



## MARCH 2011 NEWSLETTER

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### VIEWPOINT: PLAN FOR THE PINES

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It's time to start planning for the next Annual Symposium, September 18-20 at the High Country

Conference Center in Flagstaff, our second time at that excellent venue. The small but mighty Flagstaff Chapter is busily planning what looks to be a tremendous event, with great technical sessions, wonderful workshops, and fantastic field trips. All AHS members should block out the dates on the calendars now, because this will once again be an Annual Symposium not to be forgotten. The theme is “Watersheds Near and Far: Response to Changes in Climate and Landscape,” which covers a lot of ground. Plenary speakers include Terry Fulp, Deputy Regional Director of the Bureau of Reclamation Lower Colorado River Area, Dan Brown, Navajo County Supervisor and Co-Chair of the Water Resources Development Commission (which should be wrapping up its report to the Legislature right about then), and Dan Neary, Science Team Leader for the USDA Rocky Mountain Research Station. They will have plenty to say about watersheds they are watching.

The fire in Schulz Pass last summer produced some profound hydrologic effects, including a flood that impacted a subdivision. The pipeline leading from the Inner Basin well field, an alignment almost a century old, was also damaged. The Flagstaff Chapter is planning a field trip to look at what happened during this fire and flood event, a phenomenon that many of us have never seen before. This field trip may prove so popular that the number of attendees may have to be capped. Another field trip is being planned for the Rim country around Stoneman Lake, where several hydrologic studies have been underway for some time. The scientific information to be learned on these field trips will be phenomenal. Those of us who have been in AHS for any time are aware of the high reputation of Flagstaff Chapter for organizing outstanding field trips.

The Call for Abstracts will be coming out in March, both online and via postcard. There will be several topics, and the Flagstaff Chapter is looking at a difficult time in selecting from what likely will be a plethora of fine abstracts. This is a great opportunity for you to get your work heard by professionals who want to know about it.

AHS will be lining up sponsors and exhibitors for the Annual Symposium shortly. Many of you will be called to support what is shaping up as a great conference. This will be an opportunity to get your organization in front of many eyeballs—people who count will be there. You should be one of them. The online registration process will be up and running very soon, so I strongly recommend that you plan now to be in the pines in September!

Alan Dulaney,

AHS Corporate Board President, 2011

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## GOVERNMENT GOINGS-ON

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I think the whole country is aware of how wacky the Arizona Legislature has become this session. Bills limiting what Federal laws will be considered valid and can be enforced, redefining citizenship, and other anti-Washington symbolic measures are rife. It has gotten so bad that cities are now contemplating what laws passed by the Legislature they in turn want to ignore, and folks in Pima County are talking about seceding from Arizona. Where are water laws in all this mess?

HB 2313 would have made Federal properties that could generate revenue subject to eminent domain and directed the Attorney General to condemn them. This would have included the Central Arizona Project canal. Any bets on how much Colorado River water the Feds would have sent down a canal that was seized by the State? Fortunately, cooler heads prevailed at the last minute, and the bill was amended to exclude any improved property held by a reclamation program that involves water rights. SB 1547 seems to be the Senate equivalent.

HB 2457 would make changes in the Underground Water Storage statutes to allow landscaping and turf facilities (golf courses) to become Groundwater Savings Facilities. A golf course could be as profligate with water use as they want to, and call it recharge, earning storage credits. That would undercut water conservation efforts focused on reducing turf irrigation.

HB 2527 is apparently still alive. This bill would require well ownership changes to be recorded with the county recorder when property transfers are made. Presumably well ownership changes would then flow

to ADWR and the Wells55 database, making it more accurate over time with respect to ownership. Wells55 is wildly inaccurate now, as ownership changes are rarely reported. This bill has been amended to specify domestic exempt wells across the State.

HB 2393 would allow emergency transfers of groundwater across basin boundaries in a drought emergency. This grants permanent authority to ADWR, which means they don't have to come back each year for the same authority, as they do now. SB 1219 is the Senate equivalent. These are actually practical proposals.

In the budgetary process it is highly unlikely that ADEQ or ADWR will receive any more money out of the General Fund than they did last year. And both agencies have been clobbered over the last few years. The fees they put in place for applications and reviews did not raise enough money to cover their operations, and ADWR at least is looking at new sets of fees since General Fund monies are disappearing.

The leaders of House and Senate seem determined to meet their self-imposed 100 day Session limit. However, the tough budget issues have not yet (publically) been resolved. So anything can still happen. Stay tuned.

