



NOVEMBER 2011 NEWSLETTER

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VIEWPOINT: PASSAGE

One of the most important things we do is to pass along knowledge to others. Some may be peers, some may be students, some may be the interested public. Hydrology is a complex science, and the ability to pass along hydrologic knowledge is a valuable skill. Those who can do it well are valuable members of our society.

L. Gray Wilson passed away on October 22, 2011 after long illness. For over 30 years, he did hydrologic research at the University of Arizona, first at the Water Resources Research Center, then eventually teaching in the Department of Hydrology and Water Resources. He helped make that department one of the leading hydrology programs of the world. The number of students that learned from him must be numbered in the many hundreds, perhaps thousands. His research into groundwater recharge and vadose zone monitoring proved invaluable to large numbers of professionals. As an outdoors oriented guy, he fit well into the field of hydrology. He officially retired from the Department of Hydrology and Water Resources in 1994, but he never lost his interest in hydrology, never quit working, never ceased to teach and influence others.

In 2003, the Arizona Hydrological Society gave L. Gray Wilson our Lifetime Achievement Award, in recognition of his long career as a research hydrologist and teacher. Then and now, he epitomized the AHS ideal of the professional who educates in and advances the science of hydrology.

L. Gray Wilson will be missed by everyone with an interest in water resources. The sympathies of the entire Arizona Hydrological Society go out to his family and friends. We have lost someone truly irreplaceable.

Alan Dulaney,

AHS Corporate Board President, 2011

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GOVERNMENT GOINGS-ON

And now it's permanent.

The temporary rule that imposed a new tax on municipalities proportional to their population in order to fund the operations of the Arizona Department of Water Resources has now been transformed into the agency's funding base. AAC R12-15-107 was enabled by Senate Bill 1624, which authorized the adoption of the permanent rule.

A bad precedent has been set. The Arizona Legislature has quietly shunted all responsibility for paying for the operations of ADWR off onto the shoulders of another layer of government. ADWR administers water-related statutes and rules across the entire state—admittedly with an emphasis on the Active Management Areas—and for this reason was always funded by the state-wide General Fund. All citizens paid for activities that benefit all citizens, a good concept. Now only the populations of about 30 cities and towns will pay for ADWR operations. The connection between a state-wide agency and state funding has been severed.

ADEQ is not in much better shape financially than ADWR. If the Legislature can separate one agency from state funding, why not another? This slope gets greasier by the minute. If legislators think that by making other levels of government pay for state agencies the state budget can be salvaged, perhaps even reduced so that taxes can be lowered, will they really

stop to think that the very concept is a bad one? Not likely. Ultimately, several state agencies might find that their funding is dependent on something other than state taxes.

One of the worst implications is that the limit on the funds that ADWR can raise with the new municipality fee is currently set at \$7 million. But that limit is solely dependent on the “intent” of the Legislature as expressed in SB 1624. The Legislature can change that intent in any session law. The limit could gradually creep up over time. ADWR has not expressed any desire to increase the limit, but within any agency slashed as much as ADWR has been, the temptation to restore funding to former levels, and perhaps beyond to allow new programs, is inevitable. And it would be very easy for the Legislature to set a new “intent” because it would not impact the state budget. ADWR and the General Fund are now divorced.

There are rumors that the entire matter of ADWR funding will be re-opened in the future. Perhaps so. It would be a good thing to re-connect a state agency with state funding.

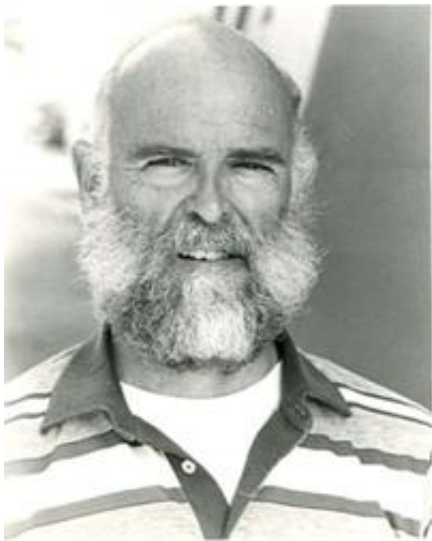
Alan Dulaney,

AHS Corporate Board President, 2011

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2003 AHS LIFETIME ACHIEVEMENT AWARD WINNER IN MEMORIAM

Dr. Lorne Graham (Gray) Wilson



Dr. Wilson, winner of the 2003 AHS Lifetime Achievement Award, passed away at home on October 22, 2011. Gray Wilson will be remembered for his warmth and compassion, and his contributions in advancing the science of hydrology. He inspired many hundreds if not thousands of students and professionals during over 30 years as an educator, researcher, and mentor at the University of Arizona Department of Hydrology and Water Resources (HWR) and Water Resources Research Center (WRRC).

