AZWWA Membership Meeting
Saturday, January 25th, 2020
Coco’s Restaurant
2026 N. 7th Street
Phoenix, AZ 85006
PH: 602-258-3821

8:30am – Meet and Greet
9:00am – Guest Speaker: To Be Announced
AZWWA Business Meeting will follow Guest Speaker

PLEASE JOIN US!
Any questions? Email admin@azwwa.org or call 480-609-3999

REGISTRATION
(Scan and email to admin@azwwa.org)

Name:__________________________________________________________

Company:________________________________________________________________________

Address:________________________________________________________________________

City:______________________ State:_____________ Zip:______________

Phone:______________________ Email:______________________________________________

Fax registration to 480-609-3939 or mail to:
AZWWA
4802 E. Ray Rd. #23-500
Phoenix, AZ 85044
ARIZONA WATER WELL ASSOCIATION

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Kerrell Dunsmore….480-609-3999
4802 E. Ray Rd. #23-500
Phoenix, AZ 85044
Fax: 480-609-3939
Email: admin@azwwa.org

GOT NEWS?

Any upcoming or recent events?
Open Houses?
Other Events?
Jobsite Photos?
Articles?
New Products or Services?
Items for sale? Weddings? Births?
Obituaries?

Contact Kerrell Dunsmore at
480-609-3999 or via Email
admin@azwwa.org

DIRECTORY OF ADVERTISERS

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SAFETY ALERT
(Reprinted from Issue #39, 11/25/19)

Submitted by John Fowler, CSP, CMSP, National EWP Safety Supervisor, AZWWA Safety Director

Crosby

RIGGING EQUIPMENT RECALL:
Crosby ® 7/8” 6.50t Shackle

IMPORTANT SAFETY NOTICE

USERS OF THE BELOW CROSBY PRODUCT: 1019542 7/8” 6.50t S-2130 Shackle
1019533 7/8” 6.50t G-2130 Shackle
1018151 7/8” 6.50t G-213 Shackle
1018160 7/8” 6.50t S-213 Shackle
1018516 7/8” 6.50t G-209 Shackle
1018525 7/8” 6.50t S-209 Shackle
1262031 7/8” 6.50t G-21300C Shackle

With Production Identification Codes (PIC) 5VJ as located on the shackle

THE CROSBY GROUP has determined the above listed shackles may have a condition that can reduce the ultimate load capacity from the published catalog values. The shackle bow may have a previously undetected defect, and continued use may result in loss of load, property damage, severe injury, or death.

By use of the Production Identification Code (PIC) symbols appearing on the product, they have determined the 7/8” 6.5t shackles with PIC 5VJ shown on the bow may have this condition. See below image showing the position of the PIC on the bow. No other sizes or PICs are part of this Important Safety Notice.

PLEASE INSPECT YOUR RIGGING EQUIPMENT, IDENTIFY ALL SUCH 7/8” 6.50T SHACKLES WITH PIC 5VJ AND REMOVE FROM SERVICE IMMEDIATELY!

Any identified shackles should be tagged out and given to your supervisor or your safety department immediately.

The Crosby Group requests you identify all such 7/8” 6.5t shackles with PIC 5VJ, remove from service and arrange for return and replacement. To return these products, please contact your Crosby Distributor. For more information concerning this Important Safety Notice, contact Technical Support at 1-800-772-1500.

If you know any other users of these shackles, please pass this notice on to that user, company, or firm. Crosby is still committed to provide the absolute best in Crosby quality.
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2Mco.com
ADWR Press Release:
Dec. 4, 2019

Arizona Department of Water Resources conducts “basin sweep” to collect water-level measurements in the Lower Gila and Gila Bend Basins

PHOENIX- Beginning the week of December 9, 2019 and continuing for several months, the Arizona Department of Water Resources (ADWR) will be making an extensive effort to measure water levels in wells in the Lower Gila and Gila Bend Basins. This sweep will cover a large portion of the state southwest of the Phoenix metropolitan area, generally south of I-10 and west of I-85, excluding the Yuma area and along the U.S. – Mexico border.

ADWR staff will attempt to measure water levels at hundreds of wells in the Lower Gila and Gila Bend Basins. This survey of area wells – or basin “sweep,” as it is known — will be the first such basin survey of the area since 2008 in Gila Bend Basin and since 1992 in Lower Gila Basin. The data collected will be used for several purposes, including:

- Analysis of water-level trends
- Groundwater modeling
- Water-level change maps
- Hydrologic reports
- Water resource planning and management

For more information regarding this matter, please contact Public Information Officer Shauna Evans at smeans@azwater.gov or (602) 771-8079.
The Mountain States Ground Water Expo invites you to attend their EXPO 2020 to be held again at the Aquarius Casino Resort

Laughlin, Nevada
February 6 - 7, 2020

This EXPO Offers:

- Networking Opportunities
- Exhibits—The Latest in Products and Services
- Educational Presentations/Seminars for CEU’s
- Raffle Prizes
- Interaction with Attendees and Peers from Other States
- Participate in the live auction to benefit the BUCK LIVELY SCHOLARSHIP FUND

Bring your family, friends and co-workers to Laughlin, NV!

REGISTER TODAY!

Hotel Information and Rates

Aquarius Casino Resort
1900 South Casino Drive
Laughlin, Nevada
1-800-662-5825

This resort welcomes us back and continues to offer some of Laughlin’s finest rooms and suites on the banks of the beautiful Colorado River, including a variety of restaurants from casual to gourmet dining. Special hotel rates of $40.00 for Sunday - Thursday nights, $75.00 for Friday and Saturday night have been arranged.

Call 1-800-662-5825 to make your reservations and mention the group code of C-MOU20. These rates are ensured only for reservations made prior to January 20, 2020.
# Registration Form

Mountain States Ground Water Expo - February 6 - 7, 2020  
Aquarius Casino Resort in Laughlin, Nevada

PLEASE PRINT CLEARLY – This form will be used to produce your badge!

