Is Wastewater REUSE in Your Plant’s Future?

Aqua-Aerobic Systems’ expertise and years of experience in Biological Processes and Filtration Systems allows us to provide you with the most advanced treatment technologies at the lowest lifecycle cost. Aqua’s technologies meet or exceed the most stringent effluent requirements and are designed to accommodate changing effluent demands. Reuse quality effluent is among one of those demands and can be achieved with the following Aqua wastewater treatment technologies:

:: AquaExcel® BATCH REACTOR
- Offers advanced nutrient removal in a single unit process prior to tertiary filtration or microfiltration.

:: Aqua-Aerobic® MBR MEMBRANE BIOREACTOR
- Provides enhanced biological nutrient removal via time-managed sequential aeration in a compact footprint.
- Direct filtration of MLSS with PURON® submerged membranes achieves solids removal to submicron levels.

:: AquaDisk®/AquaDiamond® CLOTH MEDIA FILTERS
- Aqua’s cloth media filters, featuring Optifiber® cloth media, are ideal for reuse/recycle applications and offer added benefits of low backwash rates, less operator attention and maintenance, and a small footprint.

With disinfection, Aqua-Aerobic Systems’ technologies are specifically designed to achieve Arizona’s Class A+ Reclaimed Water requirements.

FOR MORE INFORMATION CONTACT:

IES Southwest
The Reuse Specialist
41355 N. Desert Winds Dr. | Cave Creek, AZ 85331
Ph 480.488.3009 | Fax 480.488.2525
Email john@iessouthwest.com | Web www.iessouthwest.com
John Spielman | Ryan Spielman | Lisa Cilbert

AQUA-AEROBIC SYSTEMS, INC. • ROCKFORD, IL • PH 815.654.2501 • FX 815.654.2508 • WWW.AQUA-AEROBIC.COM
## CONTENTS

### features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Energy Issues at Forefront for CAP</td>
</tr>
<tr>
<td>10</td>
<td>Conservation and Water Auditing: Tools for Water Management</td>
</tr>
<tr>
<td>12</td>
<td>Pretreatment: Frontline of Pollution Control</td>
</tr>
<tr>
<td>26</td>
<td>Geotextile Tubes for Environmental Dewatering</td>
</tr>
<tr>
<td>28</td>
<td>Meet the New Director of ADEQ: An Interview with Ben Grumbles</td>
</tr>
<tr>
<td>48</td>
<td>Charity Navigator Awards WFP Four-Star Rating</td>
</tr>
<tr>
<td>50</td>
<td>Chandler Airport Water Reclamation Facility Expansion</td>
</tr>
</tbody>
</table>

### announcements

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>83rd Annual Conference &amp; Exhibition Flyer</td>
</tr>
<tr>
<td>42</td>
<td>AZ Water Scholarship Endowment</td>
</tr>
<tr>
<td>23</td>
<td>AZ Water Awards: Call for Award Nominations</td>
</tr>
<tr>
<td>35</td>
<td>Burbank Environmental Educator of the Year Award</td>
</tr>
<tr>
<td>9</td>
<td>Collection System Specialty Conference Sponsorship Opportunity</td>
</tr>
<tr>
<td>40</td>
<td>Excellence in Safety: AZ Water Association Safety Awards</td>
</tr>
<tr>
<td>52</td>
<td>Hike-A-Thon Thank You</td>
</tr>
<tr>
<td>14</td>
<td>Industrial Pretreatment Seminar</td>
</tr>
<tr>
<td>54</td>
<td>Pedal With Purpose Thank You</td>
</tr>
<tr>
<td>19</td>
<td>Phoenix Technical Luncheon Programs</td>
</tr>
<tr>
<td>18</td>
<td>Southern Arizona Technical Luncheon Programs</td>
</tr>
</tbody>
</table>

### departments

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>Association News</td>
</tr>
<tr>
<td>7</td>
<td>AWWA Director Report</td>
</tr>
<tr>
<td>39</td>
<td>Board Nominations</td>
</tr>
<tr>
<td>3</td>
<td>Calendar</td>
</tr>
<tr>
<td>56</td>
<td>Committee Chair Contacts</td>
</tr>
<tr>
<td>15</td>
<td>Committee News</td>
</tr>
<tr>
<td>57</td>
<td>Committee Volunteer Form</td>
</tr>
<tr>
<td>30</td>
<td>Crossword Puzzle</td>
</tr>
<tr>
<td>46</td>
<td>Historian Report</td>
</tr>
<tr>
<td>55</td>
<td>Membership Application</td>
</tr>
<tr>
<td>58</td>
<td>Newsletter Advertising Information</td>
</tr>
<tr>
<td>24</td>
<td>Pipeline</td>
</tr>
<tr>
<td>6</td>
<td>President’s Message</td>
</tr>
<tr>
<td>38</td>
<td>Success and Fun</td>
</tr>
<tr>
<td>17</td>
<td>Trivia</td>
</tr>
<tr>
<td>8</td>
<td>WEF Delegate Report</td>
</tr>
</tbody>
</table>
AZ Water Association

board of directors 2010-2011

Don Manthe
President
602-522-7794 • fax 602-522-7707
don.manthe@hdrinc.com

John Warner
President-Elect
520-326-4333 • fax 520-325-2832
john.warner@wwm.pima.gov

Kevin Conway
Vice President
602-275-5595 • 602-257-1178 fax
kconway@greeley-hansen.com

Vance Lee
Past President
602-263-9500 • fax 602-265-1422
vlee@carollo.com

Brandy Kelso
Treasurer
602-495-7676 • fax 602-495-5843
brandy.kelso@phoenix.gov

Patty Kennedy
Secretary
602-534-2085 • fax 602-534-7151
patty.kennedy@phoenix.gov

Mark Stratton
AWWA Director
520-575-8100 • fax 520-877-1168
mstratton@metrowater.com

Jim Pembroke
WEF Delegate
602-522-4342 • fax 602-522-7707
jim.pembroke@hdrinc.com

Marie Pearthree
Director
623-869-2111 • fax 623-869-2332
mpearthree@cap-az.com

Chris Hill
Director
520-575-8100 • 520-575-8454 fax
chill@metrowater.com

Rick Buck
Director
480-380-9858
kc7oct@hotmail.com

Jack Bryck
Director
602-797-4609 • fax 602-231-0131
jbryck@pirmie.com

Teresa Smith-DeHesus
Director
602-381-4426 • fax 602-381-4440
smith-dehesusTL@bv.com

Floyd Marsh
Director
602-954-4300 • fax 602-778-1657
fmarshall@lan-inc.com

Dan Lueder
Director
928-634-0186 • fax 928-639-4254
dlueder@ci.cottonwood.az.us

Jason Vernon
Director
602-275-4303 • fax 602-275-4229
jason@coombshopkins.com

AZ Water Association

Advertainers Winter 2010

Aqua Aerobics System IFC, OBC
Black & Veach 59
Brown and Caldwell 33
Burns & McDonnell 59
Carollo Engineers 7
CDM 59
CH2M HILL 39
Coombs/Hopkins 59
Dibble Engineering 59
DSWA 44
DYK 37
ECO2 30
EEC 59
EMA, Inc. 59
ETC Compliance Solutions 33
FANN Environmental 3
Gannett Fleminhb 6
Greeley & Hansen 47
HDR 48
Hennesy Mechanical Sales 59
IES Southwest Inc. IFC
J & S Valve 31
Kennedy/Jenks Consultants 60
Legends Technical Services 38
Lockwood, Andres & Newnam, Inc. 60
M. E. Simpson Company 41
Malcolm Pirnie 10
McCarthy 51
MISCO 33, 48, 60, IBC
Orica Watercare 45
Separation Process Inc. 60
Severn Trent Services 40
Specialized Piping Systems 60
Stanley Consultants 44
Statewide Disinfection Services 60
Syneco Systems 33
Technical Content Resource Group 60
Trojan Technologies 22
USA Bluebook 33
Utility Service Company 1
Weston Solutions 33
Wilson Engineers 60

AZ Water 2010

Kachina News
Article and Advertisement Deadlines

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>DEADLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>WINTER</td>
<td>December 10</td>
</tr>
<tr>
<td>SPRING</td>
<td>March 10</td>
</tr>
<tr>
<td>SUMMER</td>
<td>June 10</td>
</tr>
<tr>
<td>FALL</td>
<td>September 10</td>
</tr>
</tbody>
</table>

ACCEPTABLE FORMATS
INCLUDE high-resolution PDF files with fonts embedded, Adobe Illustrator 9.0 , .eps files, .tif files, .jpg files, or Microsoft Word files. Include any high-resolution (300-dpi) photos or artwork used with Microsoft files separately as either .tif or .jpg. Mail or e-mail all articles or advertisements to:

AZ Water Association
1042 Willow Creek Road
A101-510
Prescott, AZ 86301
musegroup@aol.com
www.awpca.org
**J A N U A R Y**

7  **AZ Water Tucson Luncheon Program**  
   Water For People, presented by  
   Asia Philbin, Tucson Water  
   Inn Suites Tucson City Center,  
   Tucson, AZ  
   Register online at  
   www.azwater.org

12  **AZ Water Phoenix Luncheon Program**  
   Inline Turbine Systems for Water/  
   Wastewater, presented by Nate  
   Turner, Blackgold Biofuels  
   SRP Pera Club, Tempe, AZ  
   Register online at  
   www.azwater.org

22  **Arizona Water Resources 101**  
   Sponsored by AZ Water –  
   Water Resources Committee  
   Tucson, AZ  
   Register online at  
   www.azwater.org

**F E B R U A R Y**

4  **AZ Water Tucson Luncheon Program**  
   MS4 Stormwater Permit,  
   presented by Catesby Willis, AZ  
   Dept. of Transportation  
   El Parador Mexican Restaurant  
   Tucson, AZ  
   Register online at  
   www.azwater.org

9  **AZ Water Phoenix Luncheon Program**  
   Aqua Viva Water Treatment  
   Facility in Yuma, presented by  
   Dave Sobeck, Carollo Engineers  
   SRP Pera Club, Tempe, AZ  
   Register online at  
   www.azwater.org

22  **AZ Water Pretreatment Committee Presents:**  
   Industrial Pretreatment Program  
   12:30pm – 4:30pm  
   Gateway Community College  
   Register online at  
   www.azwater.org

**M A R C H**

1  **AZ Water Nominations Committee**  
   Board Nominations Due  
   Contact Patricia Nelson Davis  
   at pnelson31@cox.net

4  **AZ Water Tucson Luncheon Program**  
   Tucson Airport Remediation  
   Project, presented by Fred Frinker,  
   TARP  
   InnSuites Tucson City Center,  
   Tucson, AZ  
   Register online at  
   www.azwater.org

9  **AZ Water Phoenix Luncheon Program**  
   Topic TBD  
   SRP Pera Club, Tempe, AZ  
   Register online at  
   www.azwater.org

12  **Water For People Phoenix Golf Tournament**  
   Phoenix, Arizona  
   More information to come.

13-16  **WEF Collection Systems 2010 Conference**  
   Phoenix Convention Center  
   Phoenix, AZ  
   www.wef.org

20-24  **AWWA - ACE10**  
   Chicago, IL  
   www.awwa.org

**A P R I L**

1  **AZ Water Tucson Luncheon Program**  
   CROP, presented by Marie  
   Peacock, CROP  
   InnSuites Tucson City Center,  
   Tucson, AZ  
   Register online at  
   www.azwater.org

13  **AZ Water Phoenix Luncheon Program**  
   Economic Impacts on the Water  
   Operations and Maintenance  
   Industry  
   SRP Pera Club, Tempe, AZ

**M A Y**

4  **AZ Water Scholarship Golf Tournament**  
   More Information to come.

5-7  **83rd AZ Water Annual Conference & Exhibition**  
   Renaissance Glendale Hotel  
   Glendale, AZ  
   Mark your calendars now.

**J U N E**

12  **Water For People Phoenix Golf Tournament**  
   Phoenix, Arizona  
   More information to come.

13-16  **WEF Collection Systems 2010 Conference**  
   Phoenix Convention Center  
   Phoenix, AZ  
   www.wef.org

20-24  **AWWA - ACE10**  
   Chicago, IL  
   www.awwa.org

**A U G U S T**

28  **Water For People Southern Arizona Golf Classic**  
   Tucson, AZ  
   More information to come.

**S E P T E M B E R**

28-30  **Tri-State Seminar**  
   Primm, NV  
   www.tristateseminar.com

**O C T O B E R**

2-6  **WEFTEC 2010**  
   New Orleans, LA  
   www.weftec.org

**N O V E M B E R**

6  **Water For People Hike-A-Thon**  
   More Information to come.

20  **Water For People El Tour de Tucson**  
   Tucson, AZ  
   More Information to come.

---

**Free AMI Seminar**

**FEBRUARY 3, 2010**

**10:00AM – 1:00PM (LUNCH PROVIDED)**

Hampton Inn Phoenix-Midtown-Downtown Area  
160 W. Catalina Drive  
Phoenix, AZ 85013

Mueller Systems/Hersey Meters will be conducting an educational review of their AMI water, gas, and electric metering systems. Space is limited, contact Anthony Hyland to reserve your space in the class.

Anthony Hyland  
Arizona/New Mexico Sales Rep  
Hersey-Meters  
A Subsidiary of Mueller Water Products, Inc.  
704-881-2170  
ahyland@muellersystems.com  
www.herseymeters.com

---

**Contact Information**

CM @ Risk  
Contract O & M  
Arsenic Removal  
Design Build

928-778-5335  
3111 Clearwater Drive, Suite A, Prescott, AZ 86305  
928-778-5870

---

**Register online at**

www.azwater.org
CENTRAL ARIZONA PROJECT (CAP) is the largest source of renewable water in Arizona. It’s also the biggest user of electricity in the state. Last year, CAP used 2.8 million mega-watt hours to deliver more than 500 billion gallons of Colorado River water to 80% of the state’s population.

Why so much power? Because between Lake Havasu and the end of the system south of Tucson, Colorado River water flows 336 miles and ends its journey 2,800 feet higher than when it started. Although the CAP system design uses the contours of the land to make the best use of gravity to move water, the fourteen pumping plants that lift the water between each section of canal consume a tremendous amount of electricity.

RELIABLE POWER SUPPLIES ARE CRITICAL TO CAP OPERATIONS

Ninety-five percent of the power CAP uses to move this water comes from the coal-fired Navajo Generating Station (NGS) located on the Navajo Reservation near Page, Arizona. CAP also receives some energy from Hoover Dam and from its own generation at New Waddell Dam at Lake Pleasant. CAP purchases the remainder at market rates from other power producers.