Following completion of his PhD degree in soil science in 1962 from the University of California, Davis, Gray came to Arizona as an Assistant Hydrologist in the Institute of Water Utilization, University of Arizona, Tucson. His research focused on the managing and protecting ground water in Arizona and he is nationally recognized for his seminal work in vadose zone monitoring. Over the course of his career, he has been the principal investigator of numerous groundwater recharge, soil aquifer treatment, and groundwater quality studies in southern Arizona.

Gray was also a devoted father and husband to his family, and loved our desert and its hidden waters. He did not want a memorial service to mark his passing—it was Gray’s wish that you might remember him during a walk in the desert.

Remembrances of Gray Wilson may be sent to [Christie O’Day](#) for posting to a Arizona Hydrological Society website’s memorial to Dr. Wilson. These will be shared with his family.

Donations may be sent to:

Parkinson's Disease Foundation
1359 Broadway, Suite 1509
New York, NY 10018

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PHOENIX CHAPTER NEWS

The next Phoenix chapter dinner meeting will be held **on Tuesday, November 8, 2011**, at SunUp Brewing Co., in midtown Phoenix (on the north side of Camelback Road, just east of Central Avenue). Please join us for a beverage, to share business cards, and talk water!



Location: [SunUp Brewery](#)
322 E. Camelback Road
Phoenix, AZ 85012

Event: *Arizona's Climate In A Warming World: An Uncertain Future In Terms Of Both Temperature And Water*

Dr. Nancy Selover, Arizona State Climatologist & School of Geographical Sciences, Arizona State University

Chapter Board Meeting: 4:30 PM – 5:30 PM

Happy Hour & Dinner: 5:30 PM – 7:00 PM

Program: 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.

Hope to see you there!

Come and meet Dr. Nancy Selover, Arizona State Climatologist, at the November Phoenix Chapter meeting. Nancy will give a presentation on Arizona's unique climate, and will present results from her studies on microclimates and the urban heat island phenomenon.



Nancy Selover received her BS, MA, and PhD degrees from Arizona State University in Geography, specializing in meteorology/climatology. She served as the Assistant State Climatologist from 1999 to 2007, and was appointed State Climatologist in 2007. She works in the [State Climate Office](#) at Arizona State University, providing climate information and data to Arizonans. She does research on the Urban Heat Island and microclimates, and serves on the Governor's Drought Task Force, the Flood Warning Task Force, and the State Hazard Mitigation planning team. She is also the state coordinator for CoCoRaHS, a citizen

precipitation observer network.

Abstract

Arizona's climate is shaped by our geography, which influences both temperature and precipitation. Our unique desert state faces particular challenges in a warming world, but our arid and semi-arid climate and our urban heat island give us a laboratory to test options for facing an uncertain future in terms of both temperature and water.

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

- December 2011 – Marnie Greenbie, ADEQ, AZPDES.
- January 2012 – Planning meeting

PHOENIX CHAPTER OFFICER ELECTIONS

Here are the current candidates for the Phoenix Chapter 2012 board. Anyone who would like to run for a board position please contact [Keith Ross](#), Phoenix Chapter President, or [Christie O'Day](#), AHS Executive Director. Please watch for the ballot coming in an email on November 14th. All ballots will be due by November 27th. Election results will be posted on the website and in the December newsletter.

- President: **Keith Ross**, Atwell, LLC
- Vice-President: **Tom Walker**, Fleet-Fisher Engineering, Inc
- Treasurer: **Kirk Creswick**, Engineering and Environmental Consultants, Inc.
- Secretary: **Angela Bond**, Salt River Project

Phoenix Chapter Board Member (2)

- **Vicki Mills**, ASU Graduate student
- **Rich Siegel**, Salt River Project

Phoenix Chapter Corporate Board Member (2), two-year term

- **Beth Proffitt**, Accutest Laboratories
- Vacant

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

Our next planning meeting is **November 8, 2011 at SunUp Brewery on Camelback at 4 pm**, just prior to the regular Phoenix Chapter Board meeting. Be prepared to brainstorm about advertising, field trips, workshops, another plenary speaker or two, entertainment, etc.

If you have questions or want to get involved please contact Ted Lehman at ted@jefuller.com or 480-222-5709. Looking forward to putting together another successful symposium. This will be the 25th!

