit.

Booking Procedure: Call the Canyoneers office directly at 928-526-0924 and tell them specifically that you are:

"Referred to Canyoneers by Wayne Ranney for the June 10th Geology Rafting Trip With the Arizona Hydrological Society." After making your deposit, please send an email to: wayneranney@earthlink.net. Wayne will send further updates about gear, expectations, and pre-trip reading.

Balance: A final bill will be mailed to you on or about February 10, 2012 and the balance of \$1,895 per person is due to Canyoneers on or before March 10, 2012

Note: Please make all payments directly to Canyoneers. You will receive all official correspondence from Canyoneers in preparation for the trip but Wayne Ranney will be sending personal e-mails to all members of our group in advance of the trip in addition. These e-mails will contain important pre-trip information in about 6 week intervals.

Other details: Individuals may take only one river trip per year in Grand Canyon. Canyoneers solicits a \$7 donation (\$1 per day) for the Grand Canyon Conservation Fund. Should you choose opt out of this solicitation, the \$7 will not be required. **Please note that Canyoneers reserves the right to promote this trip in their regular advertising venues after July 31 and there is no guarantee that the trip will fill exclusively with AHS members after that date.**

Please call or write to Wayne Ranney if you have any questions at 928-779-1596 or wayneranney@earthlink.net.

This trip is brought to you by the Flagstaff chapter of AHS. This is **THE** opportunity to embark on that river trip you have always been meaning to do, and immerse in geology and hydrogeology (and FUN) of the Grand Canyon with your AHS colleagues! Please join us!

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HYDRO-NEWS

ARIZONA GEOLOGICAL SOCIETY MEETING

The Revival of Kupferschiefer Cu-Ag Deposits and Mining in Europe

Volker Spieth, Kupferschiefer Lausitz GmbH

Sheraton Four Points Hotel Wildcat Room
1900 East Speedway (SE corner of Campbell and Speedway)
Tucson

Lecture at 8:00 PM
Tuesday, July 5, 2011

Reservations are required for the dinner. Admission to the talk only is free. Please also note that although there is limited surface parking around the hotel, there is ample parking in the garage beneath the hotel.

Special Meal Deal for Students! Dinner is *FREE* for students who make a reservation online at the website below. Please bring a student ID with you.

SCHEDULE: CASH BAR @ 6:00 PM, DINNER @ 7.00 PM, TALK @ 8:00 PM. WITH RESERVATION: MEMBER = \$24.00, GUEST = \$27.00. If you do not have a reservation, an extra \$3.00 will be charged. Also, without reservations you may not get dinner. To make dinner reservations please call the AGS answering machine at (520) 663-5295 or reserve online at <http://www.arizonageologicalsoc.org/meeting-information/dinner-reservations> by 5:00 P.M. on the Friday before the meeting. Leave name, number of attendees, and whether a vegetarian or low-salt meal is required. This number can also be used for field-trip reservations and leaving messages for Society officers. Please cancel your reservation via the answering machine if you find that you will be unable to attend.

Abstract

The copper mining revival in Germany and Poland depends on the famous Kupferschiefer-type Cu-Ag deposits, which have been well known in Central Europe since before the Middle Ages when the local aristocracy made their riches from copper and silver mining of the outcropping Kupferschiefer. Today, the Polish Kupferschiefer-copper mining company KGHM is the fourth largest copper producer in the world. New discoveries in Germany may develop into the next large copper mining district.

Kupferschiefer Cu-Ag-PGM deposits show specialized mineralogical aspects that have caused major scientific arguments. Today we know that the Kupferschiefer black shale is of upper Permian age. The development of the metallogenic concentrations lasted for at least another 25 million years. The source of the metals and their specific or rather unspecific, but predictable placement in monotonous, but diverse geological units have

mystified many researchers, from the “syngenetic” to the “epigenetic” school of thought.

The deposits are characterized by a geochemical signature of parallel metallic zones of varying composition. They are relatively thin in vertical dimension and vast in lateral extent. The Kupferschiefer strata are essential as a geological cap for rising and laterally migrating metal solutions. pH, Eh, rock permeability, geologic environment, geothermal fluids and time are the controls of ore deposition. The occurrence of the deposits is always defined by consecutive, sub-parallel lateral bands starting with the “Rote Fäule” hematitic iron which usually is present over a very large lateral area. The next metallogenic “band” is that of economically interesting copper-silver sulfides containing silver and gold and PGM inclusions - from chalcocite to bornite to chalcopyrite with an appreciable amount of organic carbon. This is followed by overlapping bands of lead sulfides, zinc sulfides, and pyrite which grade into the barren, black Kupferschiefer shale. The understanding of these geochemical and metallogenic markers can lead geologists to new discoveries of very large copper-silver deposits that will keep producing for decades to come.

Volker Spieth can be reached at vs.globalmetal@gmail.com.