About 24% of the electricity produced by the Navajo facility is dedicated to CAP uses. As a result, CAP meets most of its energy needs for the cost of producing this power. Having a dedicated source of baseload electricity provides considerable reliability for the CAP system as well as a substantial financial benefit to our customers and the residents and businesses of our 3-county service area.

NAVAJO SURPLUS POWER SALES BENEFIT ARIZONA

In the early 1990s, CAP entered into a series of agreements to sell surplus energy from CAP’s portion of NGS production. These agreements generate significant income, more than $22 million in 2008, which CAP applies to its $57 million annual repayment obligation to the Federal government for the cost of building the CAP system. The current power sales contracts expire in 2011, after which CAP anticipates selling that surplus Navajo energy annually at market rates thereby raising as much as $50 million annually, covering most of the annual repayment.

In addition, the Arizona Water Settlements Act of 2004 allows the use of revenues from NGS power sales in excess of CAP’s repayment obligation to help fund the costs of Indian water rights settlements in Arizona.

THE CHALLENGES OF COAL-BASED POWER

There are a number of challenges associated with CAP’s dependence on the Navajo Generating Station. All are related to the fact that the NGS is powered by coal.

As might be expected in an environment where there is a significant movement to eliminate or reduce US dependence on fossil fuels, reliance on a carbon-based fuel source puts the facility in a tenuous position. Several states, including California, Washington and Maine, have passed legislation to limit or put a moratorium on the construction of new coal-fired plants.
NEW AIR QUALITY REGULATIONS ANTICIPATED

Existing coal-fired power plants must meet stringent air and water quality regulations to ensure they do not pose an environmental hazard. In addition, because the Navajo plant is near a dozen or so National Parks, minimizing releases that contribute to haze or smog is also a critical element of operating the NGS. Controlling these gasses has been a priority for CAP and the power plant owners for decades. In the 1990s, ‘scrubbers’ were installed at the facility, at a cost of more than $400 million, which successfully reduced Sulfur Dioxide (SO2) emissions to below regulatory standards. NGS is also achieving high levels of particulate matter emissions control.

In 2008, aware that regulation on nitrogen oxide (NOx) emissions was pending, the Salt River Project (SRP), which operates the NGS, conducted a study of potential NOx-control technologies. Based on the study results, CAP and the power plant owners began voluntarily installing low-NOx combustion technology at NGS.

Installation of the first of three high-intensity burner assemblies was completed last year. Installation of the remaining two assemblies is scheduled for 2010 and 2011. The $47 million dollar project will reduce NOx emissions to well below the anticipated regulatory limit.

Low NOx burners control fuel and air mixing at each burner in order to create larger and more branched flames. This reduces peak flame temperature and results in less NOx formation. The improved flame structure also reduces the amount of oxygen available in the hottest part of the flame thus improving burner efficiency.

In August 2009, as part of its Regional Haze Program, EPA announced its intention to evaluate Best Available Retrofit Technology (BART) limits on NOx emissions at the Navajo Generating Station and the Four Corners Power Plant. In addition to low-NOx burners, the EPA is also considering a very different NOx control system known as Selective Catalytic Reduction (SCR).

SCR converts nitrogen oxides with the aid of a catalyst into gaseous nitrogen and water. A gaseous reductant, typically anhydrous ammonia, is added to a stream of exhaust gas and is absorbed onto a catalyst such as vanadium and tungsten, zeolites, and various precious metals. In automobiles, the catalyst is typically platinum.

According to studies conducted by the Salt River Project, the use of SCR would require more than $660 million in additional capital expense (over and above the cost of low-NOx combustion technology), and add more than $13 million in annual operation and maintenance expense. The SCR technology would also require the daily importation of as many as two tanker trucks (about 31 tons) of anhydrous ammonia to support the control equipment.

SRP’s studies also shows that SCR would produce no perceptible improvement in visibility in the region over that achievable with low-NOx combustion technology alone. This level of expenditure (and related operational difficulty and risk) would raise significant concerns about increases in the cost of power from NGS and about the operational reliability of NGS.

GREENHOUSE GAS LEGISLATION CHALLENGES

Proposed Greenhouse Gas legislation creates additional uncertainty over the future economic viability of NGS. In 2009, the House of Representatives passed the Waxman-Markey Bill, which would place an economy-wide cap on carbon emissions. The bill contains emission allowances for most electrical utilities that will reduce or delay the cost impact of the legislation for most utilities. Unfortunately, from the definition of eligible utilities, it appears that none of these allowances will be available for the CAP share of NGS.

The eventual cost of carbon emissions controls is unknown. However, the impact of climate change legislation on CAP water rates and the ability to sell the Navajo Surplus to help repay the cost of the CAP and fund Indian water rights settlements could be substantial. For example, if CO2 allowances cost $100 per ton of CO2 emitted, that would increase CAP water rates by about $200 per acre-foot.

INCREASED POWER COSTS RAISE WATER RATES

Substantial increases in power costs and detriments to station reliability could severely affect CAP water users, including Indian communities served by the CAP. The high cost could lead to CAP water rates two or three times higher than they would be otherwise.

Worse, it could make the Navajo station too expensive to operate and force it to close down. This would be an economic disaster for the Navajo and Hopi people. The Navajo Nation derives more than $137 million in wages, royalties and other revenues associated with NGS and its coal supplies. The revenues from NGS and the Peabody coal mine near Kayenta, AZ provide $12 million each year to the Hopi Tribe, funding the majority of their government operations.

CAP and others are urging EPA to propose and promulgate BART limits for NGS NOx emissions based on the low-NOx combustion technology, which satisfies the presumptive limit established by EPA’s rules. Once all three units at NGS are retrofitted with this technology and operating at the lower emission rate, the remaining visibility impact of NGS’s NOx emissions, if any, may be evaluated and any additional control options may be assessed at that time.

For more information or to learn what you can do to help, go to the CAP web site at www.CentralArizonaProject.com, or contact the author at mpearthree@cap-az.com.

MARIE PEARTHREE is the Central Arizona Project (CAP) Assistant General Manager of Business Planning. In this position, Marie is responsible for all of CAP’s inter-governmental relations activities. Marie and her staff develop and manage relationships with external stakeholders including local municipalities, interstate organizations, industry and trade associations, native tribes, agricultural customers and others. In addition, Marie manages the development of the CAP Business Plan. Also, she represents CAP in research and discussions related to climate change and its affect on water issues with international, federal, state, and local agencies.

Marie has been a Professional Engineer since 1991. She holds a Master of Science degree from the University of Arizona in Fluvial Geomorphology and a Bachelor of Arts degree from Oberlin College in Geosciences. Marie has been working on water-related issues for 28 years. Her most recent experience prior to joining CAP in July 2009 was as a Senior Consultant for CH2M Hill Engineering. From 1998 to May 2008 she served as the Deputy Director of the Tucson Water Department. She has won numerous awards within the water industry and served on several national committees during her career. Currently, Marie serves as a board member of the American Water Works Association.
THE GENERAL PUBLIC AND LAWMAKERS OF ARIZONA need to be aware that water infrastructure is a primary building block of our communities and the economy. In the last Kachina News, I urged all of us – Professionals Dedicated to Arizona’s Water – to become more visible and vocal leaders for Arizona’s water future. But we need help – from a concerted and combined national effort and from the federal government. The case for increased federal investment is compelling. Needs are massive and in most cases, local and state sources cannot meet these challenges alone. Because waters are shared across local and state boundaries, the benefits of federal investment are disseminated throughout America. Americans must reach across states, agencies, and political party lines to embrace a collective good for us all – safe, sustainable water. AZ Water members need to help with this effort.

During the 20th Century, the federal government led the way in building our nation’s greatest infrastructure systems – from the New Deal programs to the Interstate Highway System and the Clean Water Act. Our water supply systems in Arizona would not have been possible without federal programs (thank the CAP canal and the series of dams within and outside of Arizona). Our national water and wastewater infrastructure has made water-borne disease virtually non-existent and provided the water for agriculture that allows us to feed ourselves and others. However, in the last several decades, federal leadership has decreased, and the condition of the nation’s water infrastructure has suffered. New solutions are needed for what amounts to nearly $1 trillion in critical drinking water and wastewater investments over the next two decades. Not meeting the investment needs of the next 20 years risks reversing public health, environmental, and economic gains of the past three decades.

Recent catastrophic events – such as the failure of the levees in New Orleans after Hurricane Katrina or the I-35W bridge collapse in Minneapolis – reminds us of our reliance on our critical infrastructure. It also demonstrates the fragility of our systems and the need for sustained and increased infrastructure investment. Our critical infrastructure includes our vital water systems - destruction or failure of these systems would result in a serious disruption of our communities and general public welfare. Investment in critical water infrastructure has an “invisible” but profound implication on public health, national security, and economic stability and prosperity.

The time for bold advocacy is now. Elected officials must tackle these challenges with new ways of thinking and transparency while engaging stakeholders and the general public. AZ Water calls on appointed officials and public stakeholders to take an active role for change - to advocate for public health, safety and welfare in critical water infrastructure projects and decisions. Clean and safe water is no less a national priority than national defense, an adequate system of interstate highways, and a safe and efficient aviation system. Many other important infrastructure programs enjoy sustainable, long-term sources of federal backing, often through dedicated trust funding and programs. However, under current state and federal policies, critical water and wastewater infrastructure programs do not.

Water infrastructure should be among the very highest priorities for funding within the state and the nation. All Arizonans should advocate and support elected officials that have the political will and foresight to plan and collaborate for our sustainable future, health, and economic vitality.

Members of AZ Water should help shape and lead the water future of Arizona and America. Let’s advocate! After all, we are Professionals Dedicated to Arizona’s Water!
Well, we are starting another new year…and the fun just never stops! If you thought there was a lot happening at AWWA last year, plan on even more activity for this year. About the time that you receive this newsletter, the AWWA Board of Directors will be holding its winter board meeting in St. Petersburg, Florida. At the forefront for discussion at the board meeting is the selection and hiring of the new executive director for the Association and a presentation by the Member Value Restructure Committee on their recommendation for revisions to the membership structure and added value programs.

With respect to the selection process and hiring of the executive director for the Association, there have been quite a few applicants for the position, which has both a positive and negative impact. On the negative side, there are many resumes to review, that it is taking the committee a little longer to process and short list qualified candidates. The positive side is that with so many candidates, the Association should be able to select an executive director that is amply qualified. As soon as the candidate has been approved by the executive officers and the Board of Directors of the Association, I will provide our executive director with that information so she may post it on the AZ Water Association website.

The Member Value Restructure Committee has discussed and reviewed options for providing a better overall membership structure as well as providing value and benefits to its membership. As mentioned previously, one category that has created considerable discussion deals primarily with the utility and service provider membership. With this membership category a few regular memberships are included with the utility or service provider application and the employees of those entities feel that they are members of AWWA by virtue of their employer. The key is how to make those employees more a part of AWWA while maintaining a positive revenue position for the Association.

Along with this key issue is also the need to provide more value to our existing members. One idea that has garnered a fair amount of support with the committee members is the creation of a “communities of practice” concept. This concept would basically provide an opportunity for individuals with similar levels of interest (on various subject matter) that AWWA is involved with, an enhanced environment to communicate together and network with their peers and other interested individuals on those subjects. Interest might include salinity, reuse, membrane technologies, and other concepts that are on the forefront of our industry. While the concept itself seems relatively straightforward, the implementation of putting together the structure within the AWWA website to handle this level of activity will be a challenge.

On March 5-6, 2010, the AZ Water Association will be hosting the regional meeting of section officers (RMSO) in Tucson, Arizona. This meeting will include other sections within our region and various officers within those sections and allow for AWWA staff and officers to update the sections with current activities that are going on at the national level. As host for this event, the AZ Water Association has the opportunity to showcase its accomplishments with many programs and seminars that our committee’s provide to the membership. Last year’s meeting was held in Monterrey, Mexico and as the host, the Mexican section provided the guest with a wonderful display of hospitality. I believe AZ Water is capable of doing the same (or better).

While there are many other activities that are going on within AWWA, I would defer you to the AWWA website for more information on these activities. The AWWA website has undergone many changes and finding the necessary information you are searching for is becoming much easier. While there are still some glitches with the recent upgrades that have taken place, AWWA staff is constantly at work to ensure that these improvements make the information much more user-friendly and accessible to the membership. I would also point out that the AZ Water Association website is also continuing to improve and offer a user-friendly format to make the information within our Association that much more available.

I hope that this New Year brings with it a sense of pride and joy and full of accomplishments that will benefit not only you but those around you. Make it your New Year’s resolution to become more involved in the AZ Water Association and in AWWA and help it become a much stronger association due to your actions.
THE AZ WATER ASSOCIATION HAS IDENTIFIED membership and developing a membership plan as a key issue for 2010. As are many other nonprofit organizations, we too are experiencing a significant decline in WEF, AWWA, and AZ Water membership in our respective organizations. We have identified three primary reasons for the decline. (1) Our members are retiring from their jobs after a lifetime of dedicated service to a hopefully less hectic life style; (2) we are not reaching out to the extent needed to the new staff beginning careers in the Water and Wastewater industry; and, (3) the economy – which we hope is temporary and ending shortly. Our utilities, regulators, consultants, manufacturers, and educators are reducing staff levels at least for the short term.

We still have to treat and transport as much water. We still have to meet the existing and new regulations. None of us have the resources (money) we expected to have, to accomplish all of our goals. One of our best assets (to help us do the job we have to do) comes from the knowledge we get from training and networking with other professionals in the water industry through the AZ Water Association and our national organizations.

AZ Water Association has many outstanding conferences and seminars planned for this year. As well, our national organizations are bringing great conferences to our state. All of the organizations that employ water professionals will be well served by continuing the practice of their staff belonging to our Association. The training AZ Water makes available is the best value you can get in increasing the skills and the return on investment you get for your staff. This training will help you meet your goals in the tough economic times.

WEF NEWS

Almost 18,000 water professionals attended WEFTEC in Orlando this year despite a troubled economy. This was down slightly but remarkable in this financial climate. The show floor was consistently busy (967 exhibitors have set a new record and already reserved 92% of the show floor for New Orleans next year), and the 123 training sessions were very well attended. WEFTEC has become the “must attend” gathering for the water community.