TUCSON CHAPTER NEWS

Please join us for the next Tucson Chapter meeting, **Tuesday, November 8, at 6PM.**

Location: Montgomery and Associates
1550 East Prince Road
Tucson, AZ

Social half hour: 6:00 PM

Program: 6:30 PM

[ADWR Tucson AMA model updates](#)

Dale Mason - ADWR

Managing regional aquifer systems within groundwater basins in the arid southwestern U.S. requires the appropriate tools to understand and predict how recharge and withdrawals impact the systems, both spatially and temporally. Groundwater modeling has become a key tool used by water managers to address complex regional hydrologic interactions and their projected impacts on aquifer systems. The Arizona Department of Water Resources (ADWR) Groundwater flow models are currently undergoing updates in an on-going effort to provide the best tools possible in the long-term management of the water resources in the Active Management Areas (AMAs).

The Prescott AMA groundwater flow model is being updated with latest available hydrologic information. The model covers portions of the Upper Agua Fria (UAF) and Little Chino (LIC) sub-basins, and simulates groundwater flow conditions in the Upper Alluvial Unit (UAU) and the Lower Volcanic Unit (LVU) aquifers. Non-linear regression is being used to calibrate all horizontal and vertical hydraulic conductivity zones, steady (long-term) state recharge and steady underflow from the LIC and UAF sub-basins. Other significant modifications include the expansion of an aquitard between the UAU and LVU aquifers near the Prescott airport and the redistribution of natural recharge such that, with respect to previous versions, higher rates of episodic recharge are simulated along major stream channels including Granite and Lynx Creeks. Comparatively lower rates of recharge have been assigned along the peripheral MFR areas.

The SRV model was updated in 2009 with the following improvements: simulation of conditions between 1983 and 2006 (24 annual stress periods), model cell size was decreased to 0.5 mile by 0.5 mile, the geologic interpretation was updated and the Lake Pleasant region was added, and pumpage and recharge datasets were revised. In addition to the model updates, the model was re-calibrated using well specific heads and the annual water budget for the transient period of 1983 to 2006. The model is currently now being updated and will use non-linear regression to calibrate horizontal and vertical hydraulic conductivity and steady state (long-term) recharge. The transient period is also being extended back to 1900 so that the model will simulate the period 1900 to 2010.

The Pinal AMA model has been completely redesigned and updated. The “new” model includes the following enhancements: simulates groundwater conditions from predevelopment (circa 1920) to present time (2009) with annual stress periods, model cell size of 0.5 mile by 0.5 mile, updated geologic interpretation with associated increased model layering from two to three layers, northern boundary extended to include the Gila River through the entire model domain, established database for historic pumping, recharge, and water level observations, and the addition of the USGS SUB-WT package to

simulate land subsidence.

The Tucson groundwater model has been updated and now simulates the period from 1940 to 2009. Improvements to the model include a defined bottom layer to the model, the addition of episodic flood flows distributed along the major drainages, improved historical pumping volumes and distribution, and improved historical agricultural recharge volumes. The model has been re-calibrated using the latest well specific head data.

Two groundwater flow models were developed for the Santa Cruz AMA. One model, the Microbasin model, simulates conditions from the International border north to the Nogales International Wastewater Treatment Plant (NIWWTP). A second model simulates the effluent dominated portion of the AMA from the NIWWTP north to the SCAMA-TAMA boundary. The two groundwater flow models simulate flood recharge and seasonality, and were calibrated over diverse environmental conditions including periods of extreme drought and flood. To use the models as long-term planning tools and address future stream flow recharge uncertainty, the ADWR contracted the development of a stochastic stream flow model. The stream flow realizations associated with the stochastic flow model were combined with plausible pumpage stresses to provide realistic future planning scenarios.

Upcoming meetings:

December - Richard Greenberg – Water Potential on Europa, Click [here](#) for more information on Dr. Greenberg's new book, "Unmasking Europa."

TUCSON CHAPTER OFFICER ELECTIONS

Here are the current candidates for the 2012 Tucson Chapter board. Anyone who would like to run for a board position please contact [Damien Gosch](#), Tucson Chapter President, or [Christie O'Day](#), AHS Executive Director. Please watch for the ballot coming in an email on November 14th. All ballots will be due by November 27th. Election results will be posted on the website and in the December newsletter.

President: **Damien Gosch**, U of A Department of Hydrology

Vice-President **Greg Hess**, Clear Creek Associates

Treasurer: **Dan Guido**, Montgomery & Associates

Secretary: **Shane Clark**, Student, U of A Watershed Hydrology and Management

Tucson Chapter Board Member (1): **Vacant**

Tucson Chapter Corporate Board Member (1): **Marla Odom**, Montgomery & Associates (two-year term)

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FLAGSTAFF CHAPTER NEWS

The next Flagstaff Chapter meeting will be **Wednesday November 16, 6:00 pm**. Location TBA. For updates please contact [Brad Hill](#).