Alan Dulaney,

AHS Corporate Board President, 2011

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## NOMINATIONS DUE FOR 2011 AHS LIFETIME ACHIEVEMENT AWARD

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### -Brad Hill, City of Flagstaff

The Corporate Board of the Arizona Hydrological Society (AHS) is seeking nominations from AHS members for the 2011 AHS Lifetime Achievement Award. Any AHS member or a non-member can be nominated for the award. The award consists of a personal recognition plaque, a rotating plaque listing all past recipients and a \$500 check to an Arizona educational organization of choice by the award recipient. The award is presented at the Annual Symposium to honor an individual who has contributed to AHS, the science of hydrology within Arizona and/or has received national fame for their contributions in the hydrology field.

Past recipients of this prestigious award include: Leonard Halpenny (1995), Dr. Eugene Simpson (1996), Dr. Herman Bouwer (1997), Dr. Sol Resnick (1998), Dr. Errol L. Montgomery (2001), Herbert H. Schumann (2002), Dr. L. Gray Wilson (2003), Gary L. Small (2004), Gail Cordy (2006), and Nick Melcher (2009).

**Lifetime Achievement Award nominations can only be made by current AHS members.** Please refer to the [Symposium section of the AHS website](#) for more information about the award and how to complete a nomination. Your nomination must be submitted by July 1, 2011.

Please contact Brad Hill at (928) 779-7685 or [bhill@flagstaffaz.gov](mailto:bhill@flagstaffaz.gov) if you need more information or visit the AHS website under [Lifetime Achievement Award](#) about the four selection criteria.

## AHS SCHOLARSHIP APPLICATIONS NOW BEING TAKEN!

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The Arizona Hydrological Society (AHS) and the AHS Foundation will award **three \$2,000.00** student scholarships in 2011. The purpose of this award is to encourage full-time students of hydrology, hydrogeology, or any other water-resource-related fields at any Arizona university or college to excel in their area of study. Any junior, senior or graduate student who fits this description can apply.

**Applications for the Scholarship must be submitted by April 30, 2011.**

The scholarship will be awarded during the 2011 Annual AHS Symposium. Please see the [AHS Scholarship web page](#) for more information on how to apply. Please direct questions to [Dr. Aregai Teclé](#).

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## AHS MEMBERSHIP RENEWAL REMINDER

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March is the last month you will receive the newsletter if you haven't renewed your AHS membership! Please renew now if you haven't already. For those of you who attended this year's annual symposium, your 2011 membership was included in both the full registration and a one day symposium registration fees. Membership dues can to be renewed online at: [http://www.azhydrosoc.org/join\\_ahs.html](http://www.azhydrosoc.org/join_ahs.html)

Or by mail the membership form to:  
**Arizona Hydrological Society**  
**P.O. Box 1882**  
**Higley, AZ 85236**

Thank you for your continued support of the Arizona Hydrological Society!

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## PHOENIX CHAPTER NEWS

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### ASU GEOCLUB'S SECOND ANNUAL STUDENT/PROFESSIONAL MEET AND GREET

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**Thursday, March 3rd**

5:30-6:30 PM: Reception in Dietz Museum

6:30 PM: Professional Introductions, PSF 166

7:00 PM: Informal Discussion Groups, PSF 166

This is an opportunity for students to talk to professionals and find out about summer opportunities. These could include internships, scholarships, jobs and more! There will be professionals from Hydrology, Environmental, Mining, Engineering Geology, Geotechnical, Academia, and more!

For a full list of professionals and a short biography, please go to the GeoClub website at <http://asu.orgsync.com/org/geoclub>.

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### Phoenix Chapter March Dinner Meeting

The next Phoenix chapter dinner meeting will be held **on Tuesday, March 8, 2011**, at the SunUp Brewery near downtown Phoenix. Please join us for a beverage, to share business cards, and talk water!

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

**Event:** *Florence In-Situ Leach Mine*  
Mel Lawson, Curis

<b>Chapter Board Meeting:</b>	4:30 PM – 5:30 PM
<b>Happy Hour &amp; Dinner:</b>	5:30 PM – 7:00 PM
<b>Program:</b>	7:00 PM – 8:00 PM
<b>Cost:</b>	\$15 member, \$20 non-member, \$5 student

RSVP with Kirk Creswick at [kcreswick@eecphx.com](mailto:kcreswick@eecphx.com) or 602-248-7702.

Hope to see you there!

BIO: MEL LAWSON, CURIS VP PROJECT DEVELOPMENT

Mel Lawson's career in the mining industry spans more than 40 years, and his extensive experience includes mining project development and operations. He holds a BSc in Mining Engineering and has built his career around mine start-ups, operations and projects, with proven experience in underground and surface operations, project management and construction. He has worked on an array of international projects throughout Canada, the United States and New Zealand and possesses strong operational and technical abilities with hands-on experience in major project management, Feasibility Studies, project permitting, contract preparation, project and construction management, project start-up, policy development and administration.