Still, the lower attendance and the shorter visits had their impact and as a result, WEF missed its revenue budget ...not by a lot, but by enough so that some general budget adjustments will be necessary for the coming year.

WEF is not considering the recession a short-term event. More importantly, we see signs that it will change both the demands on associations by members and the ways in which associations will be called upon to serve members. In some respects, annual meetings will become more important for sharing experience and ideas, but at the same time, distance learning technologies will become more important for distributing facts and data used to feed those experiences and ideas...an outline of a new model for service is evolving.

Members of the AZ Water Association Board and staff recently participated in a conference call with WEF staff on how we all can better serve our membership. The following items summarize the discussion.

Member Association (MA) Expectations of its relationship with WEF

• Information delivery – AZ Water has seen a tremendous improvement in information provided by WEF
• Continued collaboration with AWWA
• WEF provides good leadership and participation in the MA

MA perspective of how it does/should support WEF

• Increase recruitment and retention activities
• Establish a MA membership committee
• Supports and promotes WEF specialty conferences
• Improved MA communication with WEF
• MA appreciates the WEF/MA banners provided in 2009

MA perspective of how WEF does/should support MA/Gaps in services available and services needed

• Work with MA to bring more specialty conferences to area
• WEF participation with a booth at the Tri-State Seminar to recruit WEF members
• Continue to improve MA Resource Center
• Provide operator training online
• Provide information and talking points directed at decision makers/supervisors, etc., promoting the value of WEF membership and involvement
• Consider a WEF presence at other organization meetings such as League of Cities, Conference of Mayors, etc.
• Remind MA leaders of MA list serve and how to join
• Consider monthly MA professional staff calls
• WEF Committee and Communities of Practice work provides useful information for promoting water issues to the public
• Strengthen link between WEF and MA technical committees
SPONSORSHIP OPPORTUNITY

The WEF Collection Systems Committee, in association with the AZ Water Association, is pleased to announce the 2010 Specialty Conference “Social Event” to be held at Arizona Grand Resort, Oasis Water Park on Tuesday, June 15, 2010. This event will highlight peer to peer exchanges in a relaxed family friendly atmosphere, affording ample opportunities for discussions.

The committee is seeking sponsorship for this event from local and national vendors, manufacturers, consultants, contractors or interested parties to assist with the cost of the “social event”. So get in on the fun and get your name out there by becoming a sponsor today! Contact John or Mark for further information.

VOLUNTEER OPPORTUNITY

The 2010 Specialty Conference Committee is looking for enthusiastic and energetic volunteers to assist with all aspects of the conference. If you are interested in joining “the team” and being a part of this monumental event please contact:

John Warner, Co-Chair, Email: john.warner@wvm.pima.gov
Phone: 520-443-6500 or Fax: 520-325-2832

Mark Courtney, P.E. Co-Chair, Email: mcourtney@carollo.com
Phone: 602-263-3500 or Fax: 602-265-1422

www.wef.org/CollectionSystems
Conservation and Water Auditing:

KATIE PORTER, STEVE DAVIS, AND ED MEANS, MALCOLM PIRNIE, INC.

T O O L S F O R W A T E R  M A N A G E M E N T

INCREASED WATER DEMAND,
decreased water supply, and increased water rates are just a few of many factors causing communities to examine how to manage their water supplies and demands smarter and more efficiently. Planning for and responding to potential disruptions in service due to aging infrastructure only adds to the challenges faced by water suppliers. One approach to managing demand in the face of decreasing supplies is to increase conservation and perform a top-down assessment to diagnose causes of water loss.

WHY CONSERVATION AND WATER AUDITING?

Costs for pumping, treating, and delivering water have always been part of the equation. However, utilities must incur these costs even for water that is lost through leaks or is in excess of that needed for the intended use. The US Environmental Protection Agency (EPA) estimates that the average home can waste 11,000 gallons of water per year through consumer habits alone. This does not include water that is lost through utility pipeline leakage.

By minimizing water loss and changing consumer behavior on water use, utilities can better manage demand, which should translate into decreased treatment costs and decreased pumping (energy) costs. A top-down water audit can help identify whether there are real losses, such as leaks, or apparent losses, such as theft of water and under-registering of demand meters occurring in the system. Suggested next steps stemming from the water audit, such as detection of leaks, increased asset management, or use of GIS to track pipe materials and age, can inform a utility of areas in need of attention to help mitigate future infrastructure failure and reduce Non-Revenue Water (NRW).

A recent report from the US Geological Survey (USGS), Estimated Use of Water in the United States in 2005, shows that water withdrawals for public supply were two percent more than in 2000, although the population increased by more than five percent during that time. The fact that growth in water usage was less than population growth could be an indication of the measurable effect that management strategies such as water efficiency and conservation are having on long-term planning. However, the US Census Bureau estimates that Arizona’s population in 2030 will be more than double 2000 levels (pre-economic downturn). Even with the strides made in recent years, Arizona will require significant new supplies or further reduced demand (e.g. through conservation).

WHAT ARE THE CHALLENGES?

One of the challenges is to try to change consumer attitudes and behaviors to become more conservation minded. Changing to water efficient fixtures, adjusting irrigation and landscaping practices (installing evapotranspiration controllers or soil moisture monitors, for example), and even adjusting habits (such as taking shorter showers) takes a little effort. Consumers sometimes are not always as willing to purchase new materials or give up some conveniences.

Traditionally, conservation and leak detection were not always given high priority, since there is no immediate public health issue. However, the more uncertainty there is over the quantity and quality of future supplies, the more important these practices become. Just as changing the behaviors of consumers can take time, so can changing the operational practices of utilities. One common utility perspective is that encouraging conservation translates into lost revenue.

This needs to be weighed against the utility’s future projections for costs of additional sources and additional treatment if current usage is maintained or increased, and how such costs will translate into increased rates for consumers. Decreasing usage in the short-term could delay or eliminate the need to expand supply and treatment facilities over the long term (avoided or deferred cost).

WHAT ARE SOME SOLUTIONS?

A number of water efficiency publications and programs have been used successfully to change practices and behavior. These range from mandatory drought restrictions to more incentive-based programs such as rebates or distribution of water-efficient fixtures and appliances. Many of these programs also go hand-in-hand with public education programs. EPA’s Cases in Water Conservation: How Efficiency Programs Help Water Utilities Save Water and Avoid Costs, provides
examples of how other utilities have implemented water efficiency programs and practices.

Another potential solution is the more strategic use of system meters. Meters can not only make customers more accountable for their usage, but can also provide information that would aid in leak detection. Use of automated water meters would allow both the utility and customers to see how much water a customer is using immediately, rather than the lag that occurs when reported in a monthly or quarterly bill. This would allow for better targeting of conservation and potential system and customer leak detection activities.

Helping to target and change consumer habits is EPA’s WaterSense program, a partnership program that seeks to protect the future of our nation’s water supply by promoting water efficiency and enhancing the market for water-efficient products, programs, and practices. WaterSense will promote the annual “Fix a Leak Week” in March as part of efforts to encourage Americans to use water efficiently. Becoming a WaterSense partner and/or encouraging consumers to look for WaterSense labeled products can help strengthen water-efficiency outreach efforts, as well as provide a network to collaborate and share resources.

Finally, partnering with local schools is another avenue for public education. This can be as extensive as working with the school to incorporate education on water supplies and the importance of saving water into science curriculums to just encouraging students through science fair experiments.

OTHER CONSIDERATIONS AND REGULATORY OUTLOOK

One important consideration is the end use of the water being conserved. Conserving water used for irrigation has a direct impact on the potable water treatment chain by reducing the amount that needs to be pumped and treated. While decreasing residential indoor usage also has these same benefits on the supply and treatment side, there is also a minor impact on wastewater treatment. This is due to the fact that certain inputs to the system will be consistent (such as those produced from human waste), while the water to convey these wastes decreases. This can increase the solids or nitrogen concentrations in the streams to be treated. The subject on whether potable water is the most appropriate vehicle for conveying these streams is outside the scope of this topic; however, the salient point is that more bang-for-the-buck for the entire treatment train can be achieved by encouraging conservation for irrigation purposes. According to the USGS report previously mentioned, Arizona had 949,000 acres of irrigated land as of 2005, with an application rate of 5.68 acre-feet per acre.

There are currently no Federal drinking water regulations mandating conservation or leak detection, though building codes have incorporated use of low flow devices and other measures to promote efficient use of water. Some states have integrated conservation plans into long-term planning documents, or considered such plans as a grant condition for receiving funds. Arizona’s Ground Water Management Act of 1980 may in fact serve as a model for other States as they consider how to balance groundwater withdrawals and recharge, and how to incorporate conservation plans into long-term decision making. Other States such as CA, FL, and TX have already adopted legislation requiring utility water audits as part of their overall water management strategy.

Recently, the Senate introduced the Clean Energy Jobs and American Power Act (S1733) which contains language that authorizes EPAs WaterSense program for labeling water-efficient high-performance products and services and directs federal agencies to make cost-effective water-efficient procurement decisions by purchasing WaterSense or Federal Energy Management Program certified products, whenever possible. It would also authorize grants to eligible entities for programs offering incentives to consumers who purchase and install water efficient products and services such as those labeled under the WaterSense program. This shows that water efficiency is gaining National attention as a practice that can help with our long-term sustainability.

TOOLS IN THE TOOLBOX

Conservation and water audits in themselves are not a complete solution for long-term water management, but can be important tools in the overall toolbox. Strategies such as these can help decrease the load on potable water treatment plants and wastewater treatment plants (and thus delay or eliminate the need to expand supply and treatment facilities), reduce wastewater discharges to the environment, and decrease a utility’s reliance on new sources or imported water.

In fact, EPAs Effective Utility Management: A Primer for Water and Wastewater Utilities considers conservation as an important part of supply and demand management, one of the ten attributes of effective utilities, as developed by current utility managers. Ideas for starting points on system improvements, policies and programs, or other measures can be found at http://www.epa.gov/watersense/pubs/utilities.htm. The American Water Works Association’s WaterWiser water efficiency clearinghouse provides valuable information such as free water audit software, as well as their new revised manual on Water Audits and Loss Control Programs (M36 version 3) (http://www.awwa.org/Resources/Waterwiser.cfm?&navItemNumber=1561). Additional resources are also available through the Alliance for Water Efficiency (http://www.a4we.org).

One silver lining in the current response to dealing with the limited supply and drought restrictions is that both consumers and utilities are engaging in practices that could pay dividends if sustained over the long term. According to the USGS, 96% of Arizona’s population is served by public supplies. Thus, any actions taken by utilities to either modify their operations or to educate consumers to modify their actions have the potential for high impact.

REFERENCES:

Alliance for Water Efficiency. http://www.a4we.org (accessed 12/2/09)


INTRODUCTION

This Year Approximately 160 Publicly owned treatment works (POTWs) will collectively discharge almost a billion gallons of treated effluent a day to Arizona’s surface waters and aquifers. Each of these facilities is regulated by an Arizona Pollutant Discharge Elimination System (AZPDES) permit or Aquifer Protection Permit (APP) or both, issued by the Arizona Department of Environmental Quality (ADEQ). In many cases, ADEQ requires the POTW to develop and implement steps to monitor and control discharges from industrial users. This article summarizes the regulatory framework, objectives, and major elements of a successful pretreatment program.

REGULATORY FRAMEWORK

The National Pretreatment Program, a component of the NPDES permitting program under the federal Clean Water Act, provides the regulatory basis to protect POTWs by requiring industrial dischargers to treat or control pollutants in their wastewater. Under the national program, POTWs with design capacities exceeding 5 mgd and smaller POTWs with significant industrial users (SIUs) must establish local pretreatment programs. These local programs enforce national pretreatment standards and any more stringent local requirements necessary to protect site-specific conditions. Elements of the National Pretreatment Program are incorporated into ADEQ’s AZPDES regulations and into APP regulations as part of Best Available Demonstrated Control Technology (BADCT) requirements. Figure 1 illustrates the relationships among the federal and state pretreatment regulations.

PROGRAM OBJECTIVES

Key to a successful pretreatment program is a comprehensive understanding of the POTW treatment plant and collection system, its end uses for treated effluent and biosolids, and its users. The pretreatment program must:

Recognize the site-specific vulnerabilities of the POTW. Discharges of metals and toxic organic pollutants to the wastewater collection system can inhibit biological processes at treatment plants, and heavy loads of conventional pollutants can overwhelm their capacity to consistently deliver high-quality effluent. Discharges of fats, oils, and grease can obstruct sewers, resulting in wastewater spills, and highly basic or acidic discharges can structurally damage piping and other equipment. Discharges of pollutants that may develop gases, fumes, and vapors can create fire, explosion, or toxicity hazards for collection system workers.

Protect end uses of effluent—replenishing surface or groundwaters, irrigation of crops or golf courses, or other reuse—and of biosolids—land application, remarketing, or landfilling. Each end use typically has pollutant limitations that cannot be met solely through treatment at the POTW.

Prevent potentially harmful discharges from all POTW users. Although industrial users are primary sources of toxic pollutants, commercial users may also discharge industrial-type wastes (for example, mercury concentrations from dental offices) and household users add to influent loads through poor management of solvents, paints, and pesticides. Waste haulers can be the source of highly variable, concentrated wastes. Restaurants, auto shops, and other commercial users can discharge obstructive quantities of fats and grease, and domestic, commercial, and industrial users contribute to loadings of conventional pollutants.
LEGAL AUTHORITY

To implement a pretreatment program, a municipality needs the legal authority to specify user requirements for monitoring and reporting, to enforce discharge limitations, and to address discharge violations and noncompliance. Legal authority is typically established by the municipality’s pretreatment ordinance. The ordinance authorizes the issuance of wastewater discharge permits, provides for monitoring, compliance, and enforcement activities, establishes administrative review procedures, and requires industrial user reporting, and may set fees for the equitable distribution of costs resulting from the pretreatment program. EPA has recently updated its model pretreatment ordinance (USEPA, 2007). The model ordinance includes additional provisions that will eventually be required to comply with the USEPA’s Pretreatment Streamlining Rule. Municipalities should review the new rule and their current ordinances to make certain all necessary elements are included.