SPECIAL PRESENTATION – PREVIEW OF THE 2012 MCELLHINEY LECTURE

On **Tuesday, November 8 at 3:45** in Room 103 of the Geology building at NAU, Marvin Glotfelty will be giving us an advance presentation on his **2012 McElhiney Lecture**. His year-long lecture tour doesn't officially start till after the NGWA Expo, but we will receive an early preview.

2012 McElhiney Lecture: Life-Cycle Economic Analysis of Water Wells — Considerations for Design and Construction, Marvin Glotfelty, RG, Clear Creek Associates

Following is more information from the NGWA website.

<http://www.ngwa.org/Foundation/mcellhiney/Pages/Future-McElhiney-Lecturer.aspx>

By attending the 2012 McElhiney Lecture presentation, you will be shown how seemingly more expensive initial water well costs may actually pay for themselves in the early life of the well, in addition to providing ongoing dividends in value and economics for many subsequent years.

You will learn how:

- The total cost of the well can significantly increase by using the least expensive “low-bid” approach to well construction in some cases
- Some well construction materials or methods that appear to be beneficial and cost-efficient may have “hidden” costs that can actually increase O&M costs or reduce the useful life of a well
- Analytical methods and techniques can maximize water production and water quality in both new and existing wells.

Several elements of well design/construction that impact the total (life cycle) cost of water wells including screen type, construction material, well development method, and frequency of well cleaning will be discussed.

An example life-cycle economic analysis comparing low-carbon steel vs. stainless steel well screen will be presented. The analysis includes consideration of the actual construction cost of more than 70 municipal wells installed between 1993 and 2010. This analysis was independently performed in 2003, 2008, and 2010, with essentially identical results. Economic elements include:

- Initial capital cost
- Energy requirements for water pumping
- Operations and maintenance costs
- Probable well longevity
- Replacement schedules

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FLAGSTAFF CHAPTER OFFICER ELECTIONS

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ballots will be due by November 27th. Election results will be posted on the website and in the December newsletter.

President: **Vacant**

Vice-President: **Paul Whitefield**, National Park Service

Treasurer: **Dana Downs-Heimes**, CH2M Hill

Secretary: **John Cochran**, Peabody Investments Corporation

Flagstaff Chapter Board Member (1): **Erin Young**, Fluid Solutions

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HYDRO-NEWS

2011 AWRA ANNUAL WATER RESOURCES CONFERENCE



[47th Annual Water Resources Conference](#)

November 7-10, 2011 ~ Albuquerque, NM

The Conference Planning Committee has been hard at work on the [Preliminary Program](#). We had an overwhelming response to our call for abstracts, with over 350 submissions! More than half of all abstracts were submitted to Special Sessions, which were proposed and organized by water-resources professionals spanning a broad spectrum of organizations and interests. We're excited about the Special Session concept because it allowed our members and conference participants to directly inform the conference planning process by proposing the topics that are most important for discussion right now. Topics addressed by Special Sessions at this year's conference will include: climate change, remote sensing, instream flows, surface-water quality modeling, groundwater vulnerability, resource interdependencies, green infrastructure, water resources management, water marketing, and many more.

The Conference Planning Committee includes Laura Bexfield (U.S. Geological Survey), Claudia Borchert (City of Santa Fe), Michelle Henrie (Land and Water Law), Kelly Isaacson (Daniel B. Stephens & Associates), Jesse Roach (Sandia National Laboratories), and Mark Stone (University of New Mexico). Thanks to their efforts, we've assembled a strong Conference Program, which includes:

- High-quality Technical Program, with close to 300 individual oral presentations, nine panel discussions, and a poster session
- Presenters representing 41 states, 11 nations, and 5 continents
- Keynote address by Cynthia Barnett, author of *Blue Revolution: Unmaking America's Water Crisis*

- Awards Luncheon keynote address by Charles Fishman, author of the *Big Thirst: The Secret Life and Turbulent Future of Water*
- Pre-Conference (November 6) Field Trip exploring the surface water and groundwater resources of the City of Santa Fe
- Two pre-conference workshops: one on the USGS-developed SPARROW Decision Support System and another on Integrated Water Resources Modeling
- A Student Career Night that will provide students the opportunity to hear from professionals with a variety of backgrounds
- Three book sales and signing events by Cynthia Barnett, author of *Blue Revolution: Unmaking America's Water Crisis*; Charles Fishman, author of the *Big Thirst: The Secret Life and Turbulent Future of Water*; and David Zetland, author of *The End of Abundance: Economic Solutions to Water Scarcity*.