First Name: ___________________________ Last Name: ___________________________

Company: ________________________________

Address: ____________________________________________

City: __________________ State: _____ Zip: __________

Telephone: (____) _______ Fax: (____) _______ Email: ________________________________

**MEMBERS - Please check all that apply:**

☐ Arizona Water Well Association  
☐ Colorado Water Well Contractors Assoc.

☐ New Mexico Ground Water Association  
☐ Utah Ground Water Association

☐ Nevada Ground Water Association  
☐ Other

You can also register and pay online at www.mountainstatesgroundwater.com

Registration Fee includes Thursday and Friday morning continental breakfasts, Friday lunch, Thursday evening Exhibitor’s Reception, admission to all seminars and Exhibit Hall:

**Before or on**  
Before January 31, 2020  
After January 31, 2020

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<td>Non-Exhibiting Manufacturer/Supplier</td>
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<td>Donation to Buck Lively Scholarship Fund</td>
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*(Cash contributions will be acknowledged before the Auction/Raffle begins)*

**TOTAL ENCLOSED:** $__________

I/We will donate _______ item(s) to the Buck Lively Scholarship Auction and Raffle

NOTE: All companies and individuals making donations will be acknowledged as their items are auctioned or raffled off unless requested otherwise. All income generated for the Buck Lively Scholarship Fund is evenly distributed among the scholarship programs of the 5 state associations hosting the Expo.

**CANCELLATION POLICY:** 50% if notified by January 31, 2020; No refunds after that date.

Name of Spouse/Employee/Other(s): Name: ___________________________ Name: ___________________________

Name: ___________________________ Name: ___________________________

Pay online or complete the credit card information below, then fax, email or mail the completed form OR mail completed form with a check to:

Mountain States Ground Water Expo  
Card#: ___________________________  
70 S. Val Vista Dr. #A3-229  
Exp. Date: ____________________  
Gilbert, AZ 85234  
CVV#: ___________________________  
Signature/Name on card: ___________________________

Zip code of card holder:

For further information call (480) 609-3993, fax 480-609-3939 or Email info@mountainstatesgroundwater.com
ECONOMIC IMPACT OF COLORADO RIVER WATER DELIVERED BY CAP TO ARIZONA

FACT SHEET

The Colorado River water CENTRAL ARIZONA PROJECT (CAP) delivers has supported Arizona’s gross state product (GSP) with $2 trillion in economic benefits since water deliveries began. The GSP represents the dollar value of all goods and services produced in the region and is a measurement of the economic output of a state. This economic impact supports 22 sectors of the Arizona economy related to gross state product and job-years of employment.

IN RECENT YEARS
Colorado River water delivered by CAP has supported an economic benefit exceeding $100 BILLION PER YEAR.

ARIZONA’S GROSS
STATE PRODUCT
40%

CAP’s supply of water to its customers in 2017 is estimated at annual employment of nearly 1.6 MILLION JOBS.

THE TOP FIVE SECTORS estimated to be impacted the most in terms of contribution to GSP since water deliveries began are:

- GOVERNMENT: $335.2 billion
- HEALTHCARE: $302.1 billion
- REAL ESTATE & TRAVEL: $286.6 billion
- RETAIL: $187.9 billion
- CONSTRUCTION: $187.0 billion

YOUR WATER. YOUR FUTURE.
www.CentralArizonaProject.com

Study conducted by:
CAP
Arizona State University

W.P. Carey School of Business
CAP’s Colorado River Water Deliveries = $2 Trillion Gross State Project (GSP)

12/4/2019

How much is a trillion? It’s a million millions or a thousand billions. And $2 trillion? You guessed it – two million millions and two thousand billions!

If all those zeros (if you’re counting, that’s 12) make your head spin, you’re probably not alone. Two trillion is a big number – and that’s the number of dollars CAP’s delivery of Colorado River water has generated for Arizona’s gross state product (GSP) since water deliveries began. This is one of the numbers found in “The Economic Impact of Central Arizona Project to the State of Arizona,” a study prepared by the W.P. Carey School of Business at Arizona State University.

To estimate the extent to which the State of Arizona economy would have been smaller without the annual availability and supply of water from CAP, researchers at ASU’s L. William Seidman Research Institute prepared a baseline scenario of Arizona's annual economy as it has evolved with CAP water deliveries.

A 'no-CAP’ scenario was produced for the same time period with water supplies reduced by the amount delivered each year by CAP. The differences between the scenarios represent the annual and cumulative impacts of CAP water deliveries on Arizona GSP and employment.
75 YEARS OF MOVING FORWARD.

Named after Benjamin Franklin, a pioneer in electrical engineering, Franklin Electric’s core is the world’s first reliable submersible electric motor for water systems, which has remained a staple of the water well industry. 75 years later, we continue to manufacture and distribute improved versions of this unrivaled motor design all around the world, and have expanded our expertise to create innovative solutions, including pumps, electronics, and adjacent products, addressing modern industry challenges and serving our customers’ needs.

franklinwater.com
Mesa - Dixon Duke Cowley, age 81, passed away in his home October 28, 2019. He was born December 19, 1937 at St. Johns, Arizona to Hugh Henry Cowley and Helen Janie Plumb. Duke was raised in St. Johns, graduating from Pioneer Elementary School as Valedictorian and St Johns High School with the same distinction. Upon graduating he attended The University of Arizona. He had been a lifelong member of the Church of Jesus Christ of Latter Day Saints and in 1958, he served his first mission in Brazil for 32 months. Upon returning from Brazil, he married Alice Neal, also from St. Johns, in the Mesa Arizona Temple. They have three children: Michael Theron (Lee), Timothy Neal (Kristen), and Suzette Tyler (Loren), 14 grandchildren and 7 great grandchildren.