LOCAL LIMITS

Local limits translate federal general prohibitions against pass-through (the discharge of pollutants from the POTW in amounts causing or contributing to permit violations) and interference (the discharge of pollutants to the POTW in amounts inhibiting or disrupting treatment or sludge processes) into site-specific controls. They support and add definition to specific discharge standards, such as fire and explosion hazard prohibitions, and complement federal categorical standards. Each POTW develops local limits to support its individual strengths and accommodate its weaknesses. The development process requires that POTWs use objective, reproducible, and defensible methods to develop limits that are protective of the environment and are technically-based and enforceable. The effectiveness of local limits should be reviewed annually, and detailed re-evaluations undertaken whenever changes in the influent to or effluent from the POTW occur. Evaluations should also occur if changes in water quality or biosolids criteria alter the factors used in the development of local limits (USEPA, 2004).

PERMITTING

The industrial wastewater discharge permitting program allows a municipality to regulate and monitor users with potentially harmful wastewater discharges. Municipalities must permit SIUs and may permit other users that could cause or contribute to problems at the POTW, in receiving waters, or in biosolids. Permits typically include specific numeric limitations on flow and pollutant concentration and/or mass. They may constrain practices such as batch discharge or require users to develop and implement slug loading and spill control plans or best management practices (BMPs). Permits typically specify facility and contact information, describe operations, identify wastewater outfalls, set sampling frequencies and protocols, and document reporting requirements. Permits are issued for a period not to exceed five years, and should be adjusted when the user’s circumstances change significantly (USEPA, 1989b).

ENFORCEMENT

The Enforcement Response Plan (ERP) describes procedures to identify, document, and respond to discharge violations in a manner appropriate to the nature of the violation. It defines the specific actions pretreatment staff should take to regulate and enforce industrial user compliance for wastewater discharges to the POTWs. The ERP prescribes enforcement responses, establishes guidelines that encourage fair and uniform application of enforcement responses, and defines protocols for review and appeal of responses. Municipalities should make certain that their pretreatment ordinances give them appropriate legal authority to implement their ERPs (USEPA, 1989a).

COMPLIANCE MONITORING

The compliance monitoring program comprises the procedures for collecting wastewater samples from industrial discharges—both by the municipality and users—and conducting site inspections to independently verify user-supplied information, as authorized by the pretreatment ordinance. Site inspections provide the opportunity to review an industrial discharger’s pretreatment equipment and procedures, operational processes, self-monitoring procedures (including sample collection), and good housekeeping practices. SIUs must be inspected at least once a year. Each municipality should review its compliance monitoring program to make certain it meets federal and state requirements for inspections and sampling (USEPA, 1991).

GUIDANCE

ADEQ has prepared a pretreatment procedures manual (ADEQ, 2004) to provide cities and counties in Arizona with guidance on all elements of developing successful pretreatment programs, including determining resources needed to carry out program objectives and addressing public participation. The ADEQ manual includes reference materials, detailed checklists, sample forms, and other useful tools. More information can be obtained through ADEQ’s Pretreatment Program webpage at http://www.azdeq.gov/environ/water/permits/pretreat.html.

REFERENCES


LOCATION: GateWay Community College
108 N. 40th Street
Phoenix, AZ 85034
South Building – Room SO1316
http://www.gatewaycc.edu/Campus/Map/
38th Street and Washington Light Rail Stop

DATE: February 22, 2010 From 12:30 pm to 4:30 pm

COST: $50.00 per Person (light Refreshments Provided)
NOTE: This workshop will also be available as a webinar presentation for a cost of $50 per site

Industrial Pretreatment Program
4 PDHs Approved
Sponsored by the AZ Water Association’s Pretreatment Committee
Starting an Industrial Pretreatment Program: An Overview
Expert presentations will address:

► INDUSTRIAL USER SURVEY
► FUNDING AND RESOURCES
► LEGAL CONSIDERATIONS
► LOCAL LIMITS
► AND MORE!!!!!!

Space Is Limited! Registration begins January 1, 2010 and ends on February 8, 2010
A webinar option is available

REGISTRATION: (Please indicate if you will use the Webinar option when registering for the event)

ONLINE REGISTRATION AT: www.azwater.org

Questions? Call Mike Golden (480) 350-2674 or email: mike_golden@tempe.gov
Method of Payment Accepted: MasterCard, VISA, AMEX - Check - Money Order

Make Checks Payable to AZ Water Association

Note: You can pay with a check or money order onsite but you need to register for the event first.

For planning purposes (whether you are attending or not) would you please answer this survey by clicking on this web link? http://www.surveymonkey.com/s/SSLSDYW
The Collection Systems Committee recently held a workshop in Peoria, Arizona. We had an amazing response despite the economy and the fact that the committee had not been active for a few years. It just goes to show the demand for the revival of this committee. The workshop would not have been a success without the many people volunteering their time, sponsorships, efforts and service. We also had a great response from the attendees and some great future topics of interest.

As a means to pass along information to the AZ Water Association members for those that were unable to attend the workshop in November 2009, the following is a very brief rundown of the topics covered from the workshop and the contacts for more information.

Brian Ackerman of HSW Pro-Pipe (backerman@hswwc.com) introduced a number of new technologies designed to assist collection system inspection and verification. He even walked the attendees through one of Pro-Pipes' client's sewer systems using his mouse. The video was from one of the newest Pro-Pipe tools, the high resolution IBAK Panorama 3D Optoscanner. For video gamers out there, the control was similar to that of many of the popular 3D first person video games (think HALO). Users have the ability for 360 degree views and inspect up to 70 fps of collection system lines. Brian introduced many other technologies that can help municipalities in a time when budgets are constrained and everyone is looking to prioritize repairs. These technologies and services can be found on www.pro-pipe.net.

**Mortensen,** CEO of Project Engineering Consultants (pec@pecaz.com) and a National Association of Sewer Service Companies (NASSCO) Master Trainer discussed the importance of industry standards for the rehabilitation of underground pipelines. Steve also discussed the importance of training for infrastructure condition assessment and that NASSCO has introduced a new Lateral Assessment and Certification Program (LACP) as well as many Inspector Training & Certification Programs such as Cured in Place Pipe and Pipe Bursting. NASSCO has also recently added a technical publication to help evaluate over 80 technology options for pipeline rehabilitation in their Trenchless Assessment Guide for Rehabilitation. This enables users to enter specific variables related to their particular trenchless project to generate a list of alternative technologies for their specific task. More of the information Steve presented about NASSCO can be found on www.nassco.org.

**Lori Weiss** of ADP Environmental Services (LWeiss@idexcorp.com) and a self proclaimed “sewer nerd” was able to discuss the importance of interpreting flow data in determining issues with various components of your collection system as well as a very unique topic on “Sewer Sociology”. Anyone who has opened a WE&T magazine to the back cover has seen these articles examining particular hydrographs of flow monitoring data. She explained that by examining these hydrographs through the eyes of a collection system one can interpret the water use habits of various age, socioeconomic, religious, social and sporting groups. Lori also invited attendees to send any unique flow data to her. Maybe your unique “Sewer Sociology” will be discussed in the next WE&T magazine.

**Ed Lamb,** of Lamb Technical Services (elamblts@msn.com) has been providing hydrogen sulfide and odor monitoring for over 13 years and has provided services for many large odor control projects. Ed discussed the various ways to effectively attack a collection system odor control problem. He gave examples of technologies used for air phase treatment, liquid phase treatment and monitoring technologies. Ed also stressed the importance of redundancy in your collection system odor control treatment system.

**John Bannen** of Severn Trent Services (jbannen@stes.com) has been a safety specialist for many years. John had everyone’s attention from the beginning when he mentioned collection system operators are exposed to hazards daily and the wastewater / collection systems industry has a 15% higher injury rate than the national average. He got right to the point in his discussion that safety on the job should be each individual’s and employer’s number one priority. Even with this higher rate of injury, John mentioned that only 1% of wastewater treatment facilities or collection systems operations were inspected for safety in 2008. John discussed the importance of the national initiative Prevention through Design (PtD). PtD’s major goal is concentrating on “designing out” hazards and risks rather than creating solutions to safety issues after the fact. It is critical that designers and operators have continuous communication in the design phase of a project to help prevent safety hazards from being introduced.

As you can tell from the short run down of the topics covered, a lot of pertinent collection systems information covered in the Collection Systems Committee's Kick Off Tour of Arizona. A special thanks to Pima County’s Michelle Varner, Rita Mercer, Bob Machen and John Warner and the many others that helped this event be as successful as it was in such a short order.

The Collection Systems Committee is planning on continuing the traveling tour throughout the great state of Arizona in an effort to approach the many people without the ability to make it to Phoenix and Tucson’s larger workshops and conferences. Like Michael McDonald said, we’re takin’ it to the streets and if you have any ideas or desire to join the committee, please feel free to contact me at nlester@greeley-hansen.com or Michele.varner@wwm.pima.gov.

**SAFETY COMMITTEE**

**John Bannen, Chair**

The committee scheduled a conference call on November 12th to finalize topic selection for the safety track at the 2010 AZ Water Association annual conference. Utilizing surveys conducted throughout the year, national trends in safety and committee four key area were identified and will become sessions in this year’s conference.

The committee also discussed hosting a WEF Webinar viewing party similar to the one held this past July for the Confined Space webinar and additional locations for viewing are being evaluated in Tucson and on the west side of metro Phoenix to be added to the Mesa location. Webinars are only 1½ hours in length and a great way to pick up PDHs for the operators and convey an important message about safety specific to our industry.

The next committee meeting will be held in January,
Calling all Kiwanians and Rotarians

Are you a Kiwanian or Rotarian? If you are, the Water For People Committee would like to hear from you! Please send an email to Andrea Odegard-Begay (aodegard@pirnie.com) identifying your club name and district. We would like to arrange a Water For People presentation at your club meeting as we embark on an ambitious program to forge a stronger partnership between Water For People and both Kiwanis International and Rotary International here in Arizona. We want to get the word out to Kiwanis and Rotary Clubs throughout Arizona about Water For People and we need your help!

Water Corps

Learn more about Water For People's new in-country volunteer program by visiting www.waterforpeople.org/water_corps.html. Water For People is seeking skilled volunteers to assist with program monitoring, evaluations and mapping. Volunteers are self-nominated and an application form can be found online. If you have any questions, feel free to contact David Christiana at dchristiana@cox.net.

Biosolids Committee

Fernando Sarmiento, Chair

The AZ Water Biosolids Committee strives to identify emerging trends and promote “best-practices” for the treatment and disposal of biosolids and residuals in the state of Arizona. Committee activities include organizing conferences, treatment facility tours, webcasts, public outreach events, and authoring papers and newsletter articles to advocate beneficial use of biosolids. The Committee is also highly motivated in creating awareness on energy efficiency and renewable energy opportunities as well as promoting sustainable practices for the reduction of GHG emissions/carbon footprint.

Below are activities completed by the Committee as well as activities planned for 2010.

Webcast "Biosolids and Carbon Footprint"

On November 3rd, the committee had a very successful webcast on “Biosolids and Carbon Footprint”. The webcast was well attended with over 40 registrants. PDHs were distributed. The webcast provided an overview of GHG emissions/carbon footprint regulatory trends, a brief history of carbon footprint accounting, and current leading protocols and registries to estimating GHG emissions from wastewater treatment and biosolids management. Also, the webcast discussed biosolids management case studies involving reduction of carbon footprint. Thanks to all attendees for their participation in the first webcast organized by the Biosolids Committee!

"Biosolids Management" Technical Session

AZ Water Annual Conference Thursday, May 6, 2010 8:00-10:00 AM

This session will be offered as part of the 2010 AZ Water Annual Conference in Glendale, Arizona. The presentation will focus on biosolids and residuals treatment, handling, disposal, and management practices. Topics covering cases studies, operational approaches, regulatory trends, and current research are being considered. The session is anticipated to include four speakers, each providing a 20-minute presentation followed by a 10-minute period for questions and answers. PDHs will be provided. Please mark your calendar!
"GHG Emissions/Carbon Footprint/Renewable Energy" Technical Session
AZ Water Annual Conference
Friday, May 7, 2010
8:00-10:00 AM

This session will be offered as part of the 2010 AZ Water Annual Conference in Glendale, Arizona. Our Committee is working to identify topics related to current research and efforts to generate energy from renewable sources, such as algae and residual grease. We are also planning on providing an overview of renewable energy opportunities in treatment plants and an outline of emerging finance mechanisms for energy, water and GHG reduction. We anticipate including four speakers, each providing a 20-minute presentation followed by a 10-minute period for questions and answers. PDHs will be provided. Please mark your calendar!

Biosolids Committee Meeting
AZ Water Annual Conference
Thursday, May 6, 2010
1:30-2:30 PM
During the 2010 AZ Water Annual Conference in Glendale, the Committee will hold a session open to anyone who wants to participate. The objective of the session is to provide an update of the activities conducted by the Committee as well as to seek feedback and comments from the participants. This will be a great opportunity to see what our Committee is doing, interact with our members, and, of course, join the Committee. Please mark your calendar!

Series of Webcasts
The Committee is also planning to continue offering webcasts on a regular basis, every quarter or more often depending on the interest of participants. Topics being considered include operational challenges in biosolids treatment, energy technologies, co-digestion case studies, emerging contaminants in biosolids, and biosolids regulatory trends. Please contact us if you have a specific topic of interest.

JOIN THE BIOSOLIDS COMMITTEE
Email Fernando Sarmiento, Committee Chair, at fsarmiento@greeley-hansen.com for additional information and meeting times.

Committee Members:
Jay Bailey, Coombs-Hopkins
David Epperson, City of Phoenix
Housam El Jerdi, Pima County
Craig Geyer, Synagro
Nathan Lester, Greeley and Hansen
Lorrie Loder, Synagro
Angela Lucci, City of Surprise
Gary Newman, Brown and Caldwell
David Quinby, City of Phoenix
Lorrie Loder, Synagro
Craig Geyer, Synagro
Fernando Sarmiento, Greeley and Hansen, Committee Chair
Angela Lucci, City of Phoenix
Queenie Tsui, Getty Engineering

WATER RESOURCES COMMITTEE
Warren Tenney, Chair
The Water Resources Committee worked hard the last few months to put together a Water Resources 101 workshop. The workshop has already been presented in Flagstaff and Phoenix with the Tucson event scheduled for January 22, 2010. The purpose of the workshop is to provide members with an opportunity to learn about Arizona’s past and current efforts to secure and manage its water resources. The Committee believes that it is important for AZ Water members to understand that Arizona never has and never will run out of water as long as (a State) we collectively invest and plan for our water resources and infrastructure.