The Conference will be held at the Hyatt Regency in downtown Albuquerque, conveniently located within walking distance of local restaurants and with easy access to major transportation corridors including the Rail Runner train to Santa Fe and the Rapid Ride bus to the University area.

Have a look at the [Preliminary Program](#) and make your travel plans to join us for the Annual Conference in Albuquerque!

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2011 ANNUAL MEETING OF THE SME

Arizona Conference
December 4-5, 2011
JW Marriott Starr Pass Resort
Tucson, Arizona
www.smenet.org

New Short Course this year!
GARD Guide and Beyond

Sunday, December 4, 2011

OVERVIEW

Acid rock drainage (ARD) is one of the mining industry's most significant and potentially enduring environmental problems. ARD results when sulfide-bearing rock is exposed to oxygen and water, and combined with metal leaching can result in pervasive water quality impacts. Methods are available to prevent ARD formation, but unfortunately these are not applicable to all existing ARD sources. In older closed mines, where ARD has and continues to occur, we are not always able to apply these modern approaches and long-term collection and treatment approaches may be required. These sites can continue to produce ARD representing a significant liability to mining companies, host countries and surrounding communities.

One recent development to support sustainable management of ARD is the Global Acid- Rock Drainage (GARD) Guide. This Internet-based global best practices guide for the prevention and mitigation of ARD was recently published by the International Network for Acid Prevention (INAP). The GARD Guide's objectives are to promulgate best practice in the prediction, prevention and mitigation of ARD. It endorses a risk-based, proactive and consistent approach by encouraging the reduction and control of ARD at its source by incorporating best-management practices into a mine's operation throughout its lifecycle, as part of a "cradle-to-cradle" approach.

COURSE CONTENT

9:00am – 9:15am I. Introduction to the Short Course: *Tom Wildeman*

9:15am – 9:45am II. Introduction, Objectives, and Development of the Guide:

V.T. McLemore

9:45am – 10:15am III. Acid Rock Drainage and Mining Influenced Water:

Tom Wildeman

10:15am – 10:30am **Coffee Break**

10:30am – 11:15am IV. Structure and Content of the GARD Guide: *V.T. McLemore*

11:15am – Noon V. Development of an ARD Management Plan:

V-A. Description of the Model Mine: *V.T. McLemore*

V-B. Prediction Overview: *Tom Wildeman*

V-C. Prevention and Mitigation Overview: *V.T. McLemore*

Noon – 1:15pm **Lunch**

1:15pm – 2:30pm Development of an ARD Management Plan, Continued.

V-D. Treatment Overview: *Tom Wildeman*

V-E. Monitoring Overview: *Tom Wildeman*

V-F. Management and Performance Overview: *V.T. McLemore*

2:30pm – 2:45pm **Coffee Break**

2:45pm – 4:00pm VI. Application of the GARD Guide to the Model Mine:

V.T. McLemore and Tom Wildeman.

4:00pm – 5:00pm VII. Future of the GARD Guide

VII-A. Trends in Prediction: *V.T. McLemore*

VII-B. Innovative Technology Needs and Future Research:

Tom Wildeman

VII-C. Owner and Stakeholder Evolution: *V.T. McLemore*

VII-D. Management and Direction Vision: *V.T. McLemore*

INSTRUCTORS

Tom Wildeman, Colorado School of Mines, Golden, CO
twildema@mines.edu 303.273.3642

Virginia T. McLemore, New Mexico Bureau of Geology, New Mexico Tech
giner@gis.nmt.edu 575.835.5521

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NOVEMBER AEG MEETING

The next AEG meeting will be held on Thursday **November 10, 2011** at **Monti's** located at the SWC of Mill Ave and 1st Street in Tempe. The meeting will start off at 6:00pm with a hosted happy hour, followed by dinner at 7pm and the presentation starting shortly after dinner.

The speaker is **Mr. Lee Allison**, PhD, PG, State Geologist and Director of Arizona Geological Survey.

Please RSVP by Monday November 7th. Thank you and hope to see you there!

Naida Causevic, EIT

Staff Professional

Geotechnical Engineering

AMEC Environment & Infrastructure | 1405 W. Auto Dr. | Tempe, AZ 85284

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WATER RESOURCES RESEARCH CENTER'S ANNUAL CONFERENCE

REGISTRATION IS OPEN!



For WRRRC conference information and early bird rates go to <http://cals.arizona.edu/AZWATER/programs/conf2012>

Please join us on **Tuesday, January 24, 2012**, for The University of Arizona Water Resources Research Center's annual conference, *Urbanization, Uncertainty*

and *Water: Planning for Arizona's Second Hundred Years*, organized in collaboration with the ASU Morrison Institute for Public Policy. The conference will be held at the University of Arizona Student Union Memorial Center, Tucson.