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**Future Event Calendar (see also calendar on [www.azhydrosoc.org](http://www.azhydrosoc.org))**

- April 12 – **AEG/AHS** Student Night April 12th at **ASU**
- April 12 – **Steve Acquafredda**, *A Municipal Provider's Overview of Arizona Water Resources* at Buffalo Wild Wings, 705 South Rural Road, Suite 101, Tempe
- May 2011 and beyond – Anyone with a suggestion for a monthly meeting topic please contact [Tom Walker](#), Phoenix Chapter Vice President.

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## TUCSON CHAPTER NEWS

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### March 2011 Meeting Announcement

The Tucson Chapter will meet on **Tuesday, March 8, at 6PM**. The meeting will be held at the offices of Montgomery and Associates, 1550 East Prince Road, Tucson. The meeting will start with a social half-hour at 6:00 PM, followed by the regular meeting at 6:30PM.

**At this meeting, Wally Wilson of Tucson Water will give a presentation on optimizing recharge efficiency.**

Wally Wilson has over 20 years experience as a hydrogeologist performing all levels of environmental investigations and remediation involving groundwater, surface water and soils. Mr. Wilson combines extensive experience in regulatory compliance in half a dozen western states with strong knowledge of Arizona environmental laws and permits. He has been an integral part of Tucson Water's long range planning process and water resources development for the past 8 years. Mr. Wilson is currently the Lead Hydrologist overseeing the Recharge and Special Projects Unit. This group of hydrologists monitors and optimizes the Utilities four major recharge and recovery projects which provide the City with both renewable drinking water and reclaimed water.

Abstract:

## Optimizing Recharge Efficiency - Case Study - SAVSARP

In 2008, Tucson Water began operating the Southern Avra Valley Storage and Recovery Project (SAVSARP). Prior to the initiation of recharge, instrumentation was put into place both above and below ground to provide “real-time” data for monitoring and optimizing recharge operations. Collection and analysis of real-time, empirical data has been instrumental in operation strategies that have exceeded recharge expectations for the SAVSARP facility. In addition, careful attention to the real-time data has highlighted actual versus perceived limitations on recharge capacity of individual basins and the facility as a whole.

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### **WRRC EVENT: MARCH 8 BROWN BAG - SUCCESSFULLY REDUCING YOUR GROUNDWATER FOOTPRINT AND SECOND AND THIRD ORDER EFFECTS**

**Tuesday, 3/8/11 from 12:00 PM to 1:30 PM**

**Location: WRRC, Sol Resnick Meeting Room, 350 N. Campbell Ave., Tucson, AZ**

#### **Event Summary**

Speaker: Kimberlee Mulhern, Chief, Environmental and Natural Resources Division

Fort Huachuca has been very successful at reducing its groundwater footprint through conservation, reuse, and recharge, but there are second and third order effects of doing so. Conservation reduces the amount of water available for treatment, reuse, and recharge. Effective conservation also results in increasing concentrations in influent at a wastewater treatment plant that require adjustments in the treatment processes. Ms. Mulhern's presentation will explain how Fort Huachuca has been successful and how it is coping with its challenges.

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### **WRRC EVENT: MARCH 23 BROWN BAG - ARIZONA'S WATER RESOURCES 101: HOW ARIZONA IS PLANNING AND INVESTING IN ITS MOST IMPORTANT RESOURCE**

**Wednesday, 3/23/11 from 12:00 PM to 1:30 PM**

**Location: WRRC, Sol Resnick Meeting Room, 350 N. Campbell Ave., Tucson, AZ**

#### **Event Summary**

Speaker: Warren Tenney, CAP Board Member and Assistant General Manager, Metro Water

This presentation will give an overview about the policies and management for the State's three water resources - groundwater, surface, and effluent. Presentation developed by the Water Resources Committee of AZ Water Association, a state wide organization for water professionals. [www.azwater.org](http://www.azwater.org)

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## **FLAGSTAFF CHAPTER NEWS**

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### **Next Flagstaff Chapter/2011 Symposium Planning Meeting:**

**Date:** Wednesday, March 30th, 2011

**Time:** 6:00

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

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**Mark the date! Please welcome Flagstaff Chapter speakers:**

Ms. Carol Hill, Department of Earth and Planetary Sciences, University of New Mexico; and Mr. Wayne Ranney, Coconino Community College, **will give a presentation on:**

**Karst Hydrology of Grand Canyon, Arizona**

April 13<sup>th</sup>, 2011 in Flagstaff (location to be announced in next month's Newsletter).