The Water Resources 101 workshop includes five presentations: 1) Arizona’s physical water supply and usage; 2) institutional boundaries and regulations; 3) constraint and limits on water resources; 4) water management tools; and 5) planning for the future. The Committee has been fortunate to have five hard working individuals who have prepared and present these presentations. Those members include Tim Thomure of HDR Engineering, Beth Miller of the City of Scottsdale, Alan Forrest of CH2M Hill, Chuck Callom of Central Arizona Project, and Wally Wilson of Tucson Water.

The workshops have been well received at both the Flagstaff and Phoenix locations. We encourage members to learn more about water resources and to mark your calendars to attend the Tucson workshop on January 22, 2010.

BURBANK EDUCATOR AWARDS COMMITTEE
Chuck Ohr, Chair
I recently transferred the Committee Chair responsibility to Charlotte Waddle, for the AZ Water Association Burbank Award (also known as the Nathan C. Burbank Environmental Educator-of-the-Year Award). When considering candidates to take over this responsibility, I included work and life experience as crucial factors for this nomination. The following quote from the email distributed earlier, summarizes my thoughts why I chose Charlotte, “I wanted someone to succeed me in this effort who is a past-awardee and holds the same values and experience with Dr. “B” and would carry on the same tradition and values venerating this man who was more than a friend and mentor. You fulfill my wishes and concerns for the future of the Burbank Award. Thank you for accepting this responsibility.”

TRIVIA QUESTIONS

A. Date of the issuance of the first United States postage stamps?
B. Time and location of the driving of the last spike in the railroads that completed the nation’s first transcontinental railway – connecting the segments built by the Union Pacific and Central Pacific Railroads?
C. The United States’ first food stamp program was initiated in Rochester, New York on 16 May 1939 … for what purpose?
D. The first action by Clara Barton’s American Red Cross – in a peace time disaster relief effort occurred “when and where”?
E. In 19__?__, after 94 hours of continuous flight, a B-50 Superfortress, based out of Carswell Air Force Base in Fort Worth, TX, completes the first nonstop flight around the world?

SEE ANSWERS ON PAGE 44
AZ Water Association Presents:
The Southern Arizona Technical Luncheon Program Events

Thursday, January 7, 2010
Topic: Water for People
Presented By: Asia Phelbin, Tucson Water
Register By: Monday, January 4, 2010
Door Prize Sponsor Westland Resources

Thursday, February 4, 2010
Topic: MS4 Stormwater Permit
Presented By: Catesby Willis, AZ Dept of Transportation
Register By: Monday, February 1, 2010
Door Prize Sponsor Golder & Associates
*** Location Change

Thursday, March 4, 2010
Topic: Tucson Airport Remediation Project
Presented By: Fred Brinker, TARP
Register By: Monday, March 1, 2010
Door Prize Sponsor Carboline CH2M Hill

Thursday, April 1, 2010
Topic: CAP
Presented By: Marie Pearman, CAP
Register By: Monday, March 29, 2010
Door Prize Sponsor Golder & Associates

Time: 11:45 am – Registration
Noon – Lunch
Cost: $15/person for members
$20/person for non-members

Contact: Joy Terry
Joy.terry@ch2m.com
(520) 514-9835 ext. 37163

Location: InnSuites Tucson City Center
475 N. Granada
Tucson, AZ 85701
*** Please note that our February meeting will be held at a different location.
El Parador Mexican Restaurant – 2744 E. Broadway, Tucson, AZ 85716

For More Information:
Please Register Online at the AZ WATER Website under “Upcoming Events”
http://www.azwater.org

Due to space limitations, reservations are required. No-shows will be billed.
# AZ Water Association Presents:
## The Monthly Luncheon Series Events

**Tuesday, January 12, 2010**
- **Topic:** Inline Turbine Systems for Water/Wastewater
- **Presented By:** Nate Turner, Blackgold Biofuels
- **Register By:** January 8, 2010

**Tuesday, February 9, 2010**
- **Topic:** Agua Viva Water Treatment Facility in Yuma
- **Presented By:** Dave Sobeck, Carollo Engineers
- **Register By:** February 5, 2010

**Tuesday, March 9, 2010**
- **Topic:** TBD
- **Presented By:** TBD
- **Register By:** March 5, 2010

**Tuesday, April 13, 2010**
- **Topic:** Economic Impacts on the Water Operations and Maintenance Industry
- **Presented By:** TBD
- **Register By:** April 9, 2010

---

**Time:**
- 11:45 am - Registration
- Noon - Lunch

**Location:** SRP Pera Club
- 1 East Continental Drive
- Tempe, AZ 85281

**Cost:**
- $20/person for members
- $25/person for non-members

**Contact:** Daniel Candelaria
- daniel.candelaria@ch2m.com
- (480) 377-6220

---

**For More Information:**
Please Register Online at the AWPCA Website under “Upcoming Events”
http://www.azwater.org

Special Thank You to our Flyer Sponsor
Kiewit Western Co. (602) 437-7878
Water/Wastewater Infrastructure

_Due to space limitations, reservations are required. No-shows will be billed._
Water Treatment Committee Seminar Series
Water System Optimization - Doing More with Less!!

Tuesday, February 23, 2010
GateWay Community College
Center for Health Careers Education Auditorium
Room CH1106
108 N. 40th Street, Phoenix, AZ 85034

AGENDA

8:30 a.m. - 8:55 a.m. Registration
8:55 a.m. - 9:00 a.m. Welcome: Uday Gandhe, Wilson Engineers
Chairman, AZ Water - Water Treatment Committee
9:00 a.m. - 12:00 p.m. Morning Session would include presentations from the management of various utilities in the State including Cities of Phoenix, Glendale, Mesa, Peoria, Tucson, Scottsdale, Flagstaff, and Metro Water District. The focus and topics of these presentations relate effort to comply with upcoming regulations while facing cutbacks in capital/operating budgets as well as staff reductions, capital improvements that are planned but have been delayed due to the economy, or improvements that have to be implemented but funded by cutbacks in other areas. Other areas of focus would include automation to reduce staffing, streamlining operations, and proposed changes in treatment and/or distribution system operations to improve water quality. Presentations may also include any unique challenges that are being confronted by the Utility Managers.

12:15 p.m. - 1:00 p.m. LUNCH BREAK
1:00 p.m. - 1:45 p.m. Using Chlorine Dioxide to Reduce Distribution System THM Formation:
Demonstration Testing at the Deer Valley WTP
Sreeram Rengaraj WE, Jacqueline Shaw, MPJ

1:45 p.m. - 2:15 p.m. Aeration Strategies for TTHM Control
Chad Seidel, PhD, PE, and Stephen Acquafredda, PE

2:15 p.m. - 2:45 p.m. Dissolved Air Flotation for surface water treatment; startup and operational experiences at the White Tanks Regional water treatment facility
Jeremiah Mecham, Arizona American Water; Tim White, Black and Veatch

2:45 p.m. - 3:15 p.m. San Tan Vista WTP; Startup, Commissioning, and Operational experience with Sand Ballasted Flocculation and Ozone Facilities
Kurtis McDaid, Town of Gilbert

3:15 p.m. WRAP UP
Winter 2010
AZ Water Association

Water Treatment Committee Seminar Series
Water System Optimization - Doing More with Less!!

Tuesday, February 23, 2010
GateWay Community College
Center for Health Careers Education Auditorium
Room CH1106
108 N. 40th Street, Phoenix, AZ 85034

REGISTRATION FORM
Note: use this form or register on-line at www.awpca.org

Attendee Name: ____________________________________________
Organization: ______________________________________________
Address: __________________________________________________
Phone: ______________ Fax: ___________ E-mail: _______________

Registration Fee:
☐ AZ Water Member: $60
☐ Non-Member: $90 (includes 1-year free AZ Water membership)

Payment:
Check (made payable to AZ Water)
Credit Card Payment (Mastercard and VISA accepted)

Credit Card Number: _______________________________ Exp. Date: __________
Cardholder’s Name: ________________________________

Mail Registration and Payment to:
Monica Flores
Wilson Engineers, LLC
9633 S 48th Street, Suite 290
Phoenix, Arizona 85044
Tel.: (480) 893-8860 Fax: (480) 893-8968

Valuable Professional Development Hours are available. You may be eligible to receive up to 5 PDHs!
THE TROJANUV SOLUTION

For more than 30 years, Trojan has led the way toward safe, reliable and effective ultraviolet light solutions. Tested, trusted and proven in more than 6,000 municipal installations around the world.

The TrojanUVPhox™ uses UV light to destroy potentially harmful chemical contaminants in water, making it safe for drinking. It is now installed in a large number of municipal water supply projects to destroy chemical contaminants, including in water reuse projects that recycle wastewater for augmentation of drinking water supplies. The TrojanUVPhox™ became operational at Orange County’s (California) Groundwater Replenishment System in January 2008.

Water supply expansion strategies employing recycled water are being implemented throughout the world. Trojan Technologies in London, Canada has taken a proactive role in developing technology to make your water safe. The TrojanUVPhox™ solution is just one of the ways that we deliver water confidence through UV.

Represented by:
The Coombe-Hopkins Company | Tel. 502.275.4303 | jason@coombehopkins.com

www.trojanuv.com
Don’t Forget! It is that time again to identify fellow Arizona water/wastewater professionals and worthy projects for recognition at the 2010 AZ Water Association Annual Conference & Exhibition. Nominations due by March 26, 2010!

Award criteria, nomination forms, and points of contact for the 2010 AZ Water Awards Program can now be found ONLY online at www.azwater.org under the “Awards” committee page. Electronic applications will be accepted on the website starting February 1, 2010.

Questions can be directed to the Awards Program Committee Chair, Darlene Helm at (602) 534-9138 or the Board Liaison, Teresa Smith-DeHesus at (602) 381-4226.

2010 AWARDS INCLUDE:
AZ Water Awards
- Environmental Stewardship
- Kachina Award for Outstanding Service
- Nathan Burbank Environmental Educator
- Quentin Mees Research Award
- Select Society of Sanitary Sludge Shovelers
- Gimmicks & Gadgets
- Operator of the Year (Large and Small Systems)
- Plant of the Year (Large and Small Systems)
- Operations Supervisor of the Year (Large and Small Systems)
- Electrician of the Year
- Maintenance Mechanic of the Year
- Instrumentation Technician of the Year
- Water Reuse Project of the Year
- Water Project of the Year
- Wastewater Project of the Year
- Engineer of the Year
- Young Professional of the Year
- Laboratory Excellence Award
- Safety Awards
- Scholarship Award

AWWA Awards
- Warren G. Fuller Award

WEF Awards
- Arthur Sydney Bedell Award
- George W. Burke, Jr. Award
- William D. Hatfield Award
- Laboratory Analyst Excellence Award

Don’t Miss the March 26, 2010 Deadline!!
WATER TREATMENT GRADES 1 & 2
1. Which of the following is NOT a chemical used as a primary coagulant in drinking water:
   A. Aluminum Sulfate.
   B. Ferric Chloride.
   C. Sodium Sulfide.
   D. Ferrous Sulfate.

2. How much water can a reservoir hold if it is 60 feet in diameter and 22 feet deep?
   A. 10,000 Gallons
   B. 62,172 Gallons
   C. 100,000 Gallons
   D. 465,000 Gallons

3. Under Ohm’s Law, EMF in Volts may be calculated by:
   A. Multiplying Current times Resistance.
   B. Dividing Current by Resistance.
   C. Dividing Resistance by Current.
   D. Multiplying Watts times Amps.

4. Calculate how much Sodium Hypochlorite is needed to disinfect 3.85 million gallons per day at a dose of 1.5 ppm chlorine when the concentration of Sodium Hypochlorite is 10% and the density is 10 lbs/gal?
   A. 10 lbs
   B. 30 lbs
   C. 50 lbs
   D. 70 lbs

5. If your treatment plant must add 15 mg/L of Powdered Activated Carbon (PAC) to the water to meet TOC removal requirements and you treat 50 MGD and the PAC costs $.75 / lb, how much will you spend annually on PAC?
   A. $5.25 Million/year
   B. $2.50 Million/year
   C. $1.71 Million/year
   D. $0.15 Million/year

WATER TREATMENT GRADES 3 & 4
1. How much 48% alum solution with a density of 11.0 lbs/gallon is required to mix 500 mL of a 20.0 mg/mL solution for jar tests?
   A. 15.8 mL
   B. 20.0 mL
   C. 32.5 mL
   D. 500 mL

2. A pressure gauge on a hydrant reads 88 psi. How many feet of head are on the hydrant?
   A. 38 feet
   B. 88 feet
   C. 125 feet
   D. 203 feet

3. If your system must collect and analyze 220 coliform samples each month, how many can be negative?
   A. Zero
   B. 11
   C. 15
   D. 210

4. If your customers have red stains on their porcelain plumbing fixtures, which is the most likely cause?
   A. Coliform bacteria re-growth in the distribution system.
   B. Iron in the source water.
   C. Hardness in the source water.
   D. Fluoride overdosing.

5. If copper pipe is used for service connections, your system will not meet the Lead and Copper Rule.
   A. True
   B. False

WATER DISTRIBUTION GRADES 3 & 4
1. How many horsepower (HP) are required to lift water 200 feet at a flow of 695 GPM, presuming the water-to-wire efficiency is 70%?
   A. 5.5 HP
   B. 17.0 HP
   C. 25.0 HP
   D. 50.0 HP

2. Which of the following is NOT a type of positive displacement pumps?
   A. Piston pumps
   B. Diaphragm pumps
   C. Centrifugal pumps
   D. Gear pumps

3. If adding a sequestering agent to your well water at a dosage of 2.0 mg/L and the chemical is a 25% solution with a density of 11.0 lbs/gal, what should the feed rate be in gal/hr to treat a flow of 850 GPM?
   A. It cannot be determined.
   B. 0.31 gal/hr
   C. 7.42 gal/hr
   D. 20.4 gal/hr
4. A water line must be flushed at a minimum of 5 feet per second. If the water line is 16 inches in diameter, what should the flow be in gallons per minute (GPM)?
   A. 250 GPM
   B. 2,040 GPM
   C. 2,444 GPM
   D. 3,150 GPM

5. Your water company determines that for one month the customers have used 4.15 Million Gallons, while your wells have supplied 13.5 acre feet. How much water has been lost?
   A. 250,000 gallons
   B. 118,000 gallons
   C. 1.15 million gallons
   D. 115 gallons

WASTEWATER COLLECTION GRADES 1 & 2
1. Root growth is a principal cause of wastewater collection pipe damage that allows infiltration and exfiltration of wastewater.
   A. True
   B. False

2. One of the hazardous gases produced in wastewater collection systems is:
   A. Oxygen.
   B. Chlorine.
   C. Helium.
   D. Hydrogen sulfide.

