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ARIZONA

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AZ'S NATIONAL FORESTS

A FIRST-HAND LOOK AT FIRE MITIGATION



by Amanda A. Reeve and
James Candland

During a three-day field trip hosted by the Eastern Arizona Counties Organization ("ECO"), federal, state, county and municipal elected and government officials gained a first-hand look and a whole new perspective to the old proverbial saying in regard to one "not seeing the forest for the trees". We visited three of Arizona's National Forests: the Coconino, Tonto, and Apache-Sitgreaves, to observe the various fire-mitigation efforts being implemented; and study the damage to the ecosystem from wildfires of

ECO 2015 Field Trip Elected and Governmental Officials With Bladder Tank. Photo courtesy of A. Reeve

differing temperature intensity levels. The purpose of this field trip was to let policy makers and government regulators better understand the challenges facing Arizona's overgrown forests, at-risk watersheds and struggling rural economy so that we can work together in resolving them.

EASTERN ARIZONA COUNTIES ORGANIZATION DEVELOPS LEADING ROLE

ECO is the collaborative effort led by Apache, Gila, Graham, Greenlee and Navajo counties for the purpose of monitoring Federal programs affecting

the environmental and economic well-being of the Counties. Subsequently, they have progressively developed a leading role in natural resources and public lands management issues. ECO's accomplishments over the years are many, significant and include working with all levels of government and industry on watershed and forest restoration initiatives and furthering development of infrastructures via innovative measures while stimulating Arizona's economy. For instance, we learned that Gila County Supervisor and ECO Chair Tommie Martin initiated a network of strategically-placed helicopter-available bladder-tank water filling-sites for first-strike forest fire response; which has proven to be very successful, and has even received numerous national awards and recognition. Seeing the bladders up-close impressed upon us the ingenuity of this preventative measure.

The impacts to watersheds due to the lack of forest management is felt statewide and could result in future water issues ranging from water shortages to negative impacts on much needed watershed



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*Tonto National Forest Thinning Project
Photo courtesy of RokiSEO*



*Tonto National Forest Overcrowded State
Photo courtesy of RokiSEO*

resources such as SRP's C.C. Cragin Reservoir, which is located near the Mogollon Rim and contains approximately five billion gallons of water. While visiting this reservoir, we were shown an area of the Tonto National Forest which still lacks healthy vegetation due to the irreparable damage done to the soils and slopes from the Dude Fire, a high-intensity wildfire that ravaged the area 25 years ago. The rains wash this unhealthy soil down into such resources like the C.C. Cragin Reservoir causing contamination and sedimentation of the critical water supply. Fortunately, SRP is working with federal agencies, the Town of Payson and Gila County on a 64,000 acre restoration thinning project to ensure better protection of this highly-at-risk watershed.

FOREST MANAGEMENT

Thinning the forests to make them healthier may sound counterintuitive; but only because at some point our beliefs shifted to the theory that healthy forests equate to quantity, not quality. Yet, try applying this logic to a 2,000 square-foot house in which 50 people live full-time and explaining how extensive structural damage and a continual depletion of resources would not be an issue. Much like Arizona's forests were historically, a healthy forest typically has only a few dozen trees per acre that are widely dispersed, and not the suffocating 1,000 trees per acre of today's Arizona forests. Governor Ducey's Natural Resources Policy Advisor Hunter Moore provided the perspective of looking at the trees as if they are straws. Just as a child drinks milk through a straw to nourish his body and mind, a tree sucks up water and nutrients from the soil through its roots...and its branches and leaves reach up into the sky to soak in the much needed sunlight and nutrients from the atmosphere...all of which is required for its healthy nourishment and growth. However, as trees overcrowd one another, their nourishing resources and area for growth begin to diminish until altogether vanishing up in smoke.

ECO Board member and Navajo County Supervisor Jason E. Whiting and ECO Vice Chair and Greenlee County Supervisor Chairman David Gomez explained throughout the trip that forest management is not just about focusing on the tree's well-being, but on the welfare of the ecosystem as a whole. Too many trees in one area sucking up nutrients from the soil and preventing the sun from passing through the canopy of leaves stunts their own growth; and, is prohibitive to the growth of other plants and grasses that are essential for the nourishment or habitat of the wildlife in the area. Thus, a forest with well-dispersed trees and a healthy ground-cover of plants and grasses is reflective of excellent forest management as well as preventative wildfire supervision. Less really is more when it comes to forests.

FIRE FUEL TREATMENT STUDY SITES

We observed this first-hand as we traveled into the Apache-Sitgreaves National Forests near Vernon to study the impacts of the 2014 San Juan Fire incident. We drove several miles into the forest before finally turning off the main forest road onto a less-traveled service road that went up a short steep hill and came to an end in a small clearing. We parked our vehicles and gathered around U.S. Forest Service Supervisor Tom Osen who handed each of us a copy of the San Juan Fire Fuel Treatment Effectiveness Report his team had prepared, which states:

One fortunate aspect of the San Juan Fire is that it burned through a series of experimental study sites established by the Ecological Restoration Institute (ERI) at Northern Arizona University. As a result, we now have a much more precise side-by-side comparison of fuel treatment effectiveness of two different approaches to fuel treatments as compared to a control or untreated site.

Having reiterated this statement from the report, Supervisor Osen informed us that we were actually standing in the area of one of those test sites. The service road serves as the demarcation between a treated and untreated area of the forest. As we stood in the clearing next to the road, the reality of the effectiveness of fire mitigation was astounding. On one side of the road was the untreated area in which the soil and trees were a deep black color and the immediate thought of "scorched earth" came to mind. On the other side of the road was the treated area, flush with green grass and blooming plants; and only the slight brownish stains on the trunks of the bountiful trees gave proof that this side had been touched by the fire. In other words, the catastrophic fire from only a year earlier essentially stopped in its tracks as it hit the treated areas because it lacked the necessary fuel to continue its fury.



