



JUNE 2011 NEWSLETTER

CONTENTS

[Viewpoint: Summertime Living](#)

[Government Goings-On](#)

[2011 AHS Symposium Update](#)

[CALL FOR ABSTRACTS EXTENDED!](#)

[Workshop & Course offered by Dr. Dennis Helsel. Practical Stats](#)

[AHS Foundation Update](#)

[Phoenix chapter news](#)

[First Annual AHS Wine Tasting Fundraiser!](#)

[AHS 2012 Symposium now in planning stages!](#)

[Tucson chapter news](#)

[Flagstaff chapter news](#)

[COOL YOUR HEELS WITH MORE EXCITING NORTHERN ARIZONA FIELD TRIPS](#)

[Hydro-news](#)

[Arizona Geological Society Meeting](#)

[Mogollon reservoir to make a big splash](#)

[Study: Dams harm national parks](#)

[Tapping mine reservoir a boon for Payson, SRP](#)

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

[Floods threaten West...except AZ, NM](#)

[Lake Mead water levels to rise even more](#)

[Water gushes on the Green; snow levels high](#)

[High country water flowing toward Verde](#)

[Additional Information](#)

VIEWPOINT: SUMMERTIME LIVING

It's summertime, but the living is not easy. Many of us have faced the uncertainties of this extended recession for three years or more. It takes real tenacity to keep moving forward,

but that is what we all must do. So too the Arizona Hydrological Society moves forward.

The upcoming Annual Symposium in Flagstaff on September 18-20 offers us all an opportunity to refresh and renew our hydrological knowledge and professional networks. Now more than ever we all need our Annual Symposium, and this year will be a great one. The Flagstaff Chapter has put together a program based on the theme “Watersheds Near and Far: Response to Changes in Climate and Landscape.” The technical program will be top-notch, just what you need to boost your career. And the venue, the High Country Conference Center, is perfect for the Annual Symposium.

Field trips are planned for the area affected by the Schulz Pass Fire, which burned over 15,000 acres in late June 2010. Shortly after the fire, heavy monsoonal rains caused debris flows, erosion, and substantial flooding of the Timberline residential neighborhood. Sediment and ash-laden floods caused extensive damage up to 4 miles from the burn area. This field trip will take place on Sunday, September 18, and has already generated considerable interest.

Additionally, a field trip is planned for the Beaver Creek Watershed. Between 1957 and 1962, 20 watersheds within the Beaver Creek area were designated for an experiment to test the effects of varying vegetation management practices on water yield. During the field trip, a number of watersheds within the ponderosa pine forest will be visited to discuss previous treatments and present conditions. Drs. Abe Springer and Aregai Teclé of Northern Arizona University will lead this half-day trip on September 20, which will not conflict with the Schulz Pass tour, so you can go on both.

We are currently looking for exhibitors and sponsors for the Annual Symposium. Your firm may have already received a call. When talking to your decision-makers, I ask that you emphasize the great opportunity for getting your name out in front of a sophisticated audience—the networking possibilities are tremendous. Online registration for sponsors, exhibitors, and registrants is already up and running. Visit the Annual Symposium Website at http://www.azhydrosoc.org/2011_symposium.html to learn more, and sign up now before the end of summer. You don't want to miss this one!

Alan Dulaney,

AHS Corporate Board President, 2011

[Top of the Document](#)

GOVERNMENT GOINGS-ON

The draft Clean Water Act guidance document prepared by the U.S. Environmental Protection Agency and the Corps of Engineers is attracting more attention. Concerns center on the vastly expanded definition of “waters of the U.S.” The unintended consequences for the semi-arid Southwest could prove substantial, requiring more permits more frequently at greater expense.