As owner Cowley Pumps & Supply, he was a very successful businessman and supporter of the Arizona Water Well Association for many years.

Visitation and funeral services were held November 1st at the LDS Hermosa Vista Stake Center, 2701 E Lehi Road in Mesa with Interment following at the Mesa Cemetery.

The family requests that any memorials be in the form of a donation to BYU-Pathway Worldwide at: https://ldsp-pay.ldschurch.org/donations/byu-pathway?cde2=pathway-home.

Memories and condolences can be shared with his family at: https://www.norvelowensmortuary.com/
WHY NICKEL ALUMINUM BRONZE?

The company tasked Engineering with identifying the best material for the widest variety of applications. As an application-based manufacturer, our job is to ensure that we use the right materials for the right application. Our aim is not to reinvent the wheel, but to improve it.

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  Cavitation erosion rate half that of 316 SS

- Resistant to chloride solutions and chloride-induced stress cracking
  Alloy composition reduces ion exchange

- High corrosion resistance
  Highly alloyed with 3-5.5% Ni

- High strength
  90 ksi yield strength

- Excellent wear resistance
  10-11.5% Al

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Flomatic’s VFD Check Valve  
Now with optional Metal Poppet  
THE BEST JUST GOT BETTER  
Flomatic’s Non-Sticking Check Valves are available in Stainless Steel, Ductile Iron, and Bronze

The patented submersible pump check valves are used mainly on variable flow demand (VFD) systems and applications. While standard check valves will “chatter” and be noisy when the system goes to low flow, eventually causing failure. Flomatic’s exclusive patented poppet system ensures that the valve smoothly and automatically adjusts to flow changes. Works for all applications, even non VFD systems.

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WWW.FLOMATIC.COM
The U.S. National Park Service in Boulder City, NV. made a request for proposals to design and drill a new supplemental public supply well for the Lake Mead National Recreation Area. AZCA Drilling of Ehrenburg, AZ was the successful bidder and began mobilizing to the remote location selected for this well on November 12th. They were met by employees of the NPS at the State Highway 93 turnoff to the Temple Bar Marina for an inspection of all their trucks and equipment for invasive species of any type. Once they were cleared of any invasive species, they convoyed the 27-mile trip to Temple Bar Marina and on to the selected drill site overlooking Lake Mead.

The plan was to set a 20-inch diameter steel surface casing to a depth of twenty feet using their DR24 drill rig and compressed air. Once it was set, they began advancing 12-inch diameter mild steel casing and dual tube drill pipe through unconsolidated sands and gravels to a final depth of 310 feet. Due to unconsolidated fine sand encountered at 292 feet, it was decided to shorten the final well depth to 290 feet.

The well was completed by installing eighty feet of 10-inch by 8-inch Johnson MuniPak well screens and a K packer while pulling back the 12-inch casing to expose the pre-packed screens. Air lift development followed the installation prior to setting a permanent pump that documented the well could produce 275 to 325 GPM with just eight feet of drawdown.

A six foot by six-foot square cement pad was poured around the 12-inch casing as the well was completed according to ADEQ Public Supply well standards. Prior to the end of the pump testing, a new source public water supply suite of samples were drawn and submitted to Mohave Environmental Laboratory for analysis on December 3rd. Engineering drawings were prepared by AZCA associates and delivered to their designated water plant operator for submittal to ADEQ.

This well has been designated Well #6 and it delivers water into their existing water treatment system for predominately summertime visitors, boaters and recreational enthusiasts.
Glass beads of MuniPak screen

Finished well head
Gicon Pumps & Equipment
Open House
October 11, 2019
Celebrating 20 years in Arizona!!!
Roscoe Moss Company
Since 1926

4360 Worth Street
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Phone: (323) 263-4111
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Roscoe Moss Company is dedicated to providing the highest quality casing and screen products for the water well industry worldwide. Manufacturing hydraulically efficient, cost-effective, and long lasting products has remained our core business since our inception almost 100 years ago.

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THE ART OF WATER WELLS
Technical and Economic Considerations for Water Well Siting, Design, and Installation
By Marvin F. Glotfelty, R.G.

PRACTICAL INFORMATION FOR ALL PROFESSIONALS
Get the resource for everyone in the groundwater field—contractors, engineers, water managers, and hydrogeologists.

The Art of Water Wells from NGWA Press is a comprehensive overview of well systems and delivers practical information applicable to real-world situations.

Authored by Marvin F. Glotfelty, RG, the 2012 NGWA Distinguished McElhiney Lecturer, it’s the next book for every groundwater professional’s bookshelf.

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(800) 551-7379 or (614) 898-7791
Arizona Water Well Association Membership Meeting  
October 26, 2019  

Guest Speaker: Gary Hix, RG, CWD/PI  

We held our Fall meeting at Coco’s Restaurant in Phoenix and although not many of our members were in attendance, it was a very good meeting with some great discussions regarding a variety of things happening throughout Arizona, well designs, rules & regulations, permits, scope of work, safety issues, to name a few. Everyone seems to have been very busy throughout Arizona this year and at this time, it appears to look the same for 2020.

Our Guest Speaker was Gary Hix and as NGWA’s McEllhiney Lecturer for 2019, he shared a lot of what he learned in his travels while speaking at numerous events, state association meetings, private well workshops and other functions around the U.S. Some of the topics he covered included how they manage their groundwater, drilling licensing, private water wells, etc. It was very interesting to hear what’s going on in other states, what’s worked, new things they’re doing and other topics. He showed some great slides and pictures along with interesting stories, including the above Welding Chair, handmade by a driller in Alaska to simplify his welding projects.