**Don't miss this compelling presentation on confined cave formation in the Redwall-Muav aquifer!**

**FLAGSTAFF INTERN SCHOLARSHIP WILL NOT BE OFFERED FOR 2011**

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Due to the level of effort involved in hosting the 2011 AHS Annual Hydrological Symposium and a lack of participating local employers the Flagstaff Chapter will not be offering the AHS Flagstaff Intern Scholarship in 2011. It is anticipated that the scholarship will offered again in 2012. Any interested student is welcome to apply for either the [Herman Bouwer Intern Scholarship](#) or the [Leonard Halpenney Intern Scholarship](#). All the AHS intern scholarships are available to any qualifying student enrolled in an Arizona college or university hydrology related field of study.

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**HYDRO-NEWS**

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**ARIZONA GEOLOGICAL SOCIETY MEETING - MARCH 1**

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**EXPLORATION OF URANIUM-BEARING BRECCIA PIPES IN NORTHWEST ARIZONA**

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**Kris Hefton**  
**Director and Chief Operating Officer**  
**Vane Minerals PLC**

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

**Lecture at 8:00 PM**  
**Tuesday, March 1, 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.*

**SCHEDULE: CASH BAR @ 6:00 PM, DINNER @ 7.00 PM, TALK @ 8:00 PM.**

**WITH RESERVATION: MEMBER = \$24.00, GUEST = \$27.00, STUDENT = \$10.00**

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**

Dan Hogan, while exploring for copper in 1893, unknowingly discovered what would become the first solution-collapse breccia pipe uranium mine. Hogan staked and patented his Orphan Lode Claim over the unusual, isolated outcrop where he found copper. In 1951, uranium was discovered in the Orphan copper mine and subsequent study determined the origin of the occurrence.

Economic, uranium-bearing, solution collapse breccia pipes are unique to the southwest part of the Colorado Plateau. The pipes are formed by dissolution of underlying carbonate rocks resulting in the failure and collapse of overlying formations and subsequent upward stoping to the point of forming a cylindrical pipe. The stratigraphic range is the Mississippian Redwall Limestone to the Triassic Chile Formation. In the early 1970's, using the Orphan model, several uranium companies including Gulf Resources, Phillips Uranium, Noranda, and Western Nuclear commenced exploration. The indication that the district could overtake all other uranium regions in the USA in terms of grade, averaging near 1% U<sub>3</sub>O<sub>8</sub>, set off an intense land rush. Early discoveries were made using aerial photography and satellite imagery to identify circular features. However, most of the easily identifiable pipes were found and efforts began to incorporate geophysics, geochemistry, and field mapping. The use of radiometric techniques has also discovered a breccia pipe, but the presence of uranium at depth is not certain without drilling. The concern that not all pipes stope to surface and, therefore, may not be detectable, remains a serious exploration challenge.

To date, a total of 15 breccia pipe uranium deposits (+1M lbs U<sub>3</sub>O<sub>8</sub>) have been confirmed for a total of 40M lbs of U<sub>3</sub>O<sub>8</sub>. 23M lbs U<sub>3</sub>O<sub>8</sub> have been produced from 9 of these. Although production and some exploration have resumed due to renewed interest in nuclear energy, the area is not undergoing activity on the scale seen earlier due to uncertainty cast by lawsuits and government agency decisions driven by special interest groups and politics. The lack of available geological experience in uranium also poses problems. However, the breccia pipe district represents an important strategic uranium resource for the USA and holds excellent potential for discoveries, but remains incompletely understood.

**Kris Hefton can be reached at [kris.hefton@vaneminerals.com](mailto:kris.hefton@vaneminerals.com)**

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## **TEMPE WON'T TREAT LAKE'S WATER FOR PADDLEBOARDING ACTIVITY**

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*[Tempe City officials don't consider sport a swimming activity](#)*

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by **Dianna M. Nájnez** - Feb. 14, 2011 12:00 AM  
The Arizona Republic

Tempe spends hundreds of thousands of dollars each year to ensure Town Lake's water [quality](#) is safe enough for the handful of swimming activities hosted annually at the lake.

But city officials have no plans to meet those [safety standards](#) when they debut stand-up paddle boarding this month.

The sport, which pairs surfing and canoeing, has become a popular water activity across the country. It involves standing on a long, buoyant board that looks like a surfboard and using a paddle to row.

Some experts say that with Town Lake's history of water-quality problems, paddle boarders who fall into the lake could end up with skin rashes and eye and nose irritation from high pH levels, which increase the alkalinity of the water. City officials say the lake seldom exceeds the maximum recommended pH levels and that any contact with the water would be so brief that it would not be harmful.

Most of the year, the water in Tempe Town Lake is unfit for swimming. Before events such as the Ironman Arizona triathlon in November, the city takes steps to improve water quality so swimmers are safe.