The new definition seems to go beyond the Rapanos decision. Indeed the guidance document discusses at length the opinion of Supreme Court Justice Kennedy, contrasting it with the Rapanos standard. The Rapanos decision was not clear enough, and the Kennedy standard was perhaps not restricted enough. EPA and the Corps have opted to go with a broad interpretation of “waters of the U.S.” This seems to include intermittent streams, although I am not yet convinced (as some are) that ditches could also be included. They have backed up their decision with references to hydrological publications, as footnoted in the guidance document.

Certainly the expanded definition will have an impact on the administration of AzPDES permits at ADEQ. I believe that the new definition will create a demand for increased hydrological input in the regulatory process.

The 39 page document can be found at http://water.epa.gov/lawsregs/guidance/wetlands/upload/wous_guidance_4-2011.pdf. If you work for an agency that may be affected, or are a consultant dealing with permitting issues, or an attorney considering legal impacts, or anyone else involved in surface water issues, then I suggest you add this tome to your summer reading list.

Alan Dulaney,

AHS Corporate Board President, 2011

[Top of the Document](#)

2011 AHS SYMPOSIUM UPDATE

CALL FOR ABSTRACTS EXTENDED!



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

Do you have a topic or project you would like to present? Additional ideas for sessions? Don't miss out! The Arizona Hydrological Society's Annual Symposium is one of the premier events for hydrology and water resources science, engineering, and public policy throughout the Southwest and beyond and we want to hear from you!

TECHNICAL PROGRAM

CALL FOR PAPERS

Abstract Deadline Extended to June 30, 2011!

Technical Sessions

- Upper Basin Watershed – Colorado, San Juan, and Little Colorado Rivers
- Verde Watershed
- Groundwater Models Supporting Watersheds
- Recent Advances in Watershed Science
- Search for Planetary Water in our Solar System
- U.S. Bureau of Reclamation Feasibility Studies
- Climate Change and Watershed Management
- The Schultz Fire and Impacts from Runoff Down the San Francisco Peaks
- International and National Watersheds
- Central Arizona Groundwater Replenishment District
- Watersheds that Contribute to Tribal Water Resources
- Watersheds Containing Uranium Resources – Are there potential impacts?
- Watersheds in Arid Lands – Colorado River Watershed and Uranium – Competing Resources

Abstracts should be 250 words or less and include title, authorship, and affiliations. Please include a brief biographical sketch of the primary author(s). A volume of the proceedings papers will be published. Papers must be presented to be included in the published proceedings. The format for the papers & posters will be included in the notice of acceptance. Please specify if you'd prefer to present a talk or a poster. Contributors will be notified of abstract acceptance on or about July 15, 2011.

For abstract submission and technical questions please go to the link below:

http://www.eventinterface.com/2011AHS_CallforAbstracts

For additional information or questions, please contact Margot Truini 928-556-7352 (mtruini@usgs.gov), Dan Neary 928-556-2176 (dneary@fs.fed.us), or Mike Tomlinson 928-266-2236 (tomlinson86@q.com).

[Top of the Document](#)

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.

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](#)

Turn confusion into recognizable patterns

September 21-22, 2011

Flagstaff, Arizona -- online registration coming soon!

[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!**



[Top of the Document](#)

AHS FOUNDATION UPDATE

AHS Foundation Receives Donation

Recently AHSF received a very generous donation of \$10,000 from Montgomery & Associates and its employees. Half of the money will be put into the permanent investment endowment, and half will go toward this year's intern and scholarship awards. This donation continues the tradition of annual giving by Montgomery and Associates and its employees since the inception of the Foundation; the Board is grateful for their continued support.

With this donation, the Foundation will continue to support both graduate and undergraduate hydrology students, as well as K-12 science students and teachers. In addition, thanks to many corporate and private donations, our permanent endowment has grown to nearly \$80,000. We encourage donors to show their support for AHSF's educational outreach by making a donation in 2011.