Our next meeting is scheduled for January 25, 2020, also at Coco’s, and we hope more of our members are available to attend so we can continue some of these discussions, address any new issues that may have surfaced and find out what’s happening throughout Arizona.
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Program Dedicated To Conserving Arizona Groundwater Accepting Applications

Published: December 5, 2019

A program dedicated to reducing the amount of groundwater withdrawn in Arizona’s five Active Management Areas (AMAs) has announced that it is accepting applications for its $2 million Groundwater Conservation Grant. The grant program, which has set a February 14, 2020 deadline for entries, accepts proposals for a wide variety of groundwater conservation projects and programs.

The categories include proposals focusing on water innovation and technology, infrastructure water efficiency, ecological enhancement and public outreach and engagement.

Overall, those projects are expected to include strategies and technologies that protect Arizona’s groundwater resources for current and future generations. In large part, those goals include reductions in the consumption and withdrawal of groundwater, reduction in the loss and waste of water, improvement in water efficiency, and increases in the reuse and recycling of wastewater.

Project administrators have identified several priorities for 2020 applicants. Among those priorities are projects that demonstrate “new, innovative qualities,” as well as evidence of contributions of additional funds or resources toward the project beyond the grant itself.

Additionally, the projects that demonstrate multiple benefits, or a higher impact in terms of groundwater conserved (or water augmented for the purpose of conserving groundwater), will be prioritized.

The WMAP have supported a wide-ranging array of projects and programs dedicated to water conservation throughout the years.

Among the recently supported programs is the Arizona Project WET, a long-running, multi-state initiative that promote responsible water stewardship “by providing teacher professional development that evolves instructional practice and deepens content knowledge” according to the APW website. Another is the “Water Use It Wisely” campaign, which promotes water conservation in Arizona’s urban communities through a “Don’t tell us to save water. Show us how” ethos.

This particular conservation grant program was funded by a $2 million General Fund appropriation as part of the DCP legislation that was passed in the 2019 session to increase available monies for groundwater conservation in the AMAs. The grant will be distributed among the AMAs based on population size and will be administered by ADWR’s Water Management Assistance Program (WMAP). Most other projects administered by WMAP are funded primarily from groundwater withdrawal fees collected from the people who withdraw groundwater in an AMA from a non-exempt well – that is, from higher-capacity wells that are capable of drawing more than 35 gallons of groundwater per minute.

ADWR hosted a grant application workshop December 10th at their offices in Phoenix which was available via webinar. Application solicitation, including Notice of Funding Opportunity, grant timeline, and electronic forms, may be found on the Arizona Office of Grants and Federal Resources website. Applications must be submitted through this website in order to be considered.

More information on the grant and application process can be found on the WMAP page at: https://new.azwater.gov/ama/wmap.

Project WET website: https://arizonawet.arizona.edu/
Water Use It Wisely website: https://wateruseitwisely.com/
ADWR Grant Application website: https://new.azwater.gov/meetings/grant-application-workshop
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ARIZONA'S NEXT WATER CRISIS

Megafarms and deeper wells are draining the water beneath rural Arizona – quietly, irreversibly

Ian James, and Rob O'Dell, Arizona Republic
Updated Dec. 27, 2019—Edited for space allotment

Vast expanses of lush green fields are multiplying in the Arizona desert, forming agricultural empires nourished with billions of gallons of groundwater in the otherwise parched landscape.

Arizona’s groundwater levels are plummeting in many areas. The problem is especially severe in unregulated rural areas where there are no limits on pumping. The water levels in more than 2,000 wells have dropped more than 100 feet since they were first drilled. The number of newly constructed wells is accelerating, and wells are being drilled deeper and hitting water at lower levels.

This free-for-all is draining away the water that homeowners also depend on, leaving some with dry wells.

As the groundwater is depleted, Arizona is suffering permanent losses that may not be recouped for thousands of years. These underground reserves that were laid down over millennia represent the only water that many rural communities can count on as the desert Southwest becomes hotter and drier with climate change.

Unfettered pumping has taken a toll on the state’s aquifers for many years, but just as experts are calling for Arizona to develop plans to save its ancient underground water, pumping is accelerating and the problems are getting much worse.

Big farming companies owned by out-of-state investors and foreign agriculture giants have descended on rural Arizona and snapped up farmland in areas where there is no limit on pumping.

Buying property from struggling small farms and homeowners, they’ve drilled wells a thousand feet deep or more, often spending more than half a million dollars per well to irrigate tens of thousands of acres of hay, corn, pistachios and other thirsty crops, with the expectation that they’ll soon be raking in profits.

In unregulated rural areas where water tables are dropping, homeowners and politicians are calling for the state to step in to halt well-drilling, or create new rules to limit pumping.

In these predominantly conservative communities, where the ethos is to take care of yourself and be wary of government regulation, prominent local officials are suggesting a moratorium on drilling, or the formation of new managed areas where drilling would be restricted.

Even urban areas of the state where protections exist are facing major challenges. Years of drought, rapid growth and cutbacks in Colorado River water are increasing the pressures on groundwater in areas that fall under state regulation.

In an unprecedented examination of the state’s groundwater, The Arizona Republic analyzed water-level data for more than 33,000 wells throughout Arizona, including some records going back more than 100 years, and nearly 250,000 well-drilling records.

The investigation found the water levels in nearly one in four wells in Arizona’s groundwater monitoring program have dropped more than 100 feet since they were drilled, a loss that scientists and water experts say is likely irrecoverable.

Nearly half of the wells with five or more measurements have dropped more than 50 feet at some point since record-keeping began. And that’s only in a limited number of wells whose owners agreed to be voluntarily monitored.

Arizona doesn’t require meters on wells in many areas, meaning no one really knows how much water is being pumped out.
Tom Buschatzke, director of the Arizona Department of Water Resources, said the lack of metering is a major hole in Arizona’s groundwater laws. He said his department has proposed mandatory water-use reporting by well owners in unregulated areas. That data would enable the agency to see precisely how much water is being taken out of aquifers.

"We need that pumping data," he said.