Town Lake's west-end dam burst this summer. By fall, the lake was refilled. Arizona Department of Environmental Quality officials said the water quality should improve with the new water. But Tempe weekly samples showed the pH of alkalinity last month was above the 9.0 maximum state standard for swimming. The most recent readings



were 9.1 for the first week of this year and 9.2 for the second week.

Read more: <http://www.azcentral.com/community/tempe/articles/2011/02/13/20110213tempe-town-lake-water-paddleboarding.html#ixzz1FBDD2my6>

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## **CONTAMINATION PLUME IN SW VALLEY DISCUSSED WITH FIRM'S VP**

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by **David Madrid** - Feb. 21, 2011 08:03 AM  
The Arizona Republic

The Community Advisory Group that monitors a [plume of contamination threatening Southwest Valley drinking-water wells](#) had a spirited discussion last week with a representative of the company responsible for the plume.

Crane Co., based in Stamford, Conn., is responsible for stopping the spread of the Phoenix Goodyear Airport north plume.

The Phoenix Goodyear Airport Superfund Site contains two contaminated plumes, divided into north and south.

The north plume has been spreading, but Anthony Pantaleoni, Crane's vice president of [environment](#), health and safety, said the plume is moving away from Avondale and Litchfield Park wells.

Goodyear has had to close four wells because of the contamination.

The source of the north plume pollution was Unidynamics Phoenix Inc., established in 1963 as a defense and aerospace research, development and manufacturing plant.

The plant disposed of its waste by dumping it into dry wells and unlined oxidation ponds. Most of the contamination is trichloroethylene, more commonly called TCE.

Read more: <http://www.azcentral.com/community/swvalley/articles/2011/02/18/20110218southwest-valley-contamination-plume.html#ixzz1FBGQs4UY>

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## **NEW GILBERT BOARD WILL PROMOTE GREEN POLICIES**

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by **Srianthi Perera** - Feb. 23, 2011 08:25 AM  
The Arizona Republic

In its quest to adopt and promote more environmentally-friendly [policies](#), Gilbert is forming an Environmental and Energy Conservation Advisory Board and looking for residents to join it.

The board will expand the work of the [Environmental](#) Programs Task Force, which was disbanded recently by the town. Councilman John Sentz will be the liaison.

Applicants would fill nine regular positions and one alternate position. The rules and regulations that apply to the formation of Gilbert's boards require that task force members would have to reapply to be eligible for consideration.

"The bylaws are written, it should go fast and we should meet within two months," said Tim Rinesmith, former task force chairman.

The task force, created by council in December 2007, was a temporary panel. It recommended the town develop measures and policies that encourage green commercial buildings and closer connections with schools for

environmental outreach programs.

Read more: <http://www.azcentral.com/community/gilbert/articles/2011/02/23/20110223gilbert-board-green-policies.html#ixzz1FBHM7nXg>

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## SECURING ENOUGH WATER WILL CHALLENGE SOUTHWEST

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### *Slowing down climate change will improve odds*

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by **Frank Ackerman and Elizabeth Stanton** - Feb. 12, 2011 12:00 AM  
Special for the Republic

Climate change often seems like something remote, perhaps affecting polar bears, or our great-great-grandchildren. The scarcity of water, on the other hand, is all too immediate, with the recent years of drought threatening present-day patterns of life throughout the Southwest.

What happens when the groundwater is gone and the rivers run dry? If this sounds like a bad movie, we've all been forced to watch a preview of it the past few years.

At the risk of giving away the plot, climate change turns out to be one of the major villains in the water crisis that's coming soon to a location near you. It's not the only culprit; even if there were no climate change, water is already being used at unsustainable rates.

Over the next century, water use in Arizona, [California](#), Nevada, New Mexico and Utah will more than double (a 120 percent increase), just from population and income growth.

A study we've just completed shows the changing climate will make a bad situation worse, increasing water consumption by an additional one-third of today's levels of use. There is simply no way to get the amounts of water needed to support current styles of use into the future.

Neighboring states have little if any water to spare. Ocean desalination is expensive, energy-intensive and environmentally controversial. Groundwater is bound to run out someday: It is being used far beyond its recharge rate in California and Arizona, and probably in other states as well.

Read more:

<http://www.azcentral.com/arizonarepublic/opinions/articles/2011/02/12/20110212ackerman12.html#ixzz1FBIm4y1O>

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## WATERBLOGGED BY SHAUN MCKINNON, ARIZONA REPUBLIC

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### *ADEQ gets a new boss*

Thursday, February 24, 2011 at 02:09 PM

**Henry Darwin**, a former deputy director of the [Arizona Department of Environmental Quality](#), has been named director of the agency.

Darwin, who has been acting director since December, replaces **Benjamin Grumbles**, who left ADEQ and Arizona for a job in Washington D.C.