Bladder Tank. Photo courtesy of A. Reeve

This preventative treatment saved thousands of acres of our natural resources, numerous communities, vegetation and habitats of the Mexican Spotted Owl, Northern Goshawk, Apache Trout, deer, elk and antelope that live in the area.

PROTECTING OUR NATURAL RESOURCES

With California finally awakening from its stupor in regard to its water shortage crisis, ECO is working to promote activities and partnerships that will protect our future natural resources needs. Arizona is a remarkable state with its unique geographical terrain and climate; and while it is heavily populated and largely a dry, arid desert, it is not currently in the midst of the immediate water shortage crises that is facing California. The one message that the ECO Chair Supervisor Martin kept emphasizing was that innovation and collaboration, not regulation, are the keys to successfully safeguarding our natural resources:

The answers to keeping our forest healthy and our water flowing are not in the rules, regulations or policies of the federal government. The answers can only be found at the state and local level through collaborative efforts leading to innovative and proactive solutions. Working against one another, and/or for the benefit of one's self-interest is prohibitive and destructive. All of us want a healthy and vibrant environment, ecosystem, and economy; and it can only be achieved and maintained with us all working together.

Something must be done to better protect our natural resources. As Governor Ducey expressed during his speech at the June 2015 East Valley Partnership luncheon:

The increased risk of catastrophic wildfires in our national forests due to poor forest management is a risk to our communities and our water supplies. Implementation of landscape forest restoration is a key factor in fixing the problem.

Cooperation from all levels of government and among industry is imperative to ensuring that Arizona's resources are protected for the health and well-being of all Arizonans for generations to come. ECO is on the front lines of these efforts and is a critical partner in protecting Arizona's resources and enhancing the economy, which is why it hosted this field trip with plans to host another one next year. As Tami Stowe, Chief of Staff to Speaker David Gowan in the Arizona House of Representatives, explains:

The ECO 2015 Field Trip was definitely one of the most informative, beneficial and impactful tours I have ever taken in all of my 18 years of working at the legislature. Every minute of the trip was filled with presentations, tours and discussions that helped us better understand our successes, challenges and path forward. It was almost exhausting, yet incredibly rewarding and definitely ought to be attended by all Arizona legislators.

Amanda A. Reeve is an Environmental and Regulatory Policy Advisor with Snell & Wilmer L.L.P., and a former Arizona State Representative and Chair of the Environment Committee. Amanda can be reached by email at areeve@swlaw.com, or by phone at 602-382-6177.

James Candland is President of Clarus Companies LLC, a consulting firm specializing in government and public relations. Clarus focuses on many issues including environmental policy, land, forestry, water, and energy. James can be reached at james@claruscompanies.com or by phone at 480-620-7882.

FROM THE EDITOR



The most rewarding part of publishing the Journal for nearly 13 years has been the opportunity it has given me to stay in touch, and to help others stay in touch, with so many members of our Arizona environmental community. The Journal, in our modest role as a communication platform, has had the honor of publicizing years of events, programs, regulations, organizations and their activities, companies, and people. This includes the ups & the downs -- on one hand, the organizations receiving honors and awards for their accomplishments, and on the other hand, a few that make serious 'slips' and are cited for violations, pay substantial fines, and/or enter consent decrees.

But most important are the people. Over the years we've reported on the exciting and happy events in our environmental lives -- promotions, new jobs, awards, educational scholarships, and retirements. But unfortunately we have also had our share over the years of the sad events in life, loss of family members, injuries, and sometimes death of a colleague. Sadly, in this issue, we once again publish a Memorium for a lost colleague (please see page 14). At a time like this, it is good to know we are part of a community that cares more about each other than just work, technology, and regulations -- but also as people.

Sincerely,

Jim Thrush, M.S. Environmental Management
Editor & Publisher 480-422-4430 x42
Email: jimthrush@cox.net

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JOURNAL OF Environmental Management ARIZONA

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JOURNAL OF ENVIRONMENTAL MANAGEMENT ARIZONA

EDITORIAL Publisher & Editor: James Thrush, M.S. Env. Mgt., jimthrush@cox.net or 480-422-4430. SUBSCRIBE: ehshomepage.com or 480-422-4430. RATES FREE to qualified EHS Professionals, others call. MAILING ADDRESS (NEW): JEMA, PO Box 51852, Phoenix, AZ 85076. ADVERTISING 480-422-4430 x42. Published 6 times/year. Copyright ©2013 by JEMA. All rights reserved. LEGAL DISCLAIMER Information presented in JEMA originates from sources presumed to be accurate and complete. Due to the rapidly changing nature of regulations and the law and our reliance on information provided by various sources, we make no warranty or guarantee concerning the accuracy or reliability of the content of JEMA. Readers are encouraged to contact authors, agencies, and advertisers directly for verification/clarification. Content for informational purposes only, and should not be considered legal or professional advice. Consult your legal counsel or environmental consultants for advice. WARNING Serious legal, environmental, and/or safety consequences can result from non-compliance with environmental and safety regulations and standard safety, environmental, and professional practices.

COVER PHOTO: USFS SAN JUAN FIRE BRIEFING, MAP SHOWS SAN JUAN FIRE'S DIFFERENT LEVELS OF INTENSITY AND IMPACT OF TREATMENT AREAS ON FIRE INTENSITY (FOR MORE INFO CONTACT A. REEVE). PHOTO: COURTESY OF ROKITSEO.



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SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT



Nicholas R. Hild, PhD.

LUST IN THE NEW MILLENNIUM

Lessons from our ancient environmental history way back in the 1980's should be resurrected whenever any discussion about buried pipeline transport of hazardous substances in underground 'systems' is seriously being considered. Take, for instance, the current debate about whether or not the U.S. should build the underground Canadian XL Pipeline to carry 570,000 barrels a day of crude oil to the Gulf of Mexico where it would be loaded aboard super tankers and exported overseas.