This spring, AHSF, along with the Society and the Central Arizona Project, presented awards to both Phoenix and Tucson high school science fair winners. Currently, summer interns are being hired, and soon scholarship applications will be solicited, with the winners announced at the AHS annual meeting. Did you know that you can make a contribution to the AHS Foundation at the AHS website? Go to <http://www.azhydrosoc.org/> and click on AHSF "Online donations" in the left column. All donations to AHSF, a nonprofit 501(c)(3), are tax-deductible.

[Top of the Document](#)

PHOENIX CHAPTER NEWS

The next Phoenix chapter dinner meeting will be held on **Tuesday, June 14, 2011**, at the SunUp Brewery, 3rd Street and Camelback, near downtown Phoenix. Please come and join us for a beverage, to share business cards, and talk water!

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

Event:

Embedded Water Concepts for Understanding the Water-Everything Nexus
Ben Ruddell, ASU Polytechnic Engineering Department

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.

At the June Phoenix Chapter meeting, Ben Ruddell from the ASU Polytechnic Engineering Department will give a presentation on “*Embedded Water Concepts for Understanding the Water-Everything Nexus*”.



Dr. Benjamin Ruddell is an Assistant Professor at Arizona State University since 2009, where he researches sustainable water and energy systems and Civil infrastructure and teaches Civil Engineering and Water Resources courses in the Polytechnic Engineering Department. He is affiliated with the Fulton School of Engineering, the School of Sustainability, and the Global Institute of Sustainability where he holds the title of Senior Sustainability Scientist. Since 2006 Dr. Ruddell has been working on embedded water applications for water resource management, and he is currently working with professionals around the world to develop the first standards for embedded water footprinting for watersheds and municipalities.

Abstract

Embedded water is a concept that has come of age in the management of water resources. Most types of goods and services, including Labor, Energy, Agriculture, and all industrial products, contain embedded water. By accounting for this water content using Life Cycle Analysis methods contextualized within a watershed or urban framework, it is possible to achieve a clearer understanding of how water is really allocated and used within human systems, and to more accurately understand the marginal value of water through its connection to other types of resources. The "water/energy nexus" has received a lot of attention recently, but it is more appropriately understood as a "water/everything nexus", in which all types of goods and services, both economic and environmental, have embedded water content and can function as substitutes for water.

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

- July 14 (Thursday) – **Herman Bower Intern Scholarship Wine Tasting Fundraiser**, Terroir Wine Pub at 7001 N. Scottsdale Rd in Scottsdale, sponsored by Accutest, WDC, and Southwest Geophysical.
- 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.

[Top of the Document](#)

FIRST ANNUAL AHS WINE TASTING FUNDRAISER!

Why: To Raise funds for the **Herman Bower 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 Bower 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. Thank you!

[Top of the Document](#)

AHS 2012 SYMPOSIUM NOW IN PLANNING STAGES!

The Phoenix Chapter is pleased to announce that the 2012 Symposium will be held at the Desert Willow Conference Center (DWCC) on Sept. 18-21, 2012 in Phoenix. The DWCC is conveniently located near 48th Street and Broadway Road just off Interstate 10. Click [here for a map](#).

One of the great advantages of the DWCC is that it is not associated with a hotel. However, there are a number of great options for accommodations within convenient distance of the conference center with a wide array of levels of luxury from [Motel 6](#), [Hampton Inn](#), and [Homewood Suites](#) to [The Buttes](#) and the [Arizona Grand Resort](#).

The 2012 Symposium Committee met recently and is actively working to develop a theme, website, program, and other details. If you are interested in helping with any of these activities, please contact 2012 Symposium chairperson, [Ted Lehman](#), 480-222-5709, or Phoenix Chapter Vice President, [Tom Walker](#).

[Top of the Document](#)

TUCSON CHAPTER NEWS

June 2011 Meeting Announcement

No speaker has been lined up yet for the June meeting. An email notice will be sent if this status changes.