Many of the industrial farms have located themselves in the rural areas that have already seen the largest water-level drops over time.

Arizona water consultant Marvin Glotfelty said it's difficult to determine how much the corporate farms have additionally dropped the aquifers without building complex groundwater models that can cost as much as $50,000.

"In our firm, what we are having farmers come and ask us is, 'Is there enough water for X period of time?'" Glotfelty said. "And if we say, 'OK, there's enough water to last 50 years, and it's going to result in several hundred feet of water level drawdown,' we give them that answer and they'll go forward with their farm."

These farmlands, which are forming circular islands of emerald green in the desert, are swiftly draining aquifers. People who live nearby are increasingly living in fear that their water may soon run out.

Some wells have already gone dry, leaving families struggling to cope with the costs.

Rodney Hayes' well went dry in July, as his wife, Nancy Blevins, was washing the dishes. Their pump burned up when the water level dropped, and the two, who live near a giant Saudi Arabian hay farm in Vicksburg, had to look for water elsewhere.

They hauled water, 100 one-gallon bottles at a time, from a friend who lent her tap. They dreamed about getting water back on for even a few hours a day.

"At least we could take showers without going to friends' houses or truck stops or, you know, pouring water over each other," he said.

In November, they finally managed to buy a new pump and got water running at their home again. But there's no telling how long it might last.

Regions where pumping isn't restricted — from Mohave and La Paz counties in the west to Cochise County in the southeast — have become hotspots where groundwater is being quickly depleted.

While the water tables drop year after year, the political system seems paralyzed and incapable of limiting pumping or helping residents who are saddled with the costs.

So the status quo stays in place: Large farms continue to pump out vast quantities of water. Homeowners continue to bear the costs. And this irreplaceable supply of water continues to drop.

**Long-term problem getting worse**

The largest drops in groundwater levels have occurred over decades, in valleys where farms have been drawing on aquifers for 70 years or more.

Some areas of the state have dropped so much that the water likely won't naturally recover in our lifetimes. The McMullen Valley, surrounding Salome and Wenden in the desert about 40 miles northeast of Quartzsite, has seen the average water level in state-monitored wells drop by 184 feet since the 1950s. The average well in the Gila Bend basin has dropped by 162 feet.

In Pinal County, in the Maricopa-Stanfield basin around Maricopa, monitored wells have declined by 125 feet since the 1950s. In the area around Vicksburg, where the 10,000 acre Saudi hay farming operation opened five years ago to ship hay back home, the average water level has dropped 120 feet since the '50s.

In the “active management areas” that were created by Arizona’s landmark Groundwater Management Act in 1980, average water levels have stopped falling and recovered somewhat after Colorado River water was brought by canal in the 1980s and 1990s.

(Continued on Page 32)
But in rural areas without regulation, average water levels across all monitored wells in the state have dived in recent years and are threatening to surpass all-time lows hit in the mid-1980s. State officials estimate that 40% of the water that's used in Arizona is groundwater.

State officials estimate that 40% of the water that's used in Arizona is groundwater.

Robert Glennon, a water expert and law professor at the University of Arizona, said the sharp declines in groundwater levels are alarming.

"Those are big numbers, and it's probably not reversible," Glennon said. "A 50 or 100-foot drop is a big drop. And that makes it much more expensive for everyone to use what water there is."

In those unregulated rural areas of the state, the overuse of water is getting worse. Large commercial farms are ramping up, drilling wells and pumping billions of gallons from stressed aquifers every year.

"They go to the place where there's no regulation, because they can just suck the hell out of the water and leave," Glennon said.

With water tables falling, state drilling records show that more and more wells are being drilled, and they're being drilled deeper. The wells in the overstressed Willcox basin were drilled 358 feet deeper on average in 2018 than they were in 2010. Nearby in San Simon, wells were 211 feet deeper.

In the Wellton-Mohawk basin, which straddles Interstate 8 on the way to Yuma, the average well was drilled 741 feet deeper in 2018 than in 2010. In the Hualapai Valley around Kingman, where large corporate farms have spurred calls for regulation, wells were drilled an average of 280 feet deeper than eight years ago.

There are no state or national standards that determine how big a drop in a well is problematic. The only standard Arizona has for wells is a rule inside managed areas that a well cannot be built if it will drop a neighbor's well by more than 10 feet over five years. Applying that standard to all monitored wells statewide reveals that 20 percent of wells dropped more than that during at least one five-year period.

In many areas, there are only rough estimates of how much extractable freshwater remains underground, and it's unclear how much longer overpumping could continue until aquifers approach a point where the remaining water is too deep to pump economically.

"My concern is really about the future," said Jay Famiglietti, who leads the Global Institute for Water Security at the University of Saskatchewan. "How long can it really go on before, in the case of Arizona, the water is gone?"

Famiglietti, a former NASA scientist, has used measurements from satellites to study groundwater worldwide, and has found that many of the world's large aquifers are declining.

Groundwater levels have been falling in many areas across the United States, and the problem has been especially pronounced in farming areas of the West, from the productive nut and fruit orchards of California's Central Valley to the cornfields atop the Ogallala Aquifer in the High Plains.

The plunging water levels in unregulated parts of Arizona parallel similar declines in other Western states. But the state's water data shows that the problem has been worsening with the arrival of industrial farms and investors. And people who live near the expanding farmlands are paying a heavy price.

'I don't feel safe'

For companies growing crops like alfalfa and corn, Arizona offers economical land, a sunny climate with several growing seasons, and cheap, readily available water from wells. As these farms pump more water, the collective costs are passed on to neighbors and homeowners. While the water tables decline beneath their homes, wells have been going dry.

Several years ago, as alfalfa farms expanded into virgin desert and fallow farmland around the town of Salome, Mary Goodman's well suddenly dried up.