The history lesson? In the late 1970s, it was the plethora of underground storage tanks and, in particular, the associated piping that were found to be leaking all sorts of hazardous substances into soils and groundwater. It was such a widespread problem that it led to a voluminous set of regulations (40CFR280) as part of the Resource Conservation and Recovery Act of 1980 that focused just on hazardous waste that comes from Leaking Underground Storage Tanks (LUST) and piping (systems)---back then, the acronym was 'LUST' which soon became 'UST' when the EPA didn't respond kindly to the running joke that they were now responsible for regulating 'lust' in the U.S.

It is 40CFR280 (and approved State regs) that regulates owners and operators of USTs and associated piping that feeds them. Owners/operators of UST 'systems' are required to routinely test the entire system (tanks, piping, valves; etc) to ensure that no leaks or spills have occurred since the last testing procedures were administered. In the early '80s, literally no one had acceptable testing procedures for underground piping "systems" so it fell to each owner/operator to design testing procedures that each regional (or State) EPA office agreed were appropriate for the individual 'system.' In addition, test results were submitted to a regional EPA or State office, together with any leaking tanks/piping documentation that showed how those leaks were repaired and the hazardous waste cleaned up.

For the past 30 years, literally hundreds of UST 'systems' have been tested, leaking systems removed or repaired with associated (leaked) hazardous wastes cleaned up in the millions of gallons and contaminated soils removed in the thousands of tons. And, now comes a proposal to build a 2000+ mile long buried pipeline inside a 50 foot wide right-of-way, from the Canadian border to the Gulf of Mexico. The pipeline will carry crude oil through some of the most environmentally sensitive lands in the U.S. with virtually no discussion of how such a pipeline would be constructed to ensure that it doesn't leak.

And, despite all the best intentions, if we've learned nothing else in 30+ years of managing UST systems, we have learned one truism: sooner or later all such systems leak! It's only a matter of time (i.e. aging

pipe and valves are subject to fatigue and corrosion from inside and outside the pipe walls and welded joints and valve flanges).

Discussions are being held in Congress about how the XL Pipeline can be constructed from the northern border to the Gulf of Mexico, all of it to be buried and out of sight, except (presumably) for pumping stations, along the way. So, let's review the history of LUST in the U.S. The federal office which oversees pipeline safety (besides the EPA) is the Pipeline and Hazardous Materials Safety Administration (PHMSA). They recently reported that between 1995 and 2014, there have been of over 100 significant leaks in oil and petroleum pipelines all over the U.S. Most leaks has occurred in piping that has been in the ground for more than 30 years; just a small part of the aging infrastructure that the current administration has been trying to convince congress, needs to be fixed along with our aging bridges and highway systems. But the difference in the piping infrastructure and bridges and highways is, buried piping systems are out of sight, out of mind. And, only when a leak occurs do the consequences of neglect raise concern.

For an example of the type of leak that could occur in a pipe the size of the XL Pipeline, look no further than the recent crude leak that occurred south of Santa Barbara in a 30 year old pipeline that is two feet in diameter, similar to the size of the proposed XL Pipeline. The Santa Barbara leak resulted in over 100,000 gallons of crude being spilled onto the pristine beaches and into the Pacific surf. And this pipeline was inspected and tested as recently as 2012 when the company was warned that over 40 'anomalies' were found that comprised mostly weld corrosion on the outside of the pipeline joints. Historically, those welded joints are the location in piping where corrosion causes leaks more than any other way.

In this case, there appears to be no documentation showing that the company, Plains All American Pipeline, had addressed any of the 'anomalies' although portions of the same pipeline was 'inspected' (whatever that means) just two week prior to the Memorial Day weekend when the leak occurred. The company had said it had spent over \$300 million in 2014 on maintenance of their pipelines around the U.S. but the inspections turned up 40 'anomalies' which evidently were 'overlooked' in the maintenance program that cost \$300 mil in 2014.

Thus, the important lesson here is, before we agree to build another foot of pipeline to transport crude flowing at 570,000 barrels a day from Canada to the Texas Gulf, we need to know such a massive project will be engineered to avoid leaks that impact the environment, both in the ground and above.

Add to that, the maintenance of the 50 foot easement that every mile of pipeline will require to be taken from the current landowners so maintenance can actually be performed on the line and lift/pumping stations without private property access limitations. And, why is so little being said about the required environmental impact assessments that will need to be accomplished before the project can begin?

Does anyone else see a train wreck unfolding here or is it just my pessimism showing through? Somehow, there are too many unanswered concerns our pro-pipeline-pundits and politicians seem to be brushing aside as they rush to "sell" the increased economic prosperity that will come with the jobs that will be created, be they ever so temporary and ever so few in number.

It is clear that someone needs to be proposing design/build specs that contain an appropriate EMS plan for the proposed XL Pipeline that is at least as stringent as those currently required for RCRA-regulated UST systems. Otherwise, who will take the blame when the questions are asked in decades to come, about how we let a 2,000 mile long pipeline get built that so negatively impacted the lives of our children's, children's, children?

ASSOCIATIONS PAGES

The Journal of Environmental Management Arizona invites environmental, health and/or safety organizations in Arizona to contribute news articles about their associations. Contact the editor at 480-422-4430 x42.



WWW.SAEMS.ORG

June kicked off our new leadership rotation for the Southern Arizona Environmental Management Society (SAEMS), and I am honored to be the 29th President of SAEMS. Thanks to Patrick Harrington for his leadership as President this past year and to Barb Ricca our outgoing Treasurer. I am excited about all of the great things happening with SAEMS and with our member's support, it will be another great year!

One of the more exciting changes that will be implemented this year is that college students can now become SAEMS members free of charge. A gesture of our commitment to encourage participation and networking amongst students who are pursuing an education that will lead them to a career in the Environmental, Health, and Safety industry.