A **Yuma** native, Darwin previously ran ADEQ's water quality division and has managed programs related to [air quality](#), water quality and the state's underground storage tank compliance regulations. Before joining ADEQ, Darwin worked as in-house environmental counsel for **Salt River Project** and, briefly, as an assistant attorney general on assignment to ADEQ's hazardous waste program.

Darwin graduated from the **University of Arizona** with a degree in hydrology and earned his law degree from the [Northwestern School of Law at Lewis and Clark College](#). He has received awards from ADEQ and the U.S. [Environmental Protection Agency](#).

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## [Interior: Ban uranium mining on 1M acres?](#)

Thursday, February 17, 2011 at 01:47 PM

The **U.S. Interior Department** will release its [environmental review](#) Friday of a plan to ban hardrock mining for the next 20 years on public lands near the **Grand Canyon**, but the government won't yet commit to the scope of the ban.

Interior Secretary **Ken Salazar** in July 2009 **temporarily halted** mining claims on 1 million acres around the canyon, citing concerns that extracting uranium threatened water supplies and other natural resources. Salazar said scientists would study a longer-term ban during the two-year moratorium.

The draft environmental impact statement outlines four proposals. One would allow mining to continue without limits. The other three would halt new mining and exploration for 20 years on **1 million acres**, **650,000 acres** and **300,000 acres**.

The Interior Department did not designate any of the four options as "preferred" as government agencies often do, although the review was based on Salazar's original proposal to withdraw 1 million acres for 20 years. The agency did not explain why none of the options was singled out.

The agency cannot permanently withdraw lands from mining without congressional action. Rep. **Raul Grijalva**, D-Ariz., [proposed a permanent ban](#), but the measure won only limited support, even with his own party in control of Congress and the White House. With Republicans in charge of the House, Grijalva's bill is unlikely to come up for a vote at all.



Read more:

<http://www.azcentral.com/members/Blog/ShawnMcKinnon/119135>

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## [Dry January = shrinking snowpack](#)

Tuesday, February 8, 2011 at 04:31 PM

In the desert, a good water year can turn into a stinker between Christmas and Groundhog Day and that's what happened in **Arizona**, where a dry January -- egged on out in the Pacific by **La Niña** -- kicked sand in the face of a weakening snowpack.

Precipitation on the major watersheds was significantly below average, according to the [latest survey](#) by the [Natural Resources Conservation Service](#), which monitors snowpack and forecasts water supplies. For January, precipitation ranged from 2 percent of normal on the **Verde River** to 13 percent of normal on the **San Francisco-Upper Gila** basin.

Snowpack is still decent in some areas as a result of above-average rain and snow during December. According to the NRCS, the **snowpack levels** for the major basins are:



- San Francisco-Upper Gila >> 49 percent of average

- Little Colorado River Headwaters >> 60 percent
- Upper Salt River >> 63 percent
- Mogollon Rim >> 70 percent
- Chuska Mountains >> 91 percent
- Verde River >> 93 percent
- San Francisco Peaks >> 111 percent

But with so little snow measured in January and dry conditions predicted through March, the NRCS has adjusted its stream flow forecasts. The range now is 30 to 45 percent for the runoff season.

Read more: <http://www.azcentral.com/members/Blog/ShawnMcKinnon/118041>

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### [Canyon flood: Sand and fish. Lotsa fish.](#)

Tuesday, February 8, 2011 at 03:40 PM

The controlled floods on the **Colorado River** below **Glen Canyon Dam** helped build beaches and wildlife habitat in the **Grand Canyon**, but they also swept a lot of rainbow trout downstream into native fish territory.



After a 2008 flood, rainbow trout survival rates soared and, at the confluence of the main-stem Colorado and the **Little Colorado River**, the trout population densities increased 800 percent, [according to a report](#) released Tuesday, the **U.S. Geological Survey**.

That's not good news for native humpback chub, the endangered fish species that clings to survival in the waters where the little Colorado empties into the big river. Trout can out-compete the chub for food or, just as likely, eat the chub as food. The government actually removed tens of thousands of trout -- many during nighttime outings in electrofishing boats -- in an effort to improve conditions for the chub, which makes the return of the non-native fish especially vexing.

The report says the effects of the floods on chub should be considered as the government considers new high-flow experiments in the canyon.