Goodman, a 71-year-old retired nurse, and her husband, Bill, a retired mechanic, spent $16,000 of their retirement money drilling a new 680-foot-deep well. Now they worry about how long the water will last.

"Half of me feels like we ought to just sell out now, if we can get a good price, and get the heck out of here before we run out of water," Goodman said. "The other half says, 'you love it here. You've worked for 20 years to build this place up.' So I don't think I should be forced to sell my home just to feel safe. But I don't feel safe."
Near the Goodmans' house, where there are two dirt runways for Bill's aviation hobby, new industrial wells have been drilled beside Highway 60. Goodman said all the pumping in McMullen Valley is gradually taking a toll on their well.

“The only comforting thought is by the time it goes dry, we'll probably be dead — if that's a comfort,” she said.

She said it's upsetting and scary to see the place where she planned to live out the rest of her life being drained of its water, and nobody doing anything about it.

“I think it looks very grim if something isn't done to start protecting the water in this area,” Goodman said. “There need to be some laws put into place to protect the water.”

In her town and elsewhere in the state, calls for regulation have been growing. People have been clamoring for politicians and water officials to act to safeguard groundwater before it disappears.

More than 50 miles south of Goodman's home, in the remote desert straddling the Maricopa-Yuma County line, a ghost town stands as a reminder of the potential consequences of unchecked groundwater pumping.

An abandoned hotel, with its windows boarded up, lies at the base of a rocky hill. This was once a popular hot spring resort, an oasis for travelers to stop and rest.

The Agua Caliente hot spring has a history that goes back well before Arizona became a state, said Matt Bischoff, a historian who has studied the area.

A Spanish mission was built there in 1774 and in the 1800s the springs became a resort for people traveling by horse and stagecoach along the trail that followed the Gila River.

In the 1860s, noted author John Ross Browne wrote about a visit in the book "Adventures in the Apache Country." He wrote: "An abundant supply of water flows ... We had a glorious bath in the springs next morning, which completely set us up after the dust and grit of the journey."

The 22-room hotel was built next to the hot springs in 1897, Bischoff said. During World War II, troops trained nearby at Camp Hyder and swam in the springs.

(Continued on page 34)
Now, if you drive down Old Agua Caliente Road in Hyder, you’ll find “No Trespassing” signs posted on the shuttered hotel. Near it, the remnants of wooden buildings are splintering and decaying in the sun.

The road near the Agua Caliente ghost town is lined with dead mesquite trees. Their roots no longer reach the water, and their branches have been transformed into brittle charcoal-gray skeletons.

The hotel shut down after the war, when the completion of the highway allowed drivers to bypass Agua Caliente. But it was groundwater pumping from farms, Bischoff said, that drew down the water table and dried up the springs.

"The overpumping is what killed it off completely," Bischoff said.

**Arizona politics offers little hope for fix**

Nearly 40 years ago, Arizona adopted a landmark law regulating groundwater in Phoenix, Tucson, and populated, mostly urban areas. The law left the rest of the state without rules limiting drilling or pumping.

“Outside of the active management areas, you can drill a well of any size, and any place you want, and pump as much as you like,” said Kathleen Ferris, the former Department of Water Resources director who helped draft the Groundwater Management Act.

But there’s only been one addition to regulated areas since the groundwater law was approved, and that expansion occurred in 1981. Five recent efforts to limit groundwater pumping in three different counties — Cochise, La Paz and Mohave — have failed. There is little the Arizona Department of Water Resources can do under the law to limit groundwater pumping.

“So the only thing that they can do outside of (managed areas) is to require that wells be drilled in conformance with well construction standards and by a licensed well driller and that they'd be registered with the department," said Ferris, now a senior research fellow at Arizona State University’s Kyl Center for Water Policy.

The Department of Water Resources can also create new managed areas of the state, either by declaring the area itself or establishing one if enough landowners sign petitions. But three recent efforts to create new managed areas, one in San Simon near Willcox and two efforts requested by leaders in Mohave County, were rejected by the state.

State officials said that in those cases water levels weren’t dropping rapidly enough to create a new managed area and they couldn’t take into account potential future increases in pumping. ADWR director Buschatzke ruled the state would have to wait to see even larger declines before putting in new regulations that would create an "irrigation non-expansion area" that would freeze new irrigation.

"I'm definitely constrained by the law, I only have the authority to do certain things," Buschatzke said. "We can only look at today and yesterday in terms of decline rates."
In 2017, Buschatzke's department proposed new legislation that would give the agency the ability to project water availability decades into the future when making decisions on limiting irrigation.

The package of new rules also called for metering of wells outside managed areas. Buschatzke said the department couldn't get any legislators to take up the bills.

"That's our challenge, how to build up enough support among the stakeholders that we can get something passed at the Legislature," he said.

In addition, the calls for regulation led to a surge in well-drilling around Willcox. Completed wells surged from 43 wells in 2010 to 123 wells in 2015.

State lawmakers have declined to establish new regulations.

Legislators declined to wade into a 2015 effort by community leaders in Willcox for voluntary regulation to limit groundwater pumping there, which ultimately failed. Requests to limit wells from large corporate farms in La Paz County and prevent new irrigated farms in Mohave County were met by the Legislature with an allocation of $100,000 to create study groups to examine aquifer levels there.

It's unclear how many wells across the state have gone dry in recent years, because neither state officials nor county officials have been systematically tracking reports of dry wells — even though they've been getting regular complaints.

Bruce Babbitt, the former governor who signed the 1980 Groundwater Management Act into law, is calling for the state to regulate groundwater in rural areas and give county officials a leading role. In a speech in October, Babbitt said problems are mounting in unregulated rural areas.

He pointed to the arrival of big corporate farms in Mohave, La Paz and Cochise counties. "Mark my words. It's just the beginning," Babbitt said.