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AZWWA MEMBERSHIP MEETING, GOLF, SHOOTING COMPETITION, AND PICNIC

Friday July 29th and 30th, 2011

Golf Tournament at Prescott Country Club
Shotgun start at 9:30am

Shooting Competition - 1- 4pm
Prescott Sportsmen Club

6:30PM Dinner — Speaker TBD
Hotel St. Michael Ballroom
205 W. Gurley St. , Prescott, AZ

Sat. July 30

PICNIC, Chili Cook Off and Horse Shoe Tournament
Goldwater Lake, Prescott

A group rate for sleeping rooms is available at:
Hassayampa Inn- \$99 (800-322-1927)
Hotel St. Michael—\$79-\$99 (800-678-3757)
Springhill Suites Marriott- \$119 (928-776-0998)
Tell them you are with the Arizona Water Well Association.
Rooms must be booked by June 29th to receive these rates.

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MINING-CLAIM BAN RENEWED NEAR GRAND CANYON

[By Neela Banerjee: McClatchy Newspapers](#) *Arizona Daily Star*

Posted: Tuesday, June 21, 2011

WASHINGTON - The Obama administration said it intends to place a 20-year ban on new mining claims on 1 million acres bordering the Grand Canyon, moving to protect an area that is a critical water supply to the Southwest and where uranium-mining claims have jumped 2,000 percent over the past seven years.

The ban would extend a two-year moratorium established in 2009 but set to expire July 20. Interior Secretary Ken Salazar said Monday that the Interior Department will extend it until December to allow time to complete

the steps needed to enact the 20-year ban. Mines that are currently operating would be able to continue working.

Salazar emphasized the need to protect the Colorado River watershed from possible uranium contamination. The river provides drinking water to several major Southwestern metropolitan areas, including 19 million people in Southern California.

"What drives us first is protecting the arteries of lifeblood, of water" in the area, Salazar said.

Environmentalists also said the decision would keep the Grand Canyon panorama from being gradually industrialized.

Read more: http://azstarnet.com/news/science/environment/article_de9ab267-0e01-5114-b66f-06380a60c9ea.html#ixzz1Qjs99TRE

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PHOENIX HISTORY: CANALS BRING WATER, PROGRESS

by [Richard Nilsen](#) - Jun. 24, 2011 01:39 PM
The Arizona Republic

Phoenix never had a Wild West; it was built by businessmen and real-estate developers, and the iconic figure of the Valley is not the cowboy but the booster.

"When you look to our founders, yes, many of them were farmers, but they were also business entrepreneurs and visionaries," says Shelly Dudley, historical analyst for the Salt River Project.

"Benjamin Fowler was a businessman; George Maxwell was also very much a businessman. So were attorneys like Judge Kibbey.

"All these people knew what the potential of Arizona was and framed a way for it to progress."

In 1871, the town site was platted in a grid, and plots sold for an average of \$40.

"The canals worked topographically, following the lay of the land," says architect and preservationist Don Ryden, "but the laterals and ditches follow the division of the land. The grid was superimposed on it. The roads and subdivisions of property all follow the grid of the canal laterals."

Read more: <http://www.azcentral.com/centennial/ent/articles/2011/06/24/20110624architecture-phoenix-history-buildings-victorians-bungalows.html>

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PEORIA MAYOR BARRETT LEADS WATER BOARD

Jun. 27, 2011 09:57 AM
The Arizona Republic

Peoria Mayor Bob Barrett was selected earlier this month as president of the Arizona Municipal Water Users Association.

This voluntary, non-profit corporation was established by Valley municipalities to develop an urban water-resources policy and to help make effective use of water resources within the state.

"Bob's professional background in water management, along with his leadership efforts, has helped make Peoria a leader in water conservation and management," said Steven Olson, executive director of AMWUA.

AMWUA member cities include Avondale, Chandler, Gilbert, Glendale, Goodyear, Mesa, Peoria, Phoenix, Scottsdale and Tempe.

Read more: <http://www.azcentral.com/community/peoria/articles/2011/06/27/20110627peoria-mayor-barrett-leads-water-board.html#ixzz1QjnOnm84>

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NAVAJO GENERATING STATION KEY TO STATE WATER SUPPLY

by **Pamela Pickard** - Jun. 29, 2011 12:00 AM
Special for the Republic

One power plant, the Navajo Generating Station, provides nearly 95 percent of the electricity needed to deliver water from the Colorado River to Arizonans. It keeps the pumps running on the Central Arizona Project Canal from near Lake Havasu to the CAP terminus south of Tucson.

Now, the future of that power plant is uncertain.

The U.S. Environmental Protection Agency is set to release new emission regulations for nitrogen oxides, a haze-forming pollutant, at the Navajo Generating Station this year.

The plant has installed \$45 million in new controls for nitrogen oxides. But the EPA favors a different control system that could cost up to \$1.2 billion to install and require millions of dollars in additional expenses every year to operate.

The generating station, whose ownership includes Salt River Project and Arizona Public Service, faces other future uncertainties, including the renewal of land and water leases. If they're required to make a huge investment in pollution controls, the owners could simply choose to close the plant. The consequences would hurt all of us.

Recently, the CAP had the honor of appearing before a joint meeting of the Water and Power and the Indian and Alaska Native Affairs subcommittees of the U.S. House's Natural Resources Committee.

Read more:
<http://www.azcentral.com/arizonarepublic/opinions/articles/2011/06/28/20110628pickard29.html#ixzz1QjoKtxal>

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WATERBLOGGED BY SHAUN MCKINNON, ARIZONA REPUBLIC

No hydrology related blogs were posted during June. 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>.

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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 2011 membership was included in the 2010 Symposium registration fee!