Read more: <http://www.azcentral.com/members/Blog/ShawnMcKinnon/118038>

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

## AHS JOB BOARD - FEBRUARY

### SCIENCE DIPLOMACY FELLOWSHIP

**Date posted: 2/27/2010**  
**Location: Yemen**

Science Diplomacy Fellowship: The Water-Energy Nexus in Yemen

The [Federation of American Scientists](#) (FAS) International Science Partnership is recruiting participants for its American-Yemeni science partnership project. This project, which begins in June 2011, will develop an interdisciplinary research project between early-career American and Yemeni scientists and engineers that addresses the critical challenge of developing and implementing affordable, sustainable solutions for providing reliable water and energy services to urban customers in water scarce environments. Fellows will participate in a one week visit to Yemen to collaborate with Yemeni colleagues and will also contribute substantively to the research team's research and publications, participate in conference calls and virtual meetings with team members for one year, and work with team members and FAS staff to develop a long term research and funding strategy for their work.

For more information and instructions on how to apply for this fellowship, go to:

<http://www.fas.org/programs/energy/ISP/ISP%20Request%20for%20Proposals-February%202011.pdf>. This position closes on March 22, 2011.

For inquiries or to submit your application contact:

Lindsey Marburger  
Federation of American Scientists  
(202)454-4696  
[lmrburger@fas.org](mailto:lmrburger@fas.org)

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## SENIOR MINE GEOLOGIST

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**Date posted: 2/27/2010**

**Location: Saudi Arabia**

Arabian American Development Company

The Arabian American Development Company is looking for a senior level mine geologist for their new Cu-Zn massive sulfide deposit Al Masane mine in Saudi Arabia. Salary and benefits are excellent. This job has not yet been officially advertised. For details about the company and the mine, see <http://arabianamericandev.com/>, especially [http://arabianamericandev.com/index.php/static/2010\\_september\\_al\\_masane\\_mine\\_progress](http://arabianamericandev.com/index.php/static/2010_september_al_masane_mine_progress).

For details about the position, contact:

Mohamed B Elkomi PhD.  
5300 Columbia Pike # 606  
Arlington, VA 22204  
Tel: 703-933-7384  
Cell: 703-217-4830  
email: [elkomi@yahoo.com](mailto:elkomi@yahoo.com)

For additional details on working in Saudi Arabia and references, contact:

Robert J. Kamilli, Research Geologist  
Tucson Office, Western Mineral and Environmental Resources Science Center  
U.S. Geological Survey  
520 North Park Avenue, Suite 355  
Tucson, Arizona 85719  
Phone: 520-670-5576  
E-mail: [bkamilli@usgs.gov](mailto:bkamilli@usgs.gov)

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## SENIOR HYDROGEOLOGIST

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**Date posted: 2/27/2010**  
**Location: Phoenix, AZ**

Freeport-McMoRan Copper & Gold Inc.

[Freeport-McMoRan Copper & Gold Inc.](#) is a leading international mining company with headquarters in Phoenix, Arizona. We operate large, long-lived, geographically diverse assets on four continents, with significant proven and probable reserves of copper, gold and molybdenum. As a core value, we pledge to continuously improve in meeting our commitment to work in the most safe, inclusive, environmentally and socially responsible manner practicable. Safety and health initiatives, both on and off the job, are a critically important investment in our employees.

We offer outstanding opportunities for individuals seeking a challenging, exciting and rewarding work environment for a company that supplies the world with metals that will sustain and expand economies and build infrastructure in developing nations. A world of opportunities is available to individuals who share in our commitments. We are seeking a:

#### Senior Hydrogeologist Phoenix, AZ - Job # 1100267

Provide professional, knowledgeable, and timely service to assist other Land & Water staff and worldwide business units in resolving water supply and water rights issues. Procure/oversee consultants, manage hydrogeologic projects, apply hydrogeologic principals, perform hydrogeologic analyses and provide technical support to legal counsel.

##### Job Duties:

- Conceptualizes all aspects of potential projects; prepares scopes of work and Requests for Proposal; evaluates consultant submittals and recommends consultant selection; oversees consultant's project work; edits work products; and manages project budgets and other project management duties.
- Performs hydrological/hydrogeologic assessments and oversees groundwater and surface water investigations for operations. Work involves research, compilation, and interpretation of complex hydrogeologic data.
- Applies basic knowledge of water rights and legal issues to water supply problems at operations. Assist in conducting water assessments of operations.
- Provides assistance and coordination with engineering and exploration staff to determine how hydrogeological problems can best be resolved.
- Provides leadership to hydrogeologists and other professional staff, through guidance with project assignments and problem resolution. Works effectively with, and directs the activities of, engineers, scientists, regulatory agency personnel, contractors, and consultants.
- Keeps updated on new materials and procedures, and maintains a current knowledge of water rights topics and water regulations. Participate in stakeholder groups and public agency meetings.