Our opening keynote speaker Robert Lang, Director of Brookings Mountain West and author of *Megapolitan America*—released this fall, will set the stage for discussions with an exposition on growth and adaptation of megapolitan areas. Historian Jack August, author of *Vision in the Desert* and *Dividing Western Waters*, will speak at lunch on the history of water in Arizona's first 100 years.

Grady Gammage will discuss the Morrison Institute's report, *Watering the Sun Corridor, Managing Choices in Arizona's Megapolitan Area*. David Brown and Karen Smith will each present and answer questions about other recently released reports – the *Water Resources Development Commission Final Report* and the Grand Canyon Institute's *Arizona at the Crossroads: Water Scarcity or Water Sustainability?* Knowledgeable speakers, panelists and discussants will offer a variety of perspectives throughout the program. An interactive session at the end of the day, moderated by Grady Gammage, can be expected to generate a lively discussion.

An optional pre-conference workshop, sponsored by the Sonoran Institute and the Lincoln Institute of Land Policy, on Monday, January 23, 2012 will offer a chance for in-depth discussion on the policy options related to *Watering the Sun Corridor*.

We look forward to your participation in this timely forum, to share in shaping Arizona's water future.

If you have any questions, please contact Jane Cripps at jcripps@cals.arizona.edu or call 520-621-9591.

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NWRA 2012 LAKE MEAD SYMPOSIUM

**Nevada Water Resources Association (NWRA)
2012 Lake Mead Symposium Information is
now Available!**

The 2012 Lake Mead Symposium - in conjunction with the 2012 NWRA Annual Conference - will be held at the Tuscany Suites & Casino in Las Vegas, Nevada on March 5-6, 2012.

Call for Abstracts

Don't wait; deadline is November 11, 2011!

This is a perfect opportunity to exchange information, update our industry on projects, and collaborate with your colleagues on new ideas. NWRA will accept abstracts for either oral or poster presentations from both professionals and students! Please [click here](#) for more details on submitting your abstract.

Please watch for additional information about the 2012 Lake Mead Symposium on our website at www.nvwra.org. We look forward for seeing you at the Symposium!

Attendee Registration

Please download registration [form here](#) and send with your payment to:

NWRA, c/o Tina Triplett, P.O. Box 8064, Reno, NV 89507

You can also register online at this [link](#).

Sponsorship Opportunities:

Please download the sponsorship [form here](#) or visit this link for opportunities for your firm to receive recognition for your support of the 2012 Lake Mead Symposium either as an exhibitor or as a sponsor.

Please feel free to contact Tina Triplett, NWRA Executive Director, at 775-473-5473 or creativerno@charter.net for more information.

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UP COMING ADWR WATER LEVEL DATA COLLECTION SURVEY

ADWR is seeking to focus groundwater level data collection activities within areas of the state that are considered to be of the highest priority and interest and would like public feedback on this effort. The Department is gathering information on the feasibility of collecting supplemental water-level data from collaborative monitoring partners to assist with ADWR's groundwater Level Monitoring program. Please click on the following links for overviews of the Department's [Statewide Hydrologic Monitoring Program](#) and [Basic Data groundwater-Level Collection Unit](#)

To foster collaboration and improve efficiency, the Department is currently developing a new online data submittal portal that will facilitate annual reporting by designated water providers, Community Water Systems (CWS) and permitted recharge facilities. The Department is also working to develop new online database tools and services that will provide enhanced public access and querying capabilities to select and download reported water level data.

Additionally, the Department also seeks feedback and suggestions on developing a voluntary water level data reporting program, a program that would be comprised of individuals and organizations that may collect water level data, but are not required to report that data to ADWR, and would be willing to report and share that data with the public. Existing data sharing cooperators include the USGS, USBOR, and the Tucson Water among others.

The survey is designed to collect information and opinions about the water- level data needs, uses and data collection activities of participants. The survey is currently live on the ADWR website and will remain posted through the end of 2011. Individuals or organizations who are interested in participating in the survey should check for the survey's announcement under the "Hot Topics" section of the ADWR website at www.azwater.gov. Results will be tabulated and provided on ADWR Web site early in 2012.

Anybody who may have questions about the survey or any other aspect of ADWR's Water level data collection or Hydrology program can contact Frank Corkhill at 602-771-8537.

Your participation in this survey is greatly appreciated!!

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OPINIONS: FUTURES OF WATER, ECONOMY TIED

by *Karen Smith* - Oct. 2, 2011 07:54 PM

Water resources drive Arizona's economy, including maintaining viable riparian and environmental flows so essential to the \$10.5 billion recreation and tourism industries. Without policy changes now to modify water demand to more sustainable levels, economic growth will be endangered.