We would also like to welcome in our new board for 2015-2016: Erin Lansey (Vice-President), Pat Hartshorne (Communications Coordinator), Krissy Gaska (Treasurer), Michelle Frandsen (Secretary), and Mike McGovern (President-Elect).

The June luncheon was held at the Hotel Tucson and featured Dr. Hammond's presentation on the Making Action Possible Dashboard website (mapazdash-board.arizona.edu).



Derek Koller
President



WWW.AWMA-GCS.COM

The Air and Waste Management Association-Grand Canyon Section had our last meeting on July 16th. Our guest, Ron Pope of the Maricopa County Air Quality Department, gave a presentation titled "Air Pollution and its Effects on Health" on national and local long-term trends and health effects for ozone and particulate pollution. Mr. Pope also presented his work on the relationship between ozone and particulate pollution and asthma hospitalizations in Maricopa County. Thanks to Ron for sharing his work with us.

We will be continuing to host "happy hour" mixers on the last Thursday of every month. The last one was on July 31st at Angel's Trumpet in downtown Phoenix. Please attend and meet your fellow colleagues! All environmental professionals are welcome, regardless of membership in AWMA. Free parking and light rail are nearby. The event is free, but please RSVP so we can have an accurate head count.

Meeting information will be posted on our website and sent to our members when it becomes available. For more information about AWMA-GCS, please visit us at <http://awma-gcs.com>.



Mike Sonenberg, PE
Chair



ARIZONA
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A STATEWIDE CELEBRATION OF ENVIRONMENTAL EXCELLENCE

Nearly 120 entries were received in Arizona Forward's 35th Annual Environmental Excellence Awards, the state's oldest and most prestigious awards competition focusing exclusively on sustainability, presented in partnership with SRP for the past 14 years.

Initiated in 1980, the historical program enters a new era on its 35th milestone anniversary as this signature program goes statewide, embracing projects throughout the Grand Canyon State. In taking a fresh approach to the institutional program, Arizona Forward unveiled two new award categories, including the Governor's Award for Arizona's Future, as well as a Healthy Communities category. All categories are now open to entries throughout Arizona for the first time ever!

It's a natural evolution for the Environmental Excellence Awards, which has grown significantly and now serves as a benchmark for promoting sustainability, conserving natural resources and preserving Arizona's unique desert environment for future generations.

Winners will be announced September 12 at Arizona Forward's awards gala at a brand new venue - the Chateau Luxe. More than 600 business and civic leaders typically attend.

First-place winners in each of the 17 subcategories will receive the Crescordia award, named for the Greek term meaning "To grow in harmony." Arizona Forward will also confer its most prestigious honor, the President's Award, on an individual or organization that has had an exceptional impact on environmental quality.

The Environmental Excellence Awards will prove an inspiring and enlightening evening as all spotlighted projects will pay tribute to virtually all facets of how we live, work and play.



Diane Brossart
President



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AZALLIANCE.ORG

The Alliance and the Maricopa County Air Quality Department co-hosted the 2016 Maricopa County Air Quality Permit Compliance Assistance Seminar on July 14th in Phoenix, at the Carnegie Center. Over 80 registered attendees and speakers participated in this annual educational and business assistance seminar. The Agenda included presentations by Maricopa County regulators in the morning, including a

presentation on "What is Compliance Assurance?" by AQ Director Philip McNeely, followed by afternoon presentations by industry professionals. The Alliance and Maricopa County also introduced a new feature to the seminar this year: the opportunity for fifteen minute One-on-One sessions with regulators, to address individual or site specific questions. Several attendees took advantage of this new opportunity.

The AQ Permit Compliance Assistance Seminars help fulfill the Alliance goals of facilitating collaboration between industry and regulators, and providing mentoring and education. If your organization is an environmental leader -- or striving to become one -- consider becoming an Alliance Member! Visit our website for membership information and a list of our Members and Partner Organizations.

For more information contact me at gregory.bopp@honeywell.com or call the Alliance office at 480-422-7392.

Greg Bopp
Chair



WWW.EPAZ.ORG

Thank you to all those who joined us for our Joint Summer Mixer with the Arizona Chapter of ASSE. We had over 70 in attendance at Four Peaks Brewery and we managed to raise \$675 for the Peak Foundation in memory of Peter Ewbank.

We are accepting nominations for our next Board of Directors. Our election of officers will take place in September with new officers taking the helm November 1, 2015. If you would like to nominate someone or volunteer yourself for a position, please contact Mike Ford at mford@swlaw.com.

Upcoming Events:

August 13, 2015 our luncheon will feature an "ADOSH Update", presented by Larry Gast, Assistant Director, Arizona Division of Occupational Safety and Health

September 10, 2015 our luncheon will feature "Arizona's Drought Preparedness and the State's Future Challenges", presented by Carol M. Ward-Morris, Assistant Director, Arizona Municipal Water Users Association

EPAZ hosts monthly luncheon meetings on the second Thursday of the month from 11:30 AM to 1:00 PM at the SRP PERA Club.

For the most up to date information, event details and reservations please visit our website at www.epaz.org.

Lisa Culbert
Association
Manager



The Arizona Hydrological Society (AHS) is structured as a statewide organization, with three local chapters, in Flagstaff, Phoenix, and Tucson. The local chapters hold frequent dinner meetings, usually with a speaker of interest to

ASSOCIATIONS PAGES

CONTINUED FROM PAGE 8

the water community, and also sponsor occasional field trips, short courses, and other activities.

The statewide organization and the local chapters come together annually for the AHS Annual Symposium, usually held in September. Each year one of the local chapters is responsible for the arrangements for the Symposium, which then takes place in or near that Chapter's home base.