Four decades ago, the political situation was much different. When the Arizona Legislature passed the nation's first comprehensive groundwater management law, there was a genuine crisis. A ruling by the Arizona Supreme Court had upended the state's water rules four years earlier and the state faced the threat of losing Central Arizona Project water if it did nothing.

“WHAT WE'RE SEEING IS A RISE OF INDUSTRIAL AGRICULTURE ON A SCALE THAT WE'VE NEVER SEEN IN THIS STATE, FROM NEW YORK HEDGE FUNDS, FROM NEVADA INVESTORS, FROM MIDDLE EASTERN INVESTORS,” BABBITT SAID. “THAT INDUSTRIAL AGRICULTURE IS JUST THE BEGINNING, I SUBMIT TO YOU, OF A NEW ERA OF INTENSE, UNPRECEDENTED DEMAND.”

“WE HAD LEADERSHIP IN THE LEGISLATURE THAT BELIEVED IT HAD TO HAPPEN AND HAD A GOVERNOR WHO ALSO BELIEVED IT HAD TO HAPPEN,” FERRIS SAID.
Gov. Doug Ducey didn’t respond to repeated requests for comment on Arizona’s water issues. Ducey’s Water Augmentation, Innovation and Conservation Council has a committee on rural groundwater outside of regulated areas. That committee is headed by Rep. Gail Griffin who at least five times in the past four years has tried to loosen groundwater regulations. She also did not respond to requests for comment.

Ferris said for real change to happen now, the Legislature must get involved again. But unless they do, Arizona’s paralyzed system continues the status quo, with homeowners bearing the costs of failing wells and large farms continuing to pump with no limitations.

“Unfortunately the people that have control of the status quo don’t want it to change,” Ferris said.

**Draining fossil water**

In the dusty fields near the dry bed of the Gila River in Hyder, not far from the Agua Caliente ghost town, drilling rigs are boring deep into the ground.

Companies have been buying land to lease to hay growers, and they’re putting in new wells more than 1,500 feet deep, creating Arizona’s next agricultural frontier for industrial farms.

Mark Skousen runs a second-generation family farm near the abandoned hot spring in Hyder. When his father bought the land and drilled a well in 1957, the water gushed out of the ground. At that time, the Agua Caliente hot spring was still flowing.

In the early 1960s, when Skousen was a boy, another farmer drilled wells at a farm near the hot spring. When they started pumping, the water quit flowing out of the ground and the hot spring died.

“The water tables’s been dropping steady since then,” Skousen said.

Some of his wells no longer produce enough water and he has had to reduce the number of acres he farms.

In the long term, the water losses may be irreversible in many rural communities. Much of the groundwater that’s flowing to farmland accumulated underground thousands of years ago. As it’s pumped out, the aquifers are suffering a hollowing-out that the rains won’t replenish for centuries to come.

In a few areas of the state, aquifers have been replenished by years of “banking” imported water from the Colorado River, and there, groundwater levels have risen.

But even in “active management areas” around Phoenix, Tucson and Pinal County, where aquifers have benefited from decades of regulation, there still have been significant declines in some areas. In more than half the subbasins in managed areas average water levels have declined since the 1980s even with restrictions on groundwater pumping and additional CAP water.

Arizona faces its first-ever mandatory cuts in Colorado River water next year under an agreement that will shrink the amount of water that’s available to replenish aquifers in urban areas. And in the long-term, with climate change projected to put growing strains on water supplies from rivers, Phoenix and other cities plan to potentially pump more groundwater.

Groundwater also feeds desert streams and rivers, and decades of heavy pumping has left them with diminished flows. The future of remaining rivers, from the San Pedro to the Verde, hangs in the balance.

Overpumping can also drive up costs.

At deeper levels, groundwater can contain higher levels of contaminants, which can require expensive treatment. And the deeper the water table falls, the more energy costs increase to pump the water out.

If nothing changes, Ferris said, “either the groundwater runs out, or it becomes too expensive to pump, or its quality is such that it’s too expensive to treat to use.”

*Environmental coverage on azcentral.com and in The Arizona Republic is supported by a grant from the Nina Mason Pulliam Charitable Trust. Follow The Republic environmental reporting team at environment.azcentral.com and @azcenvironment on Facebook, Twitter and Instagram.*

To read this article in its entirety, go to: https://www.azcentral.com/in-depth/news/local/arizona-environment/2019/12/05/unregulated-pumping-arizona-groundwater-dry-wells/2425078001/
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Scholarship Recipients

Dear AzWWA,

Hello from Colorado!

I hope this letter finds your organization well. I wanted to once again thank you for investing in my college education so many years ago. My undergraduate degree from the University of Arizona allowed me the opportunity to pursue post-graduate studies at the University of Colorado, which led to a career in healthcare. I have been at the University of Colorado Hospital for over ten years now and have a job I truly enjoy. I utilize CT and MRI images to evaluate patients' compatibility for various surgical procedures. Any person who is having a vascular, heart, brain or trauma surgery is evaluated by me to give the surgeon an idea of what to expect if they proceed with surgery. I also perform all of the vital measurements for our nationally recognized living organ donor program; which is very rewarding because I am part of a team that is saving lives both at my hospital and the adjoining children's hospital.

In conclusion, I would like to reiterate my appreciation of your support in obtaining my degree. It is impossible to accomplish any goal without people in your corner, and I am honored that you chose to be in mine.

Sincerely,

Amanda Sawade-Goodwin
21816 E. Stroll Avenue
Parker, CO 80138

Arizona Water Well Association,

With the help of the AzWWA I was able to graduate from Arizona State University with a Bachelor of Science in Business Data Analytics. I am passionate about working in analytics and I was fortunate enough to receive a job offer from a financial institute in Scottsdale, AZ. I am now a Data Quality Analyst working with some of the largest banks in the world.

The scholarship I received from AzWWA was more than a monetary gift. It was a reminder to get up, go to class, do well, and find success. The contribution reminded me that my education was not solely about me, but also about the people who believed in me. I thank the Arizona Water Well Association for their belief and support.