Ensuring Arizona's economic future requires recognizing the contribution of water as an engine of economic sustainability, focusing primarily on conservation while acknowledging the need for eventual water augmentation, and developing innovative financing mechanisms to facilitate it.

The Grand Canyon Institute has released *Arizona at the Crossroads: Water Scarcity or Water Sustainability?* The report reinforces and extends in important ways the recent Arizona State University Morrison Institute report *Watering the Sun Corridor*, an examination of water resources for the three-county area of Maricopa, Pinal and Pima. *Arizona at the Crossroads* includes an emphasis on the economics of water supply and demand and includes a call for action through five specific legislative actions designed to place Arizona on a path of more sustainable water use.

In Arizona, water stress can be seen in several areas.

Groundwater is pumped faster than it can be replenished, effectively depriving future generations of adequate water resources.

Years of drought have reduced reservoir levels, making water supplies uncertain. Pressure from human use threatens fish, wildlife and riparian areas.

Finally, the emerging conflict between urban and rural demands poses policy challenges of enormous complexity.

Read more: <http://www.azcentral.com/arizonarepublic/opinions/articles/2011/10/02/20111002water-economy-smith.html#ixzz1cHy77tr5>

Karen Smith, a former deputy director at the Arizona Department of Water Resources and water-quality director at the ADEQ, is a fellow at the Grand Canyon Institute and authored *Arizona at the Crossroads*.

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FACILITY PROPOSED TO TREAT WELL WATER

by **Beth Duckett** - Oct. 9, 2011 09:27 PM
The Arizona Republic

Millions of gallons of water being dumped into the Arizona Canal would instead flow to the taps of Scottsdale water customers, under a new proposal by Motorola Solutions.

The deal would help resolve lingering concerns about the pumping of groundwater from a well in Scottsdale.

After a malfunction in January 2008 allowed untreated water contaminated with the chemical trichloroethylene, or TCE, to flow into the public water supply, Arizona American Water Co. disconnected the Salt River Project-owned well from its drinking-water system.

TCE, an industrial solvent, has been linked to several types of cancer. The incident allowed chemical exposure for up to 16 hours and resulted in a three-day ban on use of the water. Regulators said there was no public health hazard due to the low rate of exposure to the tap water.

Arizona American Water, a private utility, serves 5,000 customers in Paradise Valley and Scottsdale. It is separate from Scottsdale's municipal water system, which serves most of the city.

The SRP well still must be pumped, and the water is treated to prevent a plume containing TCE from expanding northward in the North Indian Bend Wash aquifer.

Under the new proposal, Motorola, Siemens and GlaxoSmithKline would build a new facility to treat the well water. The companies are responsible for the cleanup of the North Indian Bend Wash Superfund site, an 8-square-mile area in Scottsdale where the groundwater contains certain chemicals.

Read more: <http://www.azcentral.com/community/scottsdale/articles/2011/10/09/20111009scottsdale-water-arizona-canal.html#ixzz1cHun0hfT>

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SCOTTSDALE SEEKS PLAN TO RECEIVE TREATED GROUNDWATER

by **Beth Duckett** - Oct. 13, 2011 09:13 AM
The Arizona Republic

Scottsdale will pursue an agreement with Motorola Solutions to remove a hazardous chemical from a local well and deliver the treated water to Scottsdale, reducing the city's pumping of groundwater, a non-renewable resource.

The City Council on Tuesday night unanimously supported the plan, which would divert millions of gallons being dumped into the Arizona Canal to the taps of Scottsdale water customers.

Motorola, Siemens and GlaxoSmithKline would build a new facility to treat the well, known as PCX-1. The treated water would flow via a pipeline to the city's Chaparral Water Treatment Plant.

After an incident in January 2008 allowed untreated water contaminated with the chemical trichloroethylene, or TCE, to flow into the water supply, Arizona American Water Co. disconnected the Salt River Project-owned well from its drinking-water system.

TCE, a widespread groundwater contaminant, is commonly used as an industrial solvent. In September, the U.S. Environmental [Protection](#) Agency released a final health assessment for TCE, which characterizes the chemical as carcinogenic and a health hazard to humans.

The assessment could affect the cleanup methods of the nation's 761 Superfund sites identified with TCE

Read more: <http://www.azcentral.com/community/scottsdale/articles/2011/10/13/20111013scottsdale-council-seeks-plan-receive-treated-groundwater-from-well.html#ixzz1cl0P0QtX>

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MEXICO LOOKS TO EXPORT WATER TO WESTERN STATES

by **Elliott Spagat** - Oct. 16, 2011 12:00 AM
Associated Press

SAN DIEGO - Mexico ships televisions, cars, sugar and medical equipment to the United States. Soon, it may be sending water north.