April 2011 Meeting Summary

"Active and Passive Hydrologic Tomography: a revolution in subsurface hydrology"

On Tuesday, April 12th, 2011 the Tucson Chapter hosted a special guest lecture by Tian-Chyi "Jim" Yeh from the Department of Hydrology and Water Resources, University of Arizona. This talk was held at The Shanty Café on 4th Ave. Attendance at the meeting was represented by many of the local consulting firms and government agencies within Tucson. We thank you for your company. Here is a brief summary of his lecture for those AHS members unable to attend.

Jim Yeh gave a presentation on using active and passive hydrologic tomography in order to better estimate hydrologic parameters and detect heterogeneities within the subsurface. Dr. Yeh discussed the important uses of hydrologic tomography when limitations of analytical mathematics and our inability to sample aquifers at high-density dictate the adoption of aquifer homogeneity assumptions regardless of the variable heterogeneities. Dr. Yeh began his presentation by providing an overview of experimental results using different methods to find the estimated parameter of hydraulic conductivity. Active hydraulic tomography was able to capture the sensitivity of heterogeneity better than that of slug tests and analytical estimates. While more field assessments are needed, recent validations of the active hydrologic tomography based on numerical, laboratory and field experiments are promising.

The talk finished by exploring the possibility of using river-stage variations for basin-scale hydraulic tomographic surveys (i.e., passive hydrologic tomography). Numerical models are used to simulate groundwater level changes in response to temporal and spatial variations of the river stage in a hypothetical groundwater basin. The relationship between temporal and spatial variations of well hydrographs and river stage can be exploited to image subsurface heterogeneity of the basin.

This was the second talk that Dr. Yeh has done for AHS. We are hoping to be able to have him speak at another meeting with new results utilizing the concept of passive hydrologic tomography for characterizing basin-scale aquifers and providing further insight to the interaction between streams and groundwater at the basin scale. The AHS Tucson Chapter extends a very warm thanks to Dr. Jim Yeh for his informative presentation!

Additionally, The Tucson Chapter would like to thank The Shanty Cafe for providing the space and frothy drinks so that this meeting could happen with comfort and blissfulness!

[Top of the Document](#)

FLAGSTAFF CHAPTER NEWS

The next Flagstaff Chapter 2011 Symposium Planning Meeting. Please contact [Brad Hill](#) or

[Dana Downs-Heimes](#) for additional information.

Date: Wednesday, June 15, 2011

Time: 6:00

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

COOL YOUR HEELS WITH MORE EXCITING NORTHERN ARIZONA FIELD TRIPS

Just in time to escape the long hot Arizona summer, the Flagstaff chapter is offering three new exciting, interesting and what promise to be way-fun field trips in northern Arizona.



Schultz Fire Area Field Trip - On Sunday, September 18, 2011, representatives from the U.S. Forest Service and the Arizona Geological Survey will lead a day-long visit to the Schultz Fire Area. The human-caused fire on the Coconino National Forest northeast of Flagstaff was the largest wildfire in Arizona during 2010. Ignited by an abandoned campfire on June 20th at Schultz Tank and Elden Trail, the Schultz Fire burned hot and fast. High winds quickly drove the blaze across the steep eastern slopes of the San Francisco Peaks: approximately 60% of the total 15,075 acres (23.5 sq mi) burned that first day. Following the fire, heavy rains from the 4th wettest monsoon on record in Flagstaff resulted in numerous debris flows, significant erosion, and substantial flooding of the residential areas below. There were no fatalities from the fire itself, but a 12-year old girl was tragically killed in a flash flood in her neighborhood on the afternoon July 20th.

Schultz Fire Debris Flow Area

The field trip will include visits to high impact fire areas, damaged drainage areas, channel debris flow deposits, and examples of Burned Area Emergency Response treatments for forest restoration and flood mitigation.

Beaver Creek Watershed Field Trip - On Tuesday afternoon, September 20, 2011, Dr. Aregai Tecele and Dr. Abe Springer from Northern Arizona University will lead a field trip to the Beaver Creek watershed.