Much thanks,

Travis C. Sawade

(Continued on page 38)
To the Arizona Water Well Association:

I received the AWWA scholarship beginning in Fall 2008. At that time, I began attending Arizona State University. I graduated Summa Cum Laude in 2012 with a Bachelor’s of Science in Exercise and Wellness. Ultimately in pursuit of a career in physical therapy, I was accepted to Columbia University’s College of Physicians and Surgeons Program in Physical Therapy in New York City. While attending Columbia I was the president of the Physical Therapy Community Action Network, a volunteer program in the physical therapy department that provided healthcare services to the underserved community.

I completed internships at Morgan Stanley Children’s Hospital and Children’s Hospital of Philadelphia as part of my physical therapy doctoral program. Following my final internship, I graduated with honors from Columbia University with my Doctor of Physical Therapy degree. I then began working at New York-Presbyterian Hospital in their acute care and inpatient rehabilitation departments, providing physical therapy services to a variety of acute care and inpatient rehabilitation departments, providing physical therapy services to a variety of adult and pediatric populations. My determination to work with the pediatric population led me to pursue, and receive, an opportunity to complete a Pediatric Physical Therapy Residency at the University of Colorado and Children’s Hospital Colorado. I am currently completing this residency program after which time I will be able to sit for my Pediatric Clinical Specialty exam to receive specialist certification as a Doctor of Physical Therapy for the pediatric population at the Hospital for Special Surgeries in New York City.

I am very grateful to the Arizona Water Well Association for their support at the beginning of my education. My education has been long and taxing in many ways, but it has been extremely rewarding and fruitful. Any assistance provided, monetary or otherwise, was a welcome contribution that aided to lessen the burdens that accompany higher education which ultimately facilitated greater success in both my academic and career pursuits. I thank the Arizona Water Well Association for their past generosity and support.

Sincerely,

Samantha A Sawade, PT, DPT
Doctor of Physical Therapy

More AZWWA Scholarship Funds are Available!

The AZWWA offers educational scholarships in the amount of $1,000 per semester for the children and/or grandchildren of contractors who have been members of our Association for a minimum of 2 years or employees of said contractor who has a reasonable relationship with the Association.

Other qualifications of the applicant are:

- Has the support of his/her family. If the applicant is a child or grandchild of an employee of a contractor, the owner/manager must also support the applicant.
- Acceptance by aforementioned Arizona institution. The Committee will take into consideration any requests or attendance at schools outside of Arizona.
- Full time enrollment. The Committee will also take into consideration requests for less than a full schedule.
- Maintain a 2.5 grade point average.

The above qualifications are in reference to university or junior college enrollment. However, the Committee will consider requests for trade school or other participation at reduced levels of financial support if such education is deemed beneficial to the family’s business effort.

A completed Scholarship Application, including a resume, a letter of endorsement from the applicant’s parents or employer and a transcript from the last educational institution attended are required.

For more information, please contact:

Scholarship Chair
Fred Tregaskes
ftregaskes1@gmail.com
PH: 480-404-2788

AZWWA Office
Kerrell Dunsmore
admin@azwwa.org
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Changes Coming to the Way MVD Issues Plates, Tabs and Documents

Customers to get items through U.S. Mail

This new year will usher in a new way for Arizona Department of Transportation Motor Vehicle Division customers to get license plates, registration tabs and many documents such as vehicle titles.

Beginning in January, customers will receive these items through the U.S. Mail and will no longer be able to obtain them at an MVD or Authorized Third Party office. Customers should make sure their address is current and complete with the U.S. Postal Service and MVD.

“The MVD needs to be well-positioned for the growth of e-commerce,” said MVD Stakeholder Relations Manager Jennifer Bowser Richards. “Distributing items such as license plates, tabs, title work and other documents allows us to prepare for the growing demand for fulfilling customer orders through the mail as MVD continues to increase the number of services available online, anytime.”

All registration documents and license plate tabs, including those issued at MVD self-service kiosks will be mailed. When customers renew, their record is updated instantly and a receipt will be proof of registration.

For customers getting a license plate, the change will also mean the plate number will be entered into the customer’s service file and the temporary plate issued at the office will have the same number as the permanent plate being mailed.

Customers who purchase Off-Highway Vehicle decals the same day they plan to use them at a recreational area will not receive the decal at the office, but will get a receipt that should be kept with them to prove the decals have been purchased.

In the future, more vehicle titles will transition to an electronic process. Currently, a limited number of title transfers such as one-owner to one-owner transfers of Arizona-registered vehicles can already be done entirely online through AZ MVD Now, which is available through ServiceArizona.com.

For more information, go to MVD System Changes link at azdot.gov/mvd.

The vision of the Arizona Department of Transportation Motor Vehicle Division is to “get Arizona out of line and safely on the road”. Dedicated MVD employees, Authorized Third Party providers and offering more services online help MVD achieve this vision.

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Events Calendar

January 25th, 2020  
AzWWA Membership Meeting  
Location: Coco’s  
2026 N. 7th Street  
Phoenix AZ 85006  
For more information, Email admin@azwwa.org or call 602-258-3821

February 6 & 7, 2020  
Mountain States Ground Water Expo  
Aquarius Casino Resort  
Laughlin, NV  
For more information go to www.mountainstatesgroundwater.com, Email info@mountainstatesgroundwater.com or call 480-609-3993

April 14-16, 2020  
AZ Water 93rd Annual Water Conference & Exhibition  
Phoenix Convention Center, South Building  
33 S. 3rd Street, Phoenix, AZ 85004  
For more information:  
Website: https://www.azwater.org/page/2020AnnualConf  
Email conference@azwater.org or call 480-987-4888

April, 2020  
AzWWA Membership Meeting  
Date and Location TBD