Western states are looking south of the border for water to fill drinking glasses, flush toilets and sprinkle lawns, as four major U.S. water districts help plan one of two huge desalination-plant proposals in Playas de Rosarito, about 15 miles south of San Diego. Combined, they would produce 150 million gallons a day, enough to supply more than 300,000 homes on both sides of the border.

The plants are one strategy by both countries to wean themselves from the drought-prone Colorado River, which flows 1,450 miles from the Rocky Mountains to the Gulf of California. Decades of friction over the Colorado, in fact, are said to be a hurdle to current desalination negotiations.

The proposed plants have also sparked concerns that American water interests looking to Mexico are simply trying to dodge U.S. environmental reviews and legal challenges.

Read more:

<http://www.azcentral.com/news/articles/2011/10/16/20111016Water1016.html#ixzz1cHw0Jjem>

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ISLAND NATION'S WATER CRISIS MAY BE A WARNING FOR WORLD

by **Nick Perry** - Oct. 16, 2011 12:00 AM
Associated Press

FUNAFUTI, Tuvalu - Palelei Tovia recalls how Tuvalu islanders used to survive droughts with all-night vigils at wells to collect precious freshwater during the moments it seeped into the shafts.

Tovia, now a school teacher, said that during the last bad drought 14 years ago, she stayed up beside a well with her high-school friends, telling each other stories to stay awake. As the ocean tide rose, she said, it would push freshwater up into the well, and they'd take turns scooping it out, cup by cup.

This year's drought on this isolated atoll in the South Pacific Ocean is equally severe, she said, but with a difference: People no longer turn to well water when the rains don't come. It's too contaminated and salty to drink.

"The situation is bad," said Pusinelli Laafai, Tuvalu's permanent secretary of home affairs. "It's really bad."

Experts said the contamination is due in part to development and population growth. But part of it, too, can be attributed to greater recent tidal fluctuations, resulting in unusually high tides that have mixed saltwater in with groundwater.

With climate change expected to push sea levels higher in the decades ahead, Tuvalu could become a bellwether for low-lying islands from the Maldives to Kiribati, where rising oceans threaten to contaminate groundwater to the point where it becomes unable to sustain life.

Read more:

<http://www.azcentral.com/news/articles/2011/10/16/20111016Tuvalu1016.html#ixzz1cHwOnOg9>

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STUDY: BIG DINOSAURS MIGRATED TO FIND FOOD, WATER

by **Alicia Chang** - Oct. 30, 2011 12:00 AM
Associated Press

LOS ANGELES - What did giant plant-munching dinosaurs do when they couldn't find enough to eat in the parched American West? They hit the road.

An analysis of fossilized teeth adds further evidence that the long-necked dinosaurs called sauropods - the largest land creatures - went on road trips to fill their gargantuan appetites.

Scientists have long theorized that sauropods foraged for precious resources during droughts because of their preserved tracks and long limbs that were "ideal moving machines" and allowed them to cover long distances, said paleobiologist Matthew Bonnan of Western Illinois University.

Read more: <http://www.azcentral.com/arizonarepublic/news/articles/2011/10/30/20111030big-dinosaurs-migrated-find-food.html#ixzz1cl1DsqsM>

WATERBLOGGED BY SHAUN MCKINNON, ARIZONA REPUBLIC

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>.

HYDRO JOBS

ENVIRONMENTAL SPECIALIST I - ATWELL

RESPONSIBILITIES/JOB PURPOSE

[Atwell](#) Engineering is seeking an individual to join our growing environmental staff in our Mesa office as an Environmental Specialist I. This position will involve the performance of Phase I and II ESAs, asbestos inspection and remediation oversight, and field assignments involving soil, groundwater and soil gas sampling. Ideal candidate should have approximately five years of experience and a BS in Environmental Science or related field. This is a developmental position that supports the project team by conducting environmental evaluations, assisting in the production of environmental related reports and other related tasks.

SKILLS & KNOWLEDGE / EDUCATION & EXPERIENCE

- Perform Phase I ESA's on residential, commercial, and retail properties.
- Perform Phase II field investigations.
- Perform Asbestos Remediation oversight
- Demonstrate accountability and dependability by completing tasks and assignments accurately and on time, following up as appropriate, taking responsibility for actions, meeting deadlines, following company policies, practices and procedures.
- Strong written and verbal communication skills.
- Technical report writing/editing skills.
- 40-Hour health and safety training (OSHA)
- AHERA Building Inspector and Contractor/Supervisor.

Interested candidates should forward their resume to Matt Shinsky at mshinsky@atwell-group.com.

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!