This year, the 2015 AHS Annual Symposium is being held in Phoenix, at the Desert Willow Conference Center, from September 16 to 19. The theme for this year's conference is "Where Did the Water Go?", a timely topic in this era of extended drought, water shortages, and potential political struggles over limited water resources. The Call for Abstracts is still open (until July 30) for presentations and poster presentation. Reservations are also open for exhibitor spaces.

For more information about the AHS 2015 Annual Symposium, go to the Symposium website at: <http://ahssymposium.org/2015/>

Tom Walker
Immediate Past
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PART II
A SHORT SERIES
ON WATER IN THE
AMERICAN WEST

Larry Olson, PhD.

IT'S ALL ABOUT CHEMISTRY

WATER IN THE AMERICAN WEST

Climate change models (for example, the National Climate Assessment in 2014 at <http://nca2014.globalchange.gov/>) suggest that the 15 year drought that the western U.S. is now experiencing may become more like the norm for the future. If that is the case, we are going to have to make some serious adjustments in our water management strategies to balance the gap between supply and demand. We've had long lasting droughts before, but never with the population that now exists throughout the American West. As noted in the previous column, for the last hundred years the federal government has been heavily involved in building dams and providing new supplies of water for agriculture and cities. But prospects for major new additional sources are minimal and even existing systems will have a difficult time providing historical levels of water supplies. So we're going to have to learn to live with less water per capita for the foreseeable future.

Any new water management strategies must include water conservation, reuse, and augmentation components. In the next column we'll look at progress in finding ways to produce more water, including better forest management to increase runoff, cloud seeding, and desalination. In this column we'll focus on examples of effective conservation and reuse measures and what their impact may be.

California has been garnering much of the national press attention for its response to the current historic drought conditions. Moving beyond Governor Brown's call for a voluntary 20% reduction, the State Water Resources Control Board has proposed mandatory cuts of up to 35% for some areas for residential water use over 2013 use levels. Significant fines are possible for local water agencies who fail to meet their goals. A variety of strategies will be

employed including mandatory low flow for new toilets and showerheads, real time monitoring of water use with email or text updates when overuse is detected, use of grey water for landscaping, and use of xeriscape landscaping in more arid areas. Since 50% of water use for landscaping is typical for residential use, this is a huge target.

But California is far from the goals outlined in the Emergency Drought Declaration in early 2014, with average residential water use reductions month over month of only 10.9% from June 2014 to May 2015. One example of the difficulties in substantially reducing water use is that even though a 2004 law mandated water meters statewide by 2025, many homes around Sacramento and the Central Valley still don't have a meter. Not surprisingly, residential water use is much higher in these areas than other comparable areas.

California isn't alone though. Flagstaff has had an active program promoting water conservation for many years. Flagstaff residents can get rebates for long term commitments to reduce water consumption such as installing low flow toilets, rainwater harvesting, or xeriscape landscaping. There is also a tiered rate structure for single family residences which usually means that the last water used is more expensive. The city also reclaims treated wastewater for watering parks, schools, and golf courses, snow making, and residential watering uses. Industry can use reclaimed water for cooling purposes at lower rates than for potable water. How effective has this been? In 1988 the water usage in Flagstaff peaked at 186 gallons per capita per day (GPCD). Today it is 108 GPCD overall and 86 GPCD for residential use.

When considering how to conserve water, though, we can't ignore the largest user which is agriculture. Worldwide about 70% of water use is for agriculture, so water shortages impact malnutrition and hunger as well. Much of our ability to feed the world's ever increasing population depends upon the yield from irrigated lands which make up about 20% of arable lands, but produce 40% of the crops. In California, agriculture is estimated to use 80% of the water supply while producing more than 50% of U.S. fruits, nuts and vegetables. Agriculture in California is worth more than \$50 billion annually, but that is only 2.5% of the state's \$2 trillion economy. 37% of the fresh water withdrawals in the U.S. are for irrigation and 85% of that irrigation occurs in 17 western states. In the Western U.S. about 52% of irrigation waters are from surface waters and 48% from ground water. So if you want to make major impacts on water use, agriculture has to play a central role.

In the next column we'll look at some leading examples from places like Israel and Yuma where effective solutions to more efficient irrigated agriculture have been proven and how that might impact our water use if they were adopted more widely.

Larry Olson, PhD., Associate Professor, Arizona State University Environmental Technology Management Program. Dr. Olson holds a Ph.D. in Chemistry from the University of Pennsylvania, and is an environmental chemist with interests in remediation technologies and international environmental management. He can be reached at 480-727-1499, or by email at Larry.Olson@asu.edu.

NEWS BRIEFS

ADEQ AWARDS \$48,500 BROWNFIELDS GRANT TO TOWN OF WELLTON

❖ Arizona Department of Environmental Quality (ADEQ) officials announced recently a \$48,500 brownfields grant to the Town of Wellton to remove asbestos and hydraulic hoists from a town-owned building located at 28789 Los Angeles Ave. in Yuma County.

Brownfields are properties with active redevelopment potential hindered by known or perceived environmental contamination.

Formerly a gas station, the town currently uses the 1.6-acre property as a storage facility. The asbestos abatement and hydraulic hoist removal will prepare the property for development of a municipal complex to include the town hall and council chambers and the public safety department.

Town of Wellton Public Works Director Joe Grant shared, "We value ADEQ's brownfields expertise and assistance in helping us reach our beautification goals for our downtown area." Grant added, "The first grant we received last year identified what cleanup work needed to be done; this second grant will fund the actual cleanup work."

"Recovering blighted properties by administering non-competitive grants through ADEQ's brownfields program is just one way we accomplish environmentally responsible economic growth in our state," ADEQ Director Henry Darwin said. "Our staff works diligently with grant applicants to create customized solutions that maximize program benefits for each community's unique needs."