3. A tracer dye indicates flow through 600 feet of sewer takes 4 minutes. What is the velocity in feet per second (fps)?
   A. 1.9 fps
   B. 2.5 fps
   C. 3.6 fps
   D. 8.1 fps

4. A sewer line is 24 inches in diameter and flows completely full at 2500 gpm. What is the velocity in feet per second through this sewer line?
   A. 0.39 ft/sec
   B. 1. 77 ft/sec
   C. 2.79 ft/sec
   D. 4. 15 ft/sec

5. One hundred gallons per day of Sodium Hypochlorite solution containing one pound chlorine per gallon of solution is added to a flow of 2.4 MGD. What is this dosage in mg/L?
   A. 2.0 mg/L
   B. 3.0 mg/L
   C. 4.0 mg/L
   D. 5.0 mg/L

WASTEWATER COLLECTION GRADES 3 & 4
1. Significant lift station failures make headlines in newspapers and tarnish the image of collection system agencies.
   A. True
   B. False

2. A sewer pipe 48” in diameter is flowing half full and at a velocity of 2 feet per second. What is the flow in gallons per minute (GPM)?
   A. 5,640 GPM
   B. 9,455 GPM
   C. 11,300 GPM
   D. 22,500 GPM

3. When a molded case circuit breaker fails, the:
   A. Case must be opened to identify the problem.
   B. Entire circuit breaker must be replaced.
   C. Failed parts must be replaced.
   D. Repairs must be made by a certified electrician.

4. Explosions in collection systems are caused by:
   A. Buildup of explosive gases in the sewer line.
   B. Concentration of ventilation gases in the atmosphere.
   C. Failures of manhole vent systems.
   D. Fires in homes and offices.

5. The most important factor in determining the number of personnel needed to maintain a sewer system is:
   A. Age.
   B. Condition.
   C. Funding.
   D. Size.

WASTEWATER TREATMENT GRADES 1 & 2
1. A trickling filter removes solids by a filtering action.
   A. True
   B. False

2. What is the detention time of a basin measuring 80 feet long, 30 feet wide, and 14 feet deep, with an influent flow of 2.3 MGD?
   A. 80 minutes
   B. 160 minutes
   C. 260 minutes
   D. 360 minutes

3. How many pounds of oxygen per day are needed in a wastewater treatment plant with an influent flow of 6.6 MGD and oxygen demand of 185 mg/L?
   A. 185 lbs/day
   B. 1020 lbs/day
   C. 10,200 lbs/day
   D. 66,000 lbs/day

4. What is the percentage removal efficiency of a basin with influent suspended solids of 135 mg/L and effluent suspended solids of 45 mg/L?
   A. 45% removal
   B. 66% removal
   C. 77% removal
   D. 90% removal

5. Which of the following lab glassware is used for determining the settleable solids in aeration basins?
   A. Pipet
   B. Beaker
   C. Graduated cylinder
   D. Imhoff cone

WASTEWATER TREATMENT GRADES 3 & 4
1. Aeration basins are usually located just upstream of trickling filters.
   A. True
   B. False

2. What is the organic loading to a basin in pounds per day (PPD) if the influent BOD is 205 mg/L and the influent flow is 2.75 MGD?
   A. 4700 PPD
   B. 6000 PPD
   C. 7325 PPD
   D. 9100 PPD

3. What is the weir overflow rate in gallons per minute per foot (GPMPF) of a basin 85 feet in diameter, with weirs around the circumference of the basin and with a flow of 12.2 MGD?
   A. 28.0 GPMPF
   B. 31.75 GPMPF
   C. 85 GPMPF
   D. 280 GPMPF

4. A representative sample is one which:
   A. Closely reflects the overall conditions of the waste stream being sampled.
   B. Combines equal portions of samples from two or more waste streams.
   C. Most closely reflects the average plant waste stream.
   D. Reflects the average conditions over a day, week or month.

5. If a digester is 50 feet in diameter and contains 18 feet of solids with an average volatile content of 2800 mg/L, how many pounds of volatile solids are in the digester?
   A. 280 lbs
   B. 480 lbs
   C. 5000 lbs
   D. 6200 lbs

BY TED BAILEY
BAILEYTB@ATT.NET

Winter 2010 | AZ Water Association 25
The Economic Benefits of using Geotextile Tubes for Environmental Dewatering

The use of geotextile tubes for environmental dewatering began in the late 1990’s with applications in the industries of water and wastewater treatment, mining and mineral processing, light/heavy industry, food processing, agriculture and contaminated (Superfund) site cleanup. The technology is passive and simple to install and requires no special equipment for mobilization/demobilization.

Geotextile tubes are fabricated from high strength polypropylene fabrics and can range in size from units that can fit in standard roll on/roll off boxes to units up to 120 ft (36 m) in circumference and hundreds of feet long. The sizes of the tubes are influenced by the available space to deploy them, the size of existing drying beds, efficient production rates vs. volume to be dewatered, etc.

The components of effective geotextile dewatering begin with sludge testing and evaluation. A representative sample is obtained and various chemical conditioners, or polymers, are added to the waste material to create the best “floc”. With biosolids, for example, the polymers are the same as those typically used in mechanical dewatering systems. Lesser concentrations, however, are usually required. Mobilization is the next stage. This step includes preparing the lay down area, setting up pumps/dredges, fill lines and, if required, the polymer injection system. As the filling of the geotextile begins, it is simply a matter of monitoring the feed solids for consistency and making sure the pressure in the tube does not exceed recommended levels. It may take several cycles of filling and dewatering, but once the geotextile tube is full, it is cut open and the dried contents removed to a suitable disposal area. During the filling and dewatering process, the effluent is also managed by returning it to the headworks, using it for irrigation or, depending on the quality, returning it to a lagoon, reservoir, channel or sanitary sewer line.

Engineering parameters necessary for proper design also need to be identified. These include specific gravity, % total suspended solids (TSS) in-situ, targeted % TSS by weight, volume of material to be dewatered, pumping rates and pumping efficiencies.

In the current economic climate, many communities are researching alternative technologies for the management of water and wastewater sludge/biosolids. With fewer dollars available for capital expansion, cost effective systems such as geotextile tube dewatering are the logical solution. A case in point is the city of Heber, CA, Water Reclamation Facility. Like thousands of similar facilities in North America, the city historically utilized drying beds for the anaerobic sludge in the plant’s digesters. Approximately 2-3% TSS waste activated sludge (WAS) was placed in the beds at the mercy of Mother Nature. In addition, it attracted flies and mosquitoes and generated foul odors. When the sludge was introduced into the geotextile tubes, those problems went away.

First, the geotextile fabric is hydrophobic (water repelling) and together with internal pressures inside the tube, water is not reabsorbed. This is particularly important in regions of the U.S. with high rainfall rates. And, because the WAS is contained in the geotextile tube, it does not attract flies and mosquitoes nor does it give off offensive odors.

Two, 45 ft circumference/29 ft long units were custom fabricated to fit in the facility’s drying beds. By cyclically pumping the units to a height of 5 ft, the capacity of the drying beds was significantly increased. Another 45 ft circumference/100 ft long unit was placed adjacent to the beds. All three provided approximately 7:1 sludge volume reduction and captured 209 cy or 42,129 gal of 22% TTS WAS.

The costs associated with geotextile tubes are orders of magnitude less than conventional mechanical drying systems. As the city of Heber’s wastewater operators discovered, the geotextile tubes (w/ freight) and polymer costs came to $0.29 gal! Compare that to the initial capital investment in a belt filter press and the cost of running the press and maintaining it. With cities and counties trying to manage their infrastructure costs these days, geotextile tubes offer tremendous cost savings.

For more information contact Stephen Martin, PE, CPESC, Environmental Engineer, Applied Diving Services, Inc. at 602.258.1116, 602.327.8433 cell, Stephen@applieddiving.com.

By Stephen Martin, PE, CPESC, Environmental Engineer, Applied Diving Services, Inc.
Inspiring Today’s Students. Improving Tomorrow’s Water.

Are you interested in fostering the next generation of scientists and engineers? Would you like to be part of a global effort to improve the water environment?

If so, the Stockholm Junior Water Prize Committee is the place for you!

This dynamic group helps organize the most prestigious youth competition for water-related research in the United States. Meetings take place by conference call to allow for a broad representation of WEF members, including young professionals.

Customize your involvement to fit your availability and interests. For example, at the national level you can:

- Assist in developing alumni programs to keep students connected (and teachers too!)
- Help establish a grade school competition to get students interested early
- Support outreach and marketing activities to encourage student participation
- Provide assistance in editing and publishing the Journal of the SJWP
- Participate in the annual onsite competition as an organizer, coach, or judge

You can also get involved with your local Member Association to help promote the competition in your area and select your state winner.

Join Now! To learn more about how you can get involved, please contact Stephanie Costello at scostellawef.org or 703-535-5263.
Meet The New Director of ADEQ:
Benjamin H. Grumbles, J.D., LL.M

Ben Grumbles became Director of the Arizona Department of Environmental Quality (ADEQ) in June 2009. During the three months prior, he served as environmental policy advisor to Governor Jan Brewer. Ben spent 16 years on Capitol Hill working as Senior Counsel for the Water Resources and Environment Subcommittee of the Transportation and Infrastructure Committee of the U.S. House of Representatives. Prior to his recent move to Arizona, Mr. Grumbles was Assistant Administrator for Water at the U.S. Environmental Protection Agency in Washington, D.C. The author acknowledges conception of the interview idea by Chuck Graf and facilitation by Mark Shaffer of ADEQ.

WHAT IS THE BIGGEST CHANGE YOU HAVE EXPERIENCED IN MOVING FROM FEDERAL EPA TO ADEQ? WHAT IS YOUR BIGGEST CHALLENGE IN THE TRANSITION? WHY DID YOU MAKE THIS MOVE?

The state level affords me a broader portfolio of issues with air, waste, and energy plus multiple expanded connections of the issues with water. The timeliness of decision-making at the state level is better. I am closer to the affected citizens in terms of standards, policies, and permits. I am closer to the impacts. Here, we need faster decisions. At EPA, because of its national or regional scope, the decision-making process is much longer and the impact of the decision much longer. My biggest challenge is the significant budget crisis that currently exists in the state. Reduced revenue impacts are felt quickly and severely. The state’s enforcement has been affected. I made the change for family and career-broadening reasons. My parents, siblings, wife, and children are all in Arizona now. I am looking forward to working at the state level of governance in a broader environmental arena of energy, air, and waste as well as continuing my focus with water, energy, climate and their synergies.

BASED ON YOUR SHORT TIME IN ARIZONA, WHAT DO YOU FORESEE AS THE MOST SIGNIFICANT ENVIRONMENTAL ISSUES FACING ARIZONA IN THE NEXT FIVE YEARS? 10 YEARS? 30 YEARS?

Arizona’s largest issues are growth and sustainability. Closely related is water resources of the state and carrying capacity of the land. These issues are not at a crisis level in Arizona, but we need to increase diligence with water conservation practices to sustain our limited surface water and groundwater resources. I am an advocate of “smart growth,” which requires us to make greater progress on sustainability. Our water management requires long-term sustainability. We have to protect our rural water supplies to provide smart growth alternatives. Another issue is our air quality and high pollution advisories. We must monitor and control our ozone and particulate levels in the Phoenix area to reduce environmental health concerns. With smart growth, we can improve the planning for our energy needs. Arizona should become the solar power state of the nation. Arizona should lead in clean and renewable energy. ADEQ and others have developed a smart growth checklist for communities to use voluntarily. It’s making a difference.

WHAT REGULATORY CHANGES DO YOU ANTICIPATE FOR WATER AND WASTEWATER INFRASTRUCTURE?

At the national level, EPA is very active on the “waterfront.” The agency continues to focus on pathogens such as the Total Coliform Rule under the Safe Drinking Water Act. Bacterial growth in drinking water pipelines is an issue and is being addressed through EPA rule making. On the wastewater side, EPA has a strong enforcement priority for managing sewer system overflows and stormwater discharges.

WHAT CAN BE DONE TO FUND ARIZONA’S DRINKING WATER, WASTEWATER, RECLAIMED WATER, AND STORMWATER INFRASTRUCTURE NEEDS? HOW MUCH HAS THE ARRA MONEY HELPED?

Funding from the American Recovery and Reinvestment Act (ARRA) has provided about $82 million to Arizona. This funding is significant for Arizona and has provided needed
infrastructure improvements. In my position as Director, I also serve as Chairman of the Board of the Water Infrastructure and Finance Authority of Arizona (WIFA), which has a project funding priority system for managing Arizona’s federal funding allocations. I support the “green” feature of our stimulus dollars, which provides that 20 percent of the funds go towards innovative water and energy conservation projects.

ARRA funding is short term and not sustainable over the long haul. In this regard, Arizona needs to increase its citizen and ratepayer awareness of the value of water. I am a believer in “full-cost pricing” but also recognize that social equities justify the need for “lifetime” rates required for fixed income customers. To provide sustainable infrastructure funding, we need to be innovative, and that means working with the private sector. I support public-private partnerships as an element of funding and managing aging infrastructure. We need to find better ways to leverage our resources and also to improve the “harvesting” of the State’s rainfall and snowfall. We have room to work on these goals. A concerted, comprehensive educational campaign with our businesses, communities, and citizens will make a difference.

THE SYNERGY OF WATER, ENERGY, AND GREENHOUSE GAS EMISSIONS (GHG) IS BECOMING RECOGNIZED. WHAT IS ADEQ’S CURRENT ROLE IN THIS NEXUS AND WHAT IS YOUR OPINION ABOUT ADEQ’S FUTURE ROLE?

ADEQ has not been too involved in the past, but needs to be and is becoming more involved. There is a strong interrelationship among GHG emissions, climate change, and water and energy technology. Clean and renewable water and energy are keys to protecting the State’s environmental health. Energy uses water, and water uses energy. For example, concentrated solar power systems use water—sometimes lots of it. The Palo Verde Nuclear Generating Station uses treated wastewater from the SROG 91st Avenue WWTP and provides on-site enhanced treatment to improve cooling tower efficiency. Nuclear power is a green energy source and should be preserved as necessary for Arizona’s energy portfolio. The EPA has raised issues with the Navajo Generating Station in northern Arizona. We all want to see environmental progress on visibility and air quality. It is important for EPA to consider the incremental costs and benefits of alternative air emissions control treatment technologies, whether at coal-fired power plants or other facilities. There are alternative power plant cooling technologies that use less water which should be studied from a life cycle cost perspective. Multiple factors of costs, benefits, water use, and environmental impacts should collectively be considered. ADEQ is collaborating with CAP, SRP, and APS to understand and develop a statewide consensus on policy involving the water-energy-smart growth nexus in Arizona.