The Beaver Creek watershed is a large drainage basin encompassing 275,000 acres of area upstream from the confluence of the Beaver Creek and the Verde River. It is a part of the Salt-Verde River basin in central Arizona. Between 1957 and 1962, 20 watersheds within the Beaver Creek area were designated for an experiment to test the effects of varying

vegetation management practices on water yield as well as other resources such as timber, forage, wildlife and recreational use. During the field trip, a number of previously treated watersheds within the ponderosa pine forest will be visited to discuss previous treatments and present conditions.



Beaver Creek Riparian Area

The Schultz Fire Area and Beaver Creek field trips are offered as part of the AHS 2011 Symposium to be held in Flagstaff, September 18-20, 2011 – for more information and registration: http://www.azhydrosoc.org/2011_symposium.html.

JUST ANNOUNCED! Shield Ranch Field Trip – In mid-late October, 2011, representatives from AHS, The Nature Conservancy and the Arizona Riparian Council will offer a weekend campout at the Shield Ranch property.

Located at the confluence of the Verde River and West Clear Creek, the historic property includes about a half mile of Clear Creek and Verde River frontage, located 1.5 miles a mile and a half upstream from the start of the Wild and Scenic portion of the lower Verde. The property sustains a lush riverside plant community that supports a large wildlife population, including river otter, beaver, bald eagles, several endangered bird species and native fish. The area was settled in the mid-1800s and the Shill family owned and operated the land as a cattle ranch beginning in 1944. In 2010, the 306-acre Shield Ranch property was deeded to The Nature Conservancy. The purchase of the Shield Ranch is the latest in TNC's effort to protect and preserve key properties adjoining to the river. To date, they have helped set aside over 6,000 acres along the Verde River, from the headwaters on downstream.

The trip will include day-hikes and talks on natural resources and hydrology of the Verde River system. Field trip dates, registration and additional information will be provided in the August and September AHS newsletter.



Historic Shield Ranch

[Top of the Document](#)

HYDRO-NEWS

ARIZONA GEOLOGICAL SOCIETY MEETING

ADWR Land Subsidence Monitoring Program Using InSAR

Brian D. Conway, Arizona Dept. Water Resources

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

**Lecture at 8:00 PM
Tuesday, June 7, 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. 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 Arizona Department of Water Resources (ADWR) land subsidence monitoring program has been greatly enhanced by the use of Interferometric Synthetic Aperture Radar (InSAR). ADWR's InSAR program started in 2002 with the awarding of a three year NASA Earth Science grant, allowing ADWR the opportunity to develop the InSAR program.

In 2005, ADWR began collecting and processing monthly SAR data from the European and Canadian Space Agency SAR satellites, producing time-series interferograms for the greater Phoenix and Tucson metropolitan areas. Since 2005 the program has developed important partnerships with numerous State, County, and Local Agencies, Water Districts and Water Companies who provide annual contributions to help support the data collection costs. These partnerships have provided ADWR the necessary resources to expand the data collection area for the InSAR program to include numerous groundwater basins in south-central and southern Arizona in Maricopa, Pinal, Pima, La Paz, and Cochise Counties.

Through these efforts ADWR has identified more than eighteen active land subsidence features and determined the spatial extent, deformation rates, and time-series history of each land subsidence feature. The process of collecting, processing, and interpreting InSAR data has resulted in ADWR producing land subsidence maps for each land subsidence feature covering different time periods.

Engineers, hydrologists, geologists, GIS professionals, and scientists involved in the fields of water resources, structural engineering, geological engineering, hydrological engineering, land planning, floodplain management, and surveying greatly benefit from the InSAR data to identify and evaluate areas of land subsidence, uplift, earth fissures, faults, and many other geologic features.