ADEQ's brownfields grant program is funded through a partnership with the U.S. Environmental Protection Agency under the Comprehensive Environmental Resource Recovery Act (CERCLA). Since it began in 2003, our brownfields grant program has funded more than 50 projects assisting local governments and nonprofits in completing environmental assessments and cleanup. For more information about the program, visit <http://www.azdeq.gov/environ/waste/cleanup/brownfields.html> or contact ADEQ Brownfields Coordinator Jennie Curé at jec@azdeq.gov or (602) 771-2296.

EPA AND NAVAJO NATION EPA ENTER HISTORIC AGREEMENTS WITH NAVAJO TRIBAL UTILITY AUTHORITY TO HALT WATER POLLUTION

❖ The U.S. Environmental Protection Agency and the Navajo Nation EPA recently announced a pair of settlements with the Navajo Tribal Utility Authority to bring its wastewater treatment facility in Window Rock into compliance both with the federal Clean Water Act and the Navajo Nation Clean Water Act.

EPA's agreement backs up a recent ground-breaking NNEPA settlement that required the NTUA to pay a \$25,000 penalty. This is the first time that a tribally-owned entity has paid a penalty for violations of the Navajo Nation Clean Water Act. The NTUA has committed to bring the Window Rock facility into full compliance by December 31, 2015, or face additional penalties. NTUA has also agreed to build new infrastructure for the treatment plant at the site.

"For over 35 years we have partnered with the Navajo Nation to protect public health and the environment," said Jared Blumenfeld, EPA's Regional Administrator for the Pacific Southwest. "EPA applauds the Navajo Nation EPA for its leadership in setting this precedent that protects the Nation's precious water resources."

"The Navajo Nation Clean Water Act was created to protect the public health and the environment. These laws must be complied with by everyone within the Navajo Nation," said Dr. Donald Benn, Executive

Director of NNEPA. "The Window Rock Facility was out of compliance for a long time, prompting NNEPA's Water Quality program to initiate an enforcement action. The parties have reached an agreement and Navajo EPA appreciates the cooperation by NTUA to implement a long term goal for compliance."

An EPA inspection revealed that since at least 2011 NTUA had been discharging pollutants above its permit limits to Black Creek, a tributary of the Puerco River that feeds into the Little Colorado River. Other violations of the NTUA's National Pollutant Discharge Elimination System permit included its failure to submit complete and timely reports while inadequately operating and maintaining its existing treatment system. The plant collects and treats sanitary sewage from a population of about 13,300 in Apache County, Ariz., within the boundaries of the Navajo Nation.

The settlements require the NTUA to conduct sampling, submit quarterly reports, train and certify the plant's operators, and hold regular compliance meetings with senior officials of EPA and NNEPA. The NTUA will also submit a plan for EPA and NNEPA's approval for the construction of an entirely new treatment plant including a detailed schedule for commissioning and bringing the new facility on-line. Approximately \$10 million in funding for the new facility was provided through the U.S. Department of Agriculture's Rural Utilities Service Water and Waste Disposal Loans and Grants Program.

For more information on EPA's Clean Water Act NPDES program, please visit: <http://water.epa.gov/polwaste/npdes/>

For more information on EPA's Region 9 Tribal Program, please visit: <http://www.epa.gov/region9/tribal/>

For more information on Navajo Nation EPA, please visit: <http://navajonationepa.org/> or call the Administration Office for assistance at (928) 871-7692.

EPA AWARDS \$1.2 MILLION BROWNFIELDS GRANTS TO THREE ARIZONA COMMUNITIES

❖ The U.S. Environmental Protection Agency announced recently that the City of Phoenix, Pima County, and the City of Yuma, Ariz., are among 147 communities nationwide receiving funding to assess and clean up historically contaminated properties, also known as brownfields, for reuse and development.

"EPA is committed to helping communities strengthen their local economy and neighborhoods by cleaning up abandoned industrial and commercial properties – places where environmental cleanups and new jobs are needed most," said Jared Blumenfeld, EPA's Regional Administrator for the Pacific Southwest. "These funds will help Arizona meet its economic development goals and fostering new job growth opportunities, while protecting the environment."

Continued on page 14

ADEQ'S VOLUNTARY REMEDIATION PROGRAM:

FOCUS ON FASTER CLEANUPS



Proposed Rendering East Washington Fluff Site *Photo provided courtesy of Winton Architects, Inc.*

Contributed by Gwenn Ziegler and
the ADEQ Voluntary Remediation Program Staff

understanding that ADEQ may require additional work if the statutory requirements have not been sufficiently met.

PROGRAM EXPENSES

Fees and costs for VRP services are governed by the Interim Fee Rule, Arizona Administrative Code (A.A.C.) Title 18, Chapter 7, Article 5, approved February 9, 2001. A \$2,000 non-refundable application fee covers the internal ADEQ review to determine site eligibility for VRP. If the site is accepted, any remaining amount of the \$2,000 application fee is automatically applied to oversight costs. Upon acceptance, the volunteer is required to pay a \$4,000 deposit, which is similar to a retainer charged by attorneys. VRP personnel bill at \$110 per hour for any work related to the site and those hours are deducted from the site account. Volunteers with active sites receive quarterly account summaries, and if the site account balance falls below \$1,000, staff notifies them an additional \$4,000 deposit is required. Once remedial activities are completed and the site is closed, any balance remaining in the site account is refunded to the volunteer.

THE DECLARATION OF ENVIRONMENTAL USE RESTRICTION

ADEQ's Declaration of Environmental Use Restriction (DEUR) program is related to VRP. A DEUR is a mechanism leading to site closure that enable a property owner to leave in site soils contamination that exceeds the residential soil remediation standards established by administrative rule. A DEUR becomes a restrictive covenant attached to the property's deed to document that institutional and/or engineering controls have been used on the site and to ensure appropriate future use of the site. DEUR program staff work with fellow ADEQ colleagues and others to ensure that site remediation has met the requirements for DEUR placement. They also help the property owner to capture all appropriate land use restrictions necessary to protect public health and the environment from exposure to contaminants left on the site. Once a final DEUR has been developed, it is signed by the property owner, approved by ADEQ, and recorded by the property owner with the appropriate County Recorder's office.