1. Strengthen the science- We have limited funding to do this, but partnerships with manufacturers, distributors, universities, utilities, and research foundations can help. We can’t wait to fill the important scientific gaps that exist to determine the human health and ecological impacts. There are unknown synergies between these chemicals that need to be studied.

2. Improve risk communication- Risk management is not well understood. We need to communicate better the context of risks to the public to avoid or counter inappropriate headlines taken out of context. ADEQ has developed information on various elements of public risk to help reduce customer anxiety over potential water quality concerns.

3. Increase product stewardship- This prong includes consumer awareness of the hazards of using the toilet for disposal of unwanted or unused pharmaceuticals. Programs to take back unused prescriptions are needed. Partnerships with pharmacies and doctors are desired for implementing such programs, and the pharmaceutical and health care industries, including drug manufacturers and hospitals, need to step up.

4. Use regulatory tools- EPA is reviewing the list of chemicals regulated by the Safe Drinking Water Act and the Clean Water Act to prioritize the higher risks with known, current dangers.

WHAT CHANGES ARE NEEDED IN ADEQ ENFORCEMENT POLICY? HOW CAN COLLABORATION ASSIST ENFORCEMENT MATTERS?

Enforcement is a necessary bedrock of environmental regulation to protect the public health and environment. It’s a central part of our job. But as a general matter, we are most successful when we collaborate upfront and focus on compliance assistance rather than going straight to enforcement or “gotcha” games. ADEQ will not go straight to enforcement for environmental problem solving. Rather, it will provide technical and financial assistance within its resources to help move toward compliance. ADEQ has a small community environmental protection program to recognize the differences in technical and financial capabilities compared to larger municipalities. It’s a good model.

GIVEN ARIZONA’S DIRE BUDGET SITUATION, HOW CAN ADEQ IMPLEMENT ITS MANY STATUTORY RESPONSIBILITIES IN A COST-EFFECTIVE AND TECHNICALLY PROFICIENT MANNER? DO YOU FORESEE FEE INCREASES OR NEW FEES?

All State and local agencies are being asked to make cuts in this economic climate. The key to ADEQ viability is sustainable environmental programs. We need to keep our environmentally protective air, water, and waste laws but seek fair and reasonable fee increases to monitor and enforce. It’s easy to predict that general fund dollars from the Legislature will continue to decrease. As a result, we need to embrace innovative financing and rely even more on the user pays and polluter pays principles. We will become more reliant on general permits in lieu of specific permits to reduce the procedural red tape. We have to reduce programs without losing them while providing the most value for our services. Arizona wants to preserve its primary designation received in 2002 to avoid going back to the days of EPA control. To assure this, I am supportive of new AZPDES fees under the Clean Water Act. I also support a range of other fee increases and a commitment to improved services.

CHEMICALS OF EMERGING CONCERN (CECS), SUCH AS ENDOCRINE-DISRUPTING COMPOUNDS, ARE INCREASINGLY IMPORTANT IN POTABLE WATER, WASTEWATER, AND RECLAIMED WATER. WHAT IS BEING DONE AT THE FEDERAL AND STATE LEVEL TO ADDRESS THESE CONCERNS? DOES ARIZONA PLAN TO IMPLEMENT A PHARMACEUTICALS DISPOSAL PROGRAM?

It’s important to keep a close eye on CECS and their impact on drinking water and wastewater quality. There is a growing amount of research and action by EPA, AWWA, National Academy of Sciences, and research foundations on these constituents. I advocate a four-pronged approach as follows:

1. Identify the science- CECS are becoming recognized, and several States have adopted a CECS permitting program to consider the incremental costs and benefits of alternative air emissions control treatment technologies, whether at coal-fired power plants or other facilities. There are alternative power plant cooling technologies that use less water which should be studied from a life cycle cost perspective. Multiple factors of costs, benefits, water use, and environmental impacts should collectively be considered. ADEQ is collaborating with CAP, SRP, and APS to understand and develop a statewide consensus on policy involving the water-energy-smart growth nexus in Arizona.

2. Strengthen the science- We have limited funding to do this, but partnerships with manufacturers, distributors, universities, utilities, and research foundations can help. We can’t wait to fill the important scientific gaps that exist to determine the human health and ecological impacts. There are unknown synergies between these chemicals that need to be studied.

3. Increase product stewardship- This prong includes consumer awareness of the hazards of using the toilet for disposal of unwanted or unused pharmaceuticals. Programs to take back unused prescriptions are needed. Partnerships with pharmacies and doctors are desired for implementing such programs, and the pharmaceutical and health care industries, including drug manufacturers and hospitals, need to step up.

4. Use regulatory tools- EPA is reviewing the list of chemicals regulated by the Safe Drinking Water Act and the Clean Water Act to prioritize the higher risks with known, current dangers.

WHAT CHANGES ARE NEEDED IN ADEQ ENFORCEMENT POLICY? HOW CAN COLLABORATION ASSIST ENFORCEMENT MATTERS?

Enforcement is a necessary bedrock of environmental regulation to protect the public health and environment. It’s a central part of our job. But as a general matter, we are most successful when we collaborate upfront and focus on compliance assistance rather than going straight to enforcement or “gotcha” games. ADEQ will not go straight to enforcement for environmental problem solving. Rather, it will provide technical and financial assistance within its resources to help move toward compliance. ADEQ has a small community environmental protection program to recognize the differences in technical and financial capabilities compared to larger municipalities. It’s a good model.

GIVEN ARIZONA’S DIRE BUDGET SITUATION, HOW CAN ADEQ IMPLEMENT ITS MANY STATUTORY RESPONSIBILITIES IN A COST-EFFECTIVE AND TECHNICALLY PROFICIENT MANNER? DO YOU FORESEE FEE INCREASES OR NEW FEES?

All State and local agencies are being asked to make cuts in this economic climate. The key to ADEQ viability is sustainable environmental programs. We need to keep our environmentally protective air, water, and waste laws but seek fair and reasonable fee increases to monitor and enforce. It’s easy to predict that general fund dollars from the Legislature will continue to decrease. As a result, we need to embrace innovative financing and rely even more on the user pays and polluter pays principles. We will become more reliant on general permits in lieu of specific permits to reduce the procedural red tape. We have to reduce programs without losing them while providing the most value for our services. Arizona wants to preserve its primary designation received in 2002 to avoid going back to the days of EPA control. To assure this, I am supportive of new AZPDES fees under the Clean Water Act. I also support a range of other fee increases and a commitment to improved services.
crossword
BY LANCE MASON, BROWN AND CALDWELL

PUZZLE

Across
2 The "G" in GAC media (10)
6 90 degrees to the center line of the shaft (6)
7 Unit of measurement you get from a variable frequency drive (5)
9 Standard Operating Procedure (3)
10 The part of a pump that pushes the liquid in a certain direction (8)
12 This happens when air is entrained in the liquid being pumped (10)
13 Media often used in traveling bridge filter (4)
16 The "M" in MBR (8)
19 Water passing through soil and rocks from gravity (11)
22 Clean in Place or Capital Improvement Program (3)
23 This converts electrical power to a different voltage (11)
24 Trihalo methane (3)
25 Center of impeller where the liquid enters (3)

Down
1 A motor converts electrical energy in to this type of energy (10)
2 Wastewater from kitchen, bathtubs, laundry sinks, etc (4)
3 He vetoed the Clean Water Act but was overridden. (5)
4 Turning force delivered by a motor. (6)
5 Pressure resulting from a difference in vertical distance (4)
8 National Electrical Manufacturers Association (4)
9 The part of a motor that remains stationary or fixed in place (6)
11 Common units related to the work a motor does (10)
13 Part of the motor that carries torque. (5)
14 These tanks can be primary or secondary (9)
15 Speed of a liquid; i.e. feet per second (8)
17 Reduces friction while supporting rotating parts in a motor. (7)
18 Fats, oils and grease (3)
20 Electrically speaking, this is the same as pressure in hydraulics (7)
21 A sludge thickener that uses air to float solids (3)

Elminate Odor and Corrosion

• Advanced Pure Oxygen System
  90-95% Absorption Efficiency

• PREVENTS the Formation of H2S

• No Hazardous Chemicals

• Ultra-Low O&M Costs

• GUARANTEED Performance

To learn more about ECO2 visit us on the Web:
www.eco2tech.com
Or Contact Us at (317) 706—6484

The last odor control solution you will ever need!
Get On Board with J & S Valve!

IMPROVING THE STANDARD!

Largest Resilient Seated Gate Valves in the World!
2” - 72” Thru 96” Coming Soon!

Ph: 281-324-3990
sales@JandSValve.com
JandSValve.com

J & S Valve
AWWA Gate Valves
REGISTRATION AVAILABLE IN JANUARY 2010.

The World’s Water Event
June 20–24, 2010
Chicago, Illinois
KATIE FLANAGAN

1820 W. DRAKE DRIVE, SUITE 105, TEMPE, AZ 85283
480-940-6923 FAX 480-940-6935 CELL 623-680-7394
E-mail: kflanagan@miscowater.com

Your Best Source for Reliable, High Value Safety/Environmental Training and Consulting
✓ Our Prices!

Regular Open Enrollment Classes - Phoenix & Tucson
All Hazwoper classes guaranteed to be held
Schedule with Confidence!
✓ www.e-t-c.com for Class Schedule & Prices ~ 602-923-9673

Efficient Resourceful Sustainable™
Balanced solutions that make sense.

Water and Wastewater Treatment
Compliance/Permitting Water Quality and Supply
Water Resources
Infrastructure Design and Rehabilitation
IT and Asset Management
Construction Management and Operations Services
Program Management

Phoenix: 602.567.4000 • Tucson: 520.624.5744
45 Offices Nationwide • BrownandCaldwell.com
Cities of the Future
will bring together a diverse group of practitioners, researchers, and policy makers who share a vision of an improved urban landscape for future generations. The conference will address ways to create sustainable urban infrastructure that will meet the challenges of the 21st century.

Urban River Restoration
will focus on the role of revitalized urban rivers and waterfronts within the context of two major trends: an increased focus on environmentally sustainable practices, and a population shift back into cities which creates the need for livable and efficient urban environments.

Join fellow Cities of the Future and Urban River Restoration attendees staying at the Boston Marriott Cambridge. Book your room by February 15, 2010, and receive the discounted conference rate of $149 per night, on a first-come, first-served basis.

Super Saver Discount Good Through February 3, 2010

www.wef.org/CitiesOfTheFuture  |  www.wef.org/UrbanRiver
AWARD CRITERIA, PURPOSE AND SCOPE

The AZ Water Burbank Environmental Educator Award, also known as the Association’s Environmental Educator-of-the-Year Award, or the “Burbank Award”, recognizes AZ Water members for significant contributions promoting training activities in the water environment career field in the state of Arizona. While nationally recognized for his work around the world for industries, corporations, governments, and universities, Dr. Burbank is gratefully remembered in Arizona as a major influence by those of us who had the personal privilege to know or work or study under him. Established by AZ Water in 1996, the award is presented annually in the memory of Dr. Nathan C. Burbank, Jr., when deserving nominations have been made to the Association to recognize individuals, organizations, or institutions that have demonstrated the same attitude and zeal as Dr. Burbank.

There are two award categories: individual and organization or institution.

GENERAL CONSIDERATIONS

The accomplishments (basis for the nomination) may be through any of the following documented* training activities: AZ Water Committee training activities, the development and implementation of public education programs geared towards the water environment; the instruction, development and delivery of such environmental training at municipal, county or state educational institutions or organizations such as publicly owned treatment works, community colleges, universities, and/or private utility in-house training programs. There are two award categories: individual and organization or institution. The criteria for consideration for each category is essentially the same: (1) documented accomplishments in the water environmental education field; (2) identification and description of efforts to educate the public on water environment issues; (3) there is no time limitation on when the training activity occurred, but a recipient may not receive the award more than once; and, (4) nominees must be a member of AZ Water in good standing.

(To be eligible for the similar national WEF education award, the nominee must be a WEF member in good standing). The nomination form must include the following: (a) a detailed narrative description of the educational activity and public education effort including objectives and results; (b) one copy of the documented program material approved for credits, CEUs, or PDHs; and, (c) description of demonstrated nominee’s ability to inspire and encourage the student(s). Supplemental material may include a one page biography of the nominee, any other supporting material required under the criteria, and a statement of specific reasons why the nomination is being submitted (maximum one page). The award consists of a finely engraved plaque inscribed with the recipient's name and presented in the company of one's peers at the AZ Water Annual Conference Awards Reception. In addition, the Association maintains and displays a master-plaque listing all past and present recipients at the annual conference.

ABOUT DR. BURBANK

• Fondly remembered by students, operators, colleagues and friends, as Dr.” B”, was an inspiration/mentor/helper/instructor/friend to hundreds of us whose lives were impacted by his gentle, knowledgeable manner as we worked with him through water/wastewater training classes at the Arizona State Environmental Technology Training Center (ASETTC) on the Pima Community College campus, Ina Road WRF, various other utility training locations, and at state and federal prisons in Tucson, Arizona.

• Many students and student-inmates received their personal training and introduction into the water/wastewater industry through the opportunities presented by the Burbank-led ASETTC training programs coordinated with the state operator certification program during the 1980's and 1990's. These application-oriented training classes focused on career preparation and allowed many individuals to accomplish life-changing opportunities in the water utility industry.

• While educated at some of the nation's most highly regarded institutions of higher learning (i.e., Harvard, M.I.T., and Stanford), Dr. “B” never spoke over the heads of his students. He treated them each with the same influential caring guidance that fostered their loyalty, dedication and conscience to do the right thing. He was often heard to say upon first meeting a new student, colleague or just an acquaintance, “Burbank's the name, and wastewater’s my game”. His unimposing manner had a way of breaking the ice and relaxing the new persons’ attitude. His personal, technical and intellectual influence has had broad and far-reaching impacts on the content and focus of numerous water-environment training programs throughout Arizona.