Brian Conway has worked for the Arizona Department of Water Resources since 1999 and has supervised the Hydrology Division's Geophysics/Surveying Unit since 2006. Brian received his Bachelor's Degree in Environmental Science from Creighton University in Omaha, Nebraska in 1997. He attended the University of Arizona's Masters of Hydrology program from 1998 to 2001. Brian started at ADWR as an intern and worked his way up from an entry level Hydrologist in the Geophysics/Surveying Unit to the current supervisor. The Geophysics/Surveying Unit is responsible for monitoring land subsidence in Arizona using Interferometric Synthetic Aperture Radar (InSAR), and conducting gravity surveys to monitor changes in aquifer storage and gravity modeling to determine groundwater basin depth-to-bedrock, basin geometry, and groundwater-in-storage estimates.

[Top of the Document](#)

MOGOLLON RESERVOIR TO MAKE A BIG SPLASH

SRP project will boost Payson's tight water supply

by **Shaun McKinnon** - May. 25, 2011 12:00 AM

The Arizona Republic

PAYSON - The East Verde River gurgled to life near the foot of the Mogollon Rim a few weeks ago, cutting a wet path toward the Mazatzal Wilderness the way it does in the early spring when the snow is still deep.

Except this was late April and the snow, what little had accumulated during a dry winter, was long gone.

Payson's water supply gets boost

The source of the water was C.C. Cragin Reservoir, a small storage project built by a mining company in the mountains 25 miles north of Payson. It had sat largely unused for years as the company's needs changed, even as towns in the reservoir's shadow scrimped and saved to stretch their shrinking water supplies.

The gurgling water was the first hint that change was coming, that the reservoir would become more

than a good place to fish. Salt River Project, which provides water to cities and farms in metro Phoenix, acquired Cragin in February 2005 and began \$13.3 million worth of renovations.

The water will be added to SRP's existing resources and will allow the utility to expand its base of water users. It signed as its first Cragin customer the town of Payson, which will build a 15-mile delivery pipeline with enough capacity to someday serve other towns in the area.

For the next few months, the East Verde will carry water out of the reservoir and down into Phoenix, lowering water levels by about two-thirds so SRP crews can reach a subsurface tunnel and finish the upgrades on the 45-year-old infrastructure.

More important, the river will carry the promise of a renewable water supply for thirsty downstream communities that have never had one, easing some of the intense pressure on Arizona's depleting rural groundwater.

"I don't know of anyone in rural Arizona that will have an assured water supply like ours," said Buzz Walker, Payson's assistant public-works director for water. "I don't think a lot of people thought that a small town could do something like this."

Read more:

<http://www.azcentral.com/arizonarepublic/news/articles/2011/05/25/20110525payson-water-supply-mogollon-reservoir.html#ixzz1NuQe2ZuC>

[Top of the Document](#)

STUDY: DAMS HARM NATIONAL PARKS

by **Shaun McKinnon** - Apr. 26, 2011 12:00 AM
The Arizona Republic

Dams and reservoirs that transformed the Colorado River into a critical water source for more than 25 million people also have tarnished national parks that help support tourism-based economies in parts of three states, a parks-advocacy group says.

In a report to be released today, the National Parks Conservation Association describes what it characterizes as serious threats to natural and cultural resources in five national parks - including the Grand Canyon - along a stretch of the Colorado River and two tributaries in Colorado, Utah and Arizona.

The dams have altered the river's natural flow, leaving native species in a struggle for survival with invasive plants and animals, the report says. The reservoirs have inundated some archaeological sites and exposed others to vandals. And the report says policy decisions on the river have often favored water and hydroelectric-power interests.

"These parks are part of a larger landscape," said David Nimkin, director of the parks association's [Southwest](#) Region. "They are not unique islands along this river. They are connected in this web of biodiversity that the Colorado River helps to sustain. That needs to be included in the broader decision-making on how we allocate and manage that resource."

The study was conducted by the Center for Park Research, the science-based arm of the non-profit parks group, which has produced a series of reports on the environmental condition of national parks.

Threats from growth and climate change require a wider assessment of the river system, Nimkin said.