##### Qualifications:

- Bachelor's degree in Hydrogeology, Geology, Hydrology, Water Resources, or related discipline.
- Ten (10) years of relevant experience.
- Knowledge of the principles and methods used in complex hydrogeological analyses, including groundwater modeling; production well siting, design, installation, and testing; and appropriateness of different drilling methods and geophysical techniques.
- Current knowledge and understanding of water right topics, issues, and water regulations as they apply to the various Freeport-McMoRan mining operations.
- Capable of communicating effectively, both orally and in writing.
- Skilled in managing hydrogeological projects and budgets.
- Ability to research and analyze information of considerable difficulty with attention to detail and draw valid conclusions.
- Capable of organizing and managing multiple complex projects concurrently and work under pressure with short deadlines and frequent priority changes.
- Ability to work with minimal supervision and take the initiative.
- Ability to use appropriate analytical and problem solving techniques, think creatively and conceive innovative solutions.

- Proficiency in Microsoft Office Word, Excel, PowerPoint, and Outlook.
- Ability to work with general office equipment such as a personal computer and keyboard, facsimile machines and photocopier.
- Ability to develop and maintain awareness of occupational hazards and safety precautions. Skilled in following safety practices and recognizing hazards.
- Must possess or be able to obtain a valid Mine Safety and Health Administration (MSHA) Certification.

**Preferred Qualifications:**

- Master's Degree
- Ten (10) years of relevant experience, with experience in Arizona, Colorado and New Mexico water supply and water rights.

**Criteria/Conditions:**

- Position is in busy, non-smoking office located in downtown Phoenix, AZ.
- Location requires mobility in an office environment; each floor is accessible by elevator.
- Availability to travel domestically and internationally (+/- 20%). Position requires travel to field locations by automobile and air travel.
- Some work is in a mine or manufacturing plant setting, which may include exposure to extremes in temperature and humidity, moving mechanical parts, risk of electrical shock, toxic chemicals, explosives, fumes, or airborne particles.
- While performing the duties of this job, the employee is regularly required to stand, sit, demonstrate manual dexterity, climb stairs and ladders, work on elevated platforms, talk, hear and see, and speak English (Skills in conversational Spanish would be a plus).
- Occasionally may be required to lift moderately heavy objects (up to 30 pounds) during the course of the workday.
- Wearing of personal protective equipment may be required when performing work in a mine, outdoor, or manufacturing plant environment, including hard hat, hearing protection, safety glasses, safety footwear, and as needed, respirator, rubber steel-toe boots, protective clothing, gloves and any other protective equipment.
- Freeport-McMoRan Copper & Gold promotes a drug/ alcohol free work environment using mandatory pre-employment drug testing and ongoing random drug testing, as per applicable State Laws

Apply at: <https://fmi.taleo.net/careersection/2/jobdetail.ftl?lang=en&job=182760>

Or visit: [www.fcx.com/careers](http://www.fcx.com/careers)

Freeport-McMoRan promotes a drug/alcohol free work environment through the use of mandatory pre-employment drug testing and on-going random drug testing. Freeport-McMoRan Copper and Gold Inc. is an equal opportunity affirmative action employer.

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## SENIOR WATER POLICY ADVISOR

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**Date posted: 2/15/2010**

**Location: Scottsdale, AZ**

Our client, a non-profit conservation organization based in Colorado is seeking a candidate to set up their Arizona office.

Requirements include:

- Masters or professional degree in natural sciences, environmental management, public policy or related disciplines
- 10 + years experience in water field, preferable as it relates to municipal water use.
- Direct experience with Arizona water utilities and/or state agencies
- Extensive knowledge of Arizona water policy and conservation issues

Candidate will assist in the design and implementation of water conservation measures. He/she will assist communities in designing and implement water conversation measures.

Salary is negotiable based upon experience.

Resumes can be sent to Mary Weinman at [mweinman@cox.net](mailto:mweinman@cox.net). I can also be contacted at 480 483-2132.

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## HYDROGEOLOGIST

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**Date posted: 2/10/2010**

**Location: Flagstaff, AZ**

### Hopi Tribe Water Resources Program

The incumbent is under general supervision and line authority of the Water Resources Program Director. This position is responsible for performing administrative and technical duties in the area of ground water and surface water hydrology requiring knowledge in geology, geomorphology, and chemistry in support of the Water Resources Program. The incumbent performs duties of considerable difficulty and complexity requiring working knowledge of tribal, state and federal policies, procedures, rules and regulations. For more information please contact The Hopi Tribe Human Resources at (928) 734-3212. Applications are to be submitted to [The Hopi Tribe](#): Human Resources; PO Box 123, Kykotsmovi, AZ 86039. \*This position is subject to Indian preference under applicable law.

The duty location for this position is Flagstaff. The [Hopi Water Resources Program](#) has an office in the Bilby Research Center on the NAU campus. Ciick [here](#) for a full job description.

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## ADDITIONAL INFORMATION

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*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!*