There is a one-time DEUR fee paid when the final DEUR is submitted to ADEQ for approval. This fee is calculated in accordance with the DEUR Fee Rule, A.A.C. Title 18, Chapter 7, Article 6. It covers the costs for ADEQ to perform annual inspections of the DEUR site and perform administrative duties, which include ensuring that the property owner completes the

The Arizona Department of Environmental Quality's mission is to protect and enhance public health and the environment of Arizona. We fulfill our mission, in part, by supporting environmentally responsible economic growth and accelerating cleanups of contaminated sites throughout the state. ADEQ's Voluntary Remediation Program, or VRP, supports both of these agency goals by spurring property owners and other interested parties to invest resources voluntarily in recovering contaminated sites as quickly as possible to safe, healthful standards.

Accelerating cleanups is important because we want to stop the threat that contamination poses to air, soil or groundwater and the people who may come into contact with it. In return for such willing cooperation, ADEQ foregoes enforcement activity at the site, and we expedite review of the remedial actions along with a means of receiving a determination that the agency won't require further action at the site so long as remediation levels and controls meet statutory requirements. Such a determination can often influence the ability of property owners and others to return contaminated sites to economic viability, which further benefits Arizona communities.

PROGRAM ELIGIBILITY

Most sites are eligible for acceptance into the VRP, although some restrictions may apply. For example, sites listed on the Water Quality Assurance Revolving Fund (WQARF) registry with the same Contaminants of Concern (COCs) are ineligible, as are hazardous waste sites and underground storage tank sites undergoing certain corrective actions required by ADEQ, a court of law or an administrative order.

ADEQ today places a strong emphasis on listening to our customers and delivering to them the value they expect. For this reason, our VRP partners are assured clear and open communication with their assigned ADEQ project manager, who serves as a single point of contact for all aspects of the project, including timely and expedited review of remedial activity documents for the site.

The VRP prefers applicants to have performed few, if any, significant remedial activities at the site prior to entering the program because this allows the project manager to work with the volunteer to find the best remediation solutions, both in terms of time and cost. That said, VRP typically does not reject such applications. Even fully remediated sites entering the program for final closure review are accepted with the

required annual DEUR report, as well as maintaining the repository of remediated sites as required by state law.

A DEUR does not prevent future development of a property but may impact what type of development will be permitted. If the owner of a DEUR property wants to develop the property for non-residential use or release the DEUR for residential use, the owner would be encouraged to enter the VRP to ensure appropriate activities are completed according to the DEUR requirements or to release the DEUR.

TEMPE MARKET PLACE AND THE FORMER EAST WASHINGTON FLUFF WQARF SITE

Two notable sites in the metro Phoenix area with recorded DEURs are Tempe Market Place and the former East Washington Fluff WQARF site located south of Chase Field in downtown Phoenix. Prior to its development as a popular shopping and entertainment mall, the Tempe Market Place property had been a blighted eyesore near the 101/202 interchange, an area of mixed use businesses ranging from auto repair to chrome plating and landfills that were part of the Indian Bend Wash federal Superfund site.

When its DEUR was recorded, the East Washington Fluff site became the first WQARF site to be delisted from the WQARF program registry. The site is currently being developed under the oversight of the VRP, and many community leaders and residents look forward to seeing the property return to viable, productive use.

OVER 200 SITE CLEANUPS COMPLETED

Since its inception by statute in the 1990s, ADEQ's VRP has overseen the cleanup and closure of more than 200 sites around Arizona and currently has over 60 active sites in various stages of completion, including some that are implementing long-term groundwater remediation – a vital concern in our arid, drought-prone state. Sites range from dry cleaners in strip malls to pesticide sites to extensive town cleanups contaminated by historical mining activities. The VRP is qualified to accept and tackle complex sites that involve ADEQ's air, water and waste programs as well as city, county or state agencies interested in a site's economic development potential.

A site is eligible to request a No Further Action (NFA) determination from ADEQ once the remedial objectives have been achieved and applicable standards have been met. The request is a written summary report containing information required by the VRP statutes. The volunteer places a public notice, usually in a newspaper local to the site, announcing a 30-day public comment period (45 days if the site records a DEUR) allowing the public to review and comment on the NFA request. Once the public comment period is over, and if there are no objections, the VRP can issue the NFA determination. The NFA determination is contaminant specific, which means only contaminants that were sampled and analyzed for at the site are eligible for inclusion. These final site closure steps highlight the importance of a close



Tempe Marketplace Photo Courtesy of Vestar

working relationship between the volunteer and the VRP project manager to ensure the volunteer's goals for the site are met.

LEADING EDGE ENVIRONMENTAL PROTECTION

In recent years, ADEQ has made it a strategic priority to become better, faster and more cost effective in delivering its vital mission for the citizens of Arizona. ADEQ is on course to become a recognized national leader in balanced, leading edge environmental protection, and it is achieving its vision by continuously designing and redesigning programs, like VRP, for quality and radical simplicity. VRP staff embraces the changes underway at the agency that add velocity to ADEQ's ability to do more environmental good. For example, the VRP staff has significantly reduced document review time so sites get cleaned up faster and more efficiently. They have implemented standard work to many of their processes so that everyone, every time, follows the current one, best method for completing assigned tasks. They are measuring for performance and quality like never before, and as we all know, what gets measured gets done. VRP staff is proud of its record of program improvements that support both ADEQ's mission and the needs of the VRP volunteers. Together, they are closing contaminated sites faster and returning them to economic viability while protecting and enhancing public health and the environment of the state that we all call home.