The findings echo some of the arguments made by other conservation groups but will likely stir debate among water and power providers, who say the dams and reservoirs supply needed resources for a growing region and have helped protect millions of people from the effects of drought.

Read more: <http://www.azcentral.com/news/articles/2011/04/26/20110426river->

TAPPING MINE RESERVOIR A BOON FOR PAYSON, SRP

The Arizona Republic - May. 27, 2011 12:00 AM

The days of the great engineering marvels that refashioned the arid West are done, we are told. No more Hoover Dams or Central Arizona Project Canals are on anyone's planning table.

It is fitting, then, that one of Arizona's biggest water-reclamation projects in recent years is a 45-year-old reservoir built by a mining company.

In a few years, Payson will have one of the best assured water supplies of any rural community in the state, thanks to the C.C. Cragin Reservoir, which Salt River Project bought for \$13.3 million in 2005 from Phelps Dodge mining company, now part of Freeport-McMoRan.

Originally designed to provide water for its Morenci copper-mining operations more than 200 miles to the southeast, the modern marvel was constructed by the company's engineers on East Clear Creek, 25 miles north of Payson. It delivers its water through a 3,500-foot tunnel, then up a 435-foot shaft - pumped by eight generators that get their electricity from a small hydroelectric generator at the bottom of the operation.

Read more: <http://www.azcentral.com/arizonarepublic/opinions/articles/2011/05/27/20110527fri2-27.html#ixzz1NuUfOuZ8>

WATERBLOGGED BY SHAUN MCKINNON, ARIZONA REPUBLIC

(CLICK ON TITLES FOR LINK TO FULL COLUMN)

[Floods threaten West...except AZ, NM](#)

Thursday, May 19, 2011 at 01:12 PM

Another late-spring storm has added to the already deep snowpack in the northern **Rocky Mountains** and other areas of the interior West and experts say widespread flooding is possible -- except in **Arizona** and **New Mexico**.

Snowpack levels are now 200 percent of average in some locations and as high as 400 percent of average in areas of northern **Utah**, where several rivers have already flooded this spring. The concern is temperatures have remained mild through mid-May, which means when if the weather warms up in a hurry -- and with June not too far away, that's likely -- all the snow will start to melt at once.

"At this point, everybody is just sitting back chewing fingernails and waiting because the longer it stays cold and wet, the worse it's going to get," said **Randy Julander**, a supervisor with the **Natural Resources Conservation Service**, who was interviewed by [the Associated Press](#). "We're waiting for the chute to open and the bull to come out bucking, but he ain't moving, yet."

Flooding is a risk in **Colorado**, **Wyoming**, Utah -- well, just about anywhere in the West except Arizona and New Mexico, Julander [told the AP](#). Blame **La Niña**, in part, for the dry pockets in the Southwest, where drought is spreading rapidly.

The [new drought map](#) from the **National Drought Mitigation Center**, carves out an arid splotch

across **Texas, Oklahoma**, New Mexico and Arizona. All of New Mexico **is in drought** at some level and almost one-third of the state is now in "exceptional drought," the most serious category. **Eighty-six percent** of Arizona is either abnormally dry or in drought, with the worst conditions stretching across the state's southeast corner.

[Read more at



<http://www.azcentral.com/members/Blog/ShawnMcKinnon/128797>]

[Top of the Document](#)

[Lake Mead water levels to rise even more](#)

Thursday, May 12, 2011 at 04:04 PM

The news keeps getting better for **Lake Mead** and water users on the lower **Colorado River**.

In its **latest 24-month report**, the **U.S. Bureau of Reclamation** added almost 1 million acre-feet to the estimated amount of water that will be released from **Lake Powell** downstream into Mead, the wetter forecast possible because of near-record snowpack on the upper Colorado system.

In April, **the bureau announced** that projected runoff from melting snow would raise water levels at Lake Powell enough to allow extra water to flow into Mead. The extra water would keep Mead well above the levels that would trigger drought shortages.



At the time, the bureau estimated it would release 11.56 million acre-feet of water from Powell by the end of the current water year on Sept. 30. Now, the estimate is 12.46 million acre-feet. With that much water, Lake Mead is projected to rise more than 30 feet between now and early 2012, or about 46 feet since last November, when the reservoir reached a record-low level.

Mead will still be about 85 feet below full capacity, but far enough above the drought triggers that no shortage is likely for at least five or six years, probably longer.

[Read more at <http://www.azcentral.com/members/Blog/ShawnMcKinnon/128204>]

[Water gushes on the Green: snow levels high](#)

Friday, May 6, 2011 at 10:36 AM

The [Green River](#) gushed below [Flaming Gorge](#) dam this week after the [U.S. Bureau of Reclamation](#) began [releasing water](#) from the reservoir to clear space for still-unmelted snow.

The bureau **said** water was flowing through the dam's power plant at full capacity of 4,350 cubic feet per second and through the dam's bypass outlets at a rate of 4,500 cfs, raising levels rapidly downstream on the Green River.

The Green is the largest tributary of the **Colorado River**; the two waterways converge in southeastern Utah.

Snowpack on the Green and upper Colorado has continued to grow in recent weeks as late-season storms deposit more snow and rain on the watersheds. In the high country above the Green, the snow-water equivalent is projected at 130 to nearly 200 percent of the long-term average, the most snow in nearly 30 years.



[Read more at <http://www.azcentral.com/members/Blog/ShawnMcKinnon/127607>]

[High country water flowing toward Verde](#)

Tuesday, May 3, 2011 at 05:00 PM

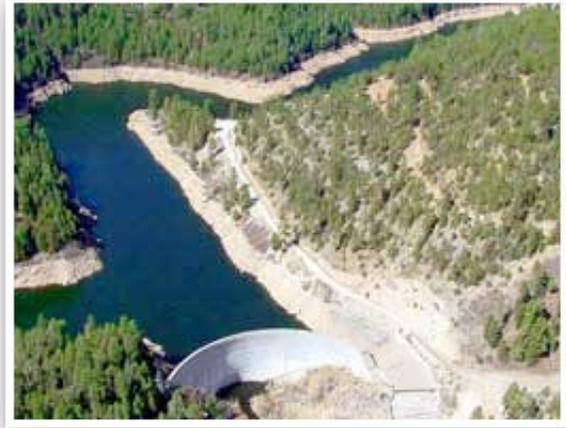
Salt River Project is releasing water from a nearly full reservoir into a river that might often sit empty this time of year, but we're not talking about **Roosevelt Lake** or the **Salt River**.

This time the water is flowing out of [C.C. Cragin Reservoir](#) up in the mountains above **Payson** and into the **East Verde River**, a tributary of the **Verde**, which, as it turns out, actually does empty into the Salt River.

According to the [Payson Roundup](#), SRP opened the valves on the Blue Ridge pipeline near **Washington Park** late last month, sending water from the reservoir into the East Verde at a rate of between 24 and 33 cubic feet per second.

From the [Roundup story](#) (which refers to Cragin as Blue Ridge Reservoir, the longtime name of the lake before SRP took it over in 2005):

The 15,000 acre-foot Blue Ridge Reservoir atop the Rim came within inches of filling up so high that dam managers would have to release excess water. By next fall, SRP hopes to move 12,000 acre-feet down the East Verde, which will likely lower the water level in the deep, narrow reservoir by 80 feet.



Payson watches what happens at the reservoir closely because it is spending close to \$40 million to build the Blue Ridge pipeline to import water from the narrow lake, originally built by Phelps Dodge to serve mining operations.

Payson has long sought a renewable alternative to its groundwater stores and, in the process, has become one of the most efficient water-using communities in Arizona.

The *Roundup* notes in a [separate story](#) that the town is trying to clear up some administrative issues surrounding the pipeline with a bill in Congress.

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

[Top of the Document](#)

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!