FOR MORE INFORMATION on the ADEQ Voluntary Remediation Program contact Julie Hoskin at 602-771-4866 or by email at Hoskin.Julie@azdeq.gov or visit the ADEQ website at www.azdeq.gov.

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NEWS BRIEFS

CONTINUED FROM PAGE 11

Phoenix will use its \$400,000 grant to target five industrial areas for environmental assessments. The assessments will identify properties for immediate reuse, existing community gardens, and potential sites for future gardens to enhance food security in these underserved neighborhoods. In Pima County, the \$400,000 grant will be focused on Tucson's Southside, one of its oldest neighborhoods. The project will address the economic development of the area through commercial infill and the expansion of new industries. The \$400,000 grant to Yuma will allow the city to conduct assessments in Old Town South, which may have hazardous and petroleum contamination due to its historic land uses.

Since the inception of the EPA's brownfields program in 1995, cumulative program investments have leveraged more than \$22 billion from a variety of public and private sources for cleanup and redevelopment activities. This equates to an average of \$17.79 leveraged per EPA brownfields dollar expended. These investments have resulted in approximately 105,942 jobs nationwide. EPA's brownfields program empowers states, communities, and other stakeholders to work together to assess, safely clean up, and sustainably reuse brownfields sites.

More information on EPA's brownfields program: <http://www.epa.gov/brownfields/>

More information on brownfields success stories: <http://www.epa.gov/brownfields/success/index.htm>

ADEQ AWARDS \$275,000 ENVIRONMENTAL STEWARDSHIP GRANT FOR OAK CREEK

❖ The Arizona Department of Environmental Quality announced recently that a \$275,000 grant has been awarded to the Oak Creek Watershed Council (OCWC) for continued educational outreach and cleanup efforts of the Water Quality Ambassadors program in Yavapai County.

ADEQ's third grant in support of the ambassadors program has two goals in addressing polluted runoff to Oak Creek: measure the positive outcomes from the prior two grant awards and establish the foundation for a self-sustaining program. Oak Creek, from its headwaters to its confluence with Spring Creek in Oak Creek Canyon, is listed as impaired for E. coli.

"ADEQ's role is not only to ensure compliance with environmental regulations but also to educate Arizona's citizens and its visitors about how they can make a positive impact," ADEQ Director Henry Darwin said. "The Water Quality Ambassadors program grant demonstrates our commitment to funding partnerships with local non-profit organizations to foster hands-on environmental education for Arizonans."

With this grant, ADEQ will fund eight ambassadors who will

continue face-to-face educational outreach in the area, waste removal and volunteer coordination to solidify the program for the future. To date, the ambassadors program has removed nearly three tons of trash from frequently visited Oak Creek recreational areas.

Continued on page 15



J. Andy Soesilo

J. Andy Soesilo, Ph. D., REM, passed away May 22nd, 2015, at the age of 71. Andy was born in Indonesia on March 20, 1944, and is survived by his wife, Ursula, two children, Stanley and Irene, two siblings, Budi and Pau Soesilo, and his two grandchildren, Tiara and Tirza.

Those of us in Arizona's environmental management world who had the privilege of knowing Andy will deeply miss him.

Andy had a long history of contributions to our community and Arizona's environment. He received his Ph.D. from Arizona State University, he worked with the Arizona Department of Environmental Quality for twenty years, he was a professor at Western International University, and most recently was on the faculty at ASU. Many readers will also know Andy through his work in Pollution Prevention, his lectures, presentations, and writings, including various papers he generously contributed over the years to the Journal of Environmental Management Arizona.

Andy was a kind, thoughtful person who will be remembered fondly by all who knew him and worked with him.

An obituary and guestbook for Andy is currently available online at: http://www.tempemortuary.com/fh/obituaries/obituary.cfm?o_id=3120395&fh_id=14347

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ACT ENVIRONMENTAL SERVICES WELCOMES DIANE ABRAMS

◆ Diane Abrams recently joined ACT Environmental Services in a Technical Sales Support position serving the Arizona market. Frank Sanchez, Branch Manager of ACT, said, "Diane will play a key role in the continued growth of our company. She brings a wealth of knowledge and experience to ACT." She can be reached at 480-563-3718 (Office), 602-525-5641 (Cell), or by email at dabrams@advancedchemical.net.

ACT Environmental Services provides hazardous waste management and many other environmental services. ACT maintains a website at www.advancedchemical.net.



Diane Abrams

NEWS BRIEFS

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ADEQ's Water Quality Improvement Grant program (WQIG) is funded through a partnership with the U.S. Environmental Protection Agency under the Clean Water Act. Since it began in 2000, our WQIG program has funded more than 150 projects reducing polluted runoff from many different sources throughout the state and had a significant impact on improving the health of our waterways. For more information about the program, visit <http://www.azdeq.gov/wqig> or contact ADEQ Grant and Watershed Coordinator Samuel "Jake" Breedlove at sb12@azdeq.gov or (602) 771-4243.

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Speaker: Larry Gast, Assistant Director, Arizona Division of Occupational Safety & Health
Topic: ADOSH Update
Location: SRP Pera Club, 1 E. Continental Drive, Tempe, AZ 85281

SEPTEMBER 10, 2015
11:30 AM - 1 PM

LUNCHEON FEATURING:

Speaker: Carol M. Ward-Morris, Assistant Director, Arizona Municipal Water Users Association
Topic: Arizona's Drought Preparedness and the State's Future Challenges
Location: SRP Pera Club, 1 E. Continental Drive, Tempe, AZ 85281

OCTOBER 8, 2015
11:30 AM - 1 PM

LUNCHEON FEATURING:

Speaker: Laura Malone, Waste Programs Division Director, AZ Dept of Environmental Quality
Topic: What's New With the Underground Storage Tank Program
Location: SRP Pera Club, 1 E. Continental Drive, Tempe, AZ 85281

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