NOMINATION PROCESS

The award nomination process begins with the announcement for the call for nominations in the Association’s winter newsletter. Nominations are submitted online to the Chair of the Burbank Award Committee by March 26. Nominations received after the deadline, are held for consideration with the following year’s nominations. The Burbank Award Committee is comprised of past Burbank Award recipients. The Committee Chair does not vote on the final induction process unless there is a tie in the voting. Only one award per category may be made annually.

*Documented refers to training activities which have been approved for college credit, or continuing education units (CEUs), or professional development hours (PDHs), by the Arizona Department of Environmental Quality operator certification program or higher institutions of learning.

Submit Nominations online at www.azwater.org. Direct questions about the Burbank Award to:
Charlotte Waddle, Chair
Burbank Award Committee
8615 W. Catalina Road
Phoenix, AZ 85018
623-849-9107
cwaddle1@cox.net

Winter 2010 | AZ Water Association 35
Stewardship of Arizona’s Water Future

Conference at a Glance

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wed.</td>
<td>All Day</td>
<td>Manufacturer’s Exhibit</td>
</tr>
<tr>
<td>Wed.</td>
<td>7:00am-8:00am</td>
<td>Breakfast Buffet</td>
</tr>
<tr>
<td>Wed.</td>
<td>8:00am-9:45am</td>
<td>Opening Session/CAWCD Panel</td>
</tr>
<tr>
<td>Wed.</td>
<td>9:45am-10:30am</td>
<td>Awards of the Year</td>
</tr>
<tr>
<td>Wed.</td>
<td>10:30am-12:00pm</td>
<td>Exhibitors and Hands-on</td>
</tr>
<tr>
<td>Wed.</td>
<td>12:00pm-1:00pm</td>
<td>Operator Awards/Luncheon</td>
</tr>
<tr>
<td>Wed.</td>
<td>1:00pm-5:30pm</td>
<td>Technical Sessions</td>
</tr>
<tr>
<td>Wed.</td>
<td>5:30pm-7:00pm</td>
<td>Reception and Awards</td>
</tr>
<tr>
<td>Wed.</td>
<td>7:00pm-9:00pm</td>
<td>Continue Social – Westgate (on your own)</td>
</tr>
<tr>
<td>Thurs.</td>
<td>6:30am-8:00am</td>
<td>Plant Tour</td>
</tr>
<tr>
<td>Thurs.</td>
<td>8:00am-12:00pm</td>
<td>Manufacturer’s Exhibit</td>
</tr>
<tr>
<td>Thurs.</td>
<td>12:00pm-1:30pm</td>
<td>Luncheon, Business Meeting, AWWA Speaker</td>
</tr>
<tr>
<td>Thurs.</td>
<td>8:00am-5:00pm</td>
<td>Technical Sessions</td>
</tr>
<tr>
<td>Thurs.</td>
<td>6:00pm-9:00pm</td>
<td>BBQ &amp; Pipe Tapping, Gavel Passing Ceremony</td>
</tr>
<tr>
<td>Fri.</td>
<td>6:30am-8:00am</td>
<td>Plant Tour</td>
</tr>
<tr>
<td>Fri.</td>
<td>8:00am-3:30pm</td>
<td>Technical Sessions</td>
</tr>
<tr>
<td>Fri.</td>
<td>12:00pm-1:30pm</td>
<td>Luncheon and WEF Speaker</td>
</tr>
</tbody>
</table>

83rd Annual Conference & Exhibition

May 5-7, 2010

Renaissance Glendale Hotel & Spa
Glendale, Arizona
AZ Water
wishes its members
a healthy and happy New Year!

P I P E L I N E  A N S W E R S

W A T E R  T R E A T M E N T  G R A D E S  1 & 2

W A T E R  T R E A T M E N T  G R A D E S  3 & 4

W A T E R  D I S T R I B U T I O N  G R A D E S  1 & 2

W A T E R  D I S T R I B U T I O N  G R A D E S  3 & 4

W A S T E W A T E R  T R E A T M E N T  G R A D E S  1 & 2

W A S T E W A T E R  T R E A T M E N T  G R A D E S  3 & 4

W A S T E W A T E R  C O L L E C T I O N  G R A D E S  1 & 2

W A S T E W A T E R  C O L L E C T I O N  G R A D E S  3 & 4

---

Plain, adorned or concealed
the beauty of a DYK tank
is in the structure

Whether your DYK prestressed concrete tank is above ground, architecturally treated or fully buried, you’ll know you have:
• Efficient design
• Minimal maintenance
• Best return on investment

DYK INCORPORATED

WWW.dyk.com 1-800-227-8181

---

 crossword

SOLUTION

SEE QUESTIONS ON PAGE 30
success and fun

RECENTLY HEARD A PRESENTATION FROM A SPEAKER named Paul Tsika about how to help people in their relationships. As you know one of the primary secrets of success is based upon your ability to have healthy relationships with others. It is very important that you are able to get along with people. Getting along with people at work and in your personal life will enable you to achieve “Success and Fun” in your life.

The Carnegie Institute published a statistic that indicated that 90% of people who fail in their life do so because they cannot get along with other people. Getting along with others is key to your success in life.

So how do you get along with others? The following are some ideas that may help you:

• The 6 most important words you will ever speak are- “I admit I made a mistake”. As hard as this is, you must be able to admit that you made a mistake. Asking for forgiveness allows you to move on in the relationship.

• The 5 most important words you will ever speak are- “You did a good job”. It is critical that you encourage others. Think of the last time that you told someone they did a good job.

• The 4 most important words you will ever speak are- “What do you think”? It demonstrates that you value them and their contribution as a team member and a person.

• The 3 most important words you will ever speak are- “After you please”. Putting others first shows respect. If a person is respected the relationship will grow. When people are respected at work their productivity increases.

• The 2 most important words you will ever speak are- “Thank you”. Demonstrating sincere gratitude will do more for building and strengthening a relationship than you can imagine. In the next week keep track of how many times you say thank you to someone.

• The 1 most important word you will ever speak is- “We” One is too small an number for greatness. As you progress through life you will find that your peak effectiveness is realized through building and developing a team.

• The LEAST important word you will ever speak is- “I”, “Me”, and “My”.

As we are starting the new-year, each of us can apply these principles to our daily lives. You will be amazed as you apply these thoughts and principles at work and at home. Please share them with others and see what happens!

I am honored to share my perspective on “SUCCESS and FUN”. I hope to hear from you, contact me at phendricks@cox.net if I can be of assistance to you.
CALL FOR 2010 AZ WATER ASSOCIATION BOARD MEMBER NOMINATIONS

The Nomination Committee is accepting qualified and willing members to fill the vice president and two board member positions within the leadership of the AZ Water Association for 2010. Nominees will be listed in the spring 2010 newsletter and voted on during the Annual Business meeting on May 6, 2010 at the AZ Water’s 83rd Annual Conference & Exhibition in Glendale, Arizona.

Submittals should include nominee contact information and an explanation why this person should be considered for a leadership position within AZ Water. Please submit your nomination in writing by March 1, 2010 to the chair of the Nomination Committee:
Patricia Nelson Davis
9246 W. Rascon Loop
Phoenix, AZ 85037
Cell: 602-909-3993
Email: pnelson31@cox.net

Director Duties

Directors are expected to attend all AZ Water Board Meetings (six per year) and other meetings as designated by the President. All director positions oversee assigned AZ Water committees. Directors must be members in good standing of the WEF, AWWA, and AZ Water. Terms are for one year, with an understanding that a three-year commitment is involved. Each year’s term is subject to re-election. If you have the energy, drive, and commitment to serve the AZ Water, please consider placing your name or the name of a colleague in nomination for a Board seat.

Vice President Duties

The Vice President serves within the structure of the Arizona Member Association of the WEF, Arizona Section of the AWWA, and the AZ Water. This position oversees the activities of various committees during June 2010-June 2011. The Vice President shall assist the President and President Elect and shall be the presiding officer of the Association in the absence of both the President and President Elect.

The Vice President will have served as a Director, Secretary, or Treasurer of the AZ Water for at least one year and will have been a member of the AZ Water for at least one year and a member of both the AWWA and WEF as of the date of the elections.

The term for the Vice President is one year (2010-2011). This person must be willing to commit to move through the officer chairs and serve as President Elect, President, and first Past President (three additional years).

WEB SITE UPDATE

Last year AZ Water changed over the awpca.org web site to the azwater.org site. Since then, many new pages have been developed. Still to come in 2010 include:
• Member Log-in Feature
• Committee Pages
• Newly Formatted Operator’s Corner
• AZ Water Store
• Online Award Submittals
• Membership Directory

AZ WATER MEMBER LOG-IN FEATURE

In February the AZ Water Member Log-in feature will be available. You will be able to download the AZ Water newsletter, training materials, conference proceedings, professional development hour certificates, membership directory, and many more information items.

In order to log into the web site to access the members-only section, you will use your AZ Water ID Number. Soon you will receive a letter with your membership card attached and instructions on how to access data.

AZ WATER MONTHLY E-BULLETIN

Although AZ Water publishes a quarterly newsletter called the Kachina News, timely updates and training information occurs between publications. In order to keep you updated on industry news, we will be publishing a monthly E-Bulletin beginning in early February.

To receive this publication we must have your current email address. Please go to the AZ Water web site and click on the “contact us” page to send us your address. You will also be able to access the monthly E-Bulletin through the Members-only login feature.
COMPLIANCE WITH REGULATORY STANDARDS DOES NOT guarantee a safe work environment. Many facilities in our industry exceed the regulatory standards in their vigilance to maintain a safe and healthy workplace. Effective safety programs have proven to improve work safety in the workplace. And, effective managers have learned that safe employees are usually the high level performers as well as employees that are conscious about quality. The AZ Water Association safety awards are a means for managers and employees to receive recognition for the effort that is put forth every day towards safety.

There are two basic categories of awards that are presented; achievement awards and performance awards. Water treatment and water distribution facilities are eligible for the following: Letter of Commendation, Award of Merit, Award of Honor and Award of Excellence.

Wastewater treatment facilities and wastewater collections are eligible for the following: Award of Merit and Award of Honor. Wastewater facilities, including collections, are also eligible for a performance award known as the Burke Award.

The achievement awards are selected based on criteria submitted on the annual safety awards submittal form. It is preferred that all achievement award submittals be made through the website. This is the last year in which hard copy submittals will be accepted and all future submittals will be required to go through the website for award consideration. Application, deadlines and full information on selection criteria can be obtained on the AZ Water Association website.

The submission for the Burke Award requires that the submitting organization complete an award application and also submit supporting documentation. Please note that this award is not submitted through the website and all award packages need to be submitted to the safety committee chairperson. The focus of the Burke Award is to recognize an organization’s effort toward improving and maintaining safety beyond merely counting injuries, illnesses or incidents. The award considers achievement of safety goals, organizational activities, highlights of a safety program, innovation of safety training, evidence of worker participation and overall safety program implementation. Application deadlines and full information on selection criteria can be obtained on the AZ Water Association website.

Safety is what we do with our hazards and risks once we recognize them. Organizations that consistently demonstrate effective safety programs and management of risk within our industry deserve to be recognized for that effort. Submit your organization and show pride in the effort your organization puts forth with regards to safety.

BY JOHN BANNEN, AZ WATER SAFETY CHAIR
The Goal is Crystal Clear

Our goal is to provide technical services improving accountability and increase revenues by maximizing distribution system performance and optimizing distribution system data, records, and mapping programs.

Our programs also provide technical services to improve your data, information, and records in your wastewater collection system.

**Optimizing Water System Operations**
- Water Audits - Leak Surveys
- Large Meter Evaluation, Testing & Repair
- Hydrant Flow Testing - Unidirectional Main
- Flushing - Mainline Valve Assessments
- Flow Measurement & Testing
- GPS Locating & CAD Mapping

**Improving Wastewater System Operations**
- Sewer Flow Monitoring - Smoke Testing
- Manhole Inspection & Inventory
- GPS Locating & CAD Mapping

salesinfo@mesimpson.com
Phone: (800) 255-1521
Fax: (888) 531-2444
www.mesimpson.com

Phoenix, AZ - Valparaiso, IN - Gwinnette County, GA - Chicago, IL - Wauconda, IL - Dyer, IN
Indianapolis, IN - Savage, MN
FOR THE FUTURE...
A SCHOLARSHIP ENDOWMENT FOR AZ WATER

BY VICKI SCOTT

AZ WATER IS A STRONG PROONENT OF EDUCATION and our association has a long history of giving scholarships. Funding for these scholarships, or a significant portion thereof, has traditionally come from the annual conference “scholarship” golf tournament. The tournament is well attended and greatly benefits from the many generous sponsorships received from our consultant and vendor members. In 2009 we awarded $10,000 in scholarships to students attending colleges in Arizona.

WHY AN ENDOWMENT?
Inspired by similar and successful efforts in California and New York, an endowment interest committee came together and has gained the Board of Director’s support for the creation of a scholarship endowment fund. In the short term, interest earned from the fund will supplement monies raised from the annual golf tournament, and long term, may ultimately fully fund scholarships given on behalf of AZ Water. We hope this effort will also trigger a fresh dialogue about scholarships and inspire new ideas for how our organization can support, attract and cultivate an interest in training and education for current and potential professionals in our industry.

THE GOAL
The AZ Water goal is to raise $200,000 in the next five years. Let’s split the elephant into bite size morsels - that’s $40,000 per year for the next five years, or less than $15.00 per member each year. It’s attainable. We can do this!

Several giving tiers have been established but no donation is too small. Because of our association’s non-profit status, all donations are tax deductible (as the law allows).

Because this is a new beginning for our organization, we want to recognize initial donors as “Founders” of the AZ Water Scholarship Endowment Fund. The Founders designation will be acknowledged in perpetuity for individuals who donate $1,000 or above, and Businesses/ Companies that donate $5,000 or above only through May 31, 2010. Go to azwater.org to donate.

YOU’RE INVITED
All members are invited to attend one or more of the endowment kick-off events. For a small donation you can join your fellow AZ Water members for tasty appetizers and wine or beer sampling. Socialize, network, learn about the scholarship program, find out more about the scholarship endowment fund, and share your ideas for the future.

SCHOLARSHIP ENDOWMENT COMMITTEE
Vicki Scott (Chair)
Brandy Kelso
Patty Kennedy
Patrick Goodfellow
Jeanne Jensen
Brooke Mayer
Tom Galezewski
Misti Burkman
Charolotte Jones
Chuck Ohr
John Getchell
Bob Clinger
Paul Hendricks
Patricia Davis
Jay Bailey
Lisa Culbert

If you are interested in volunteering on this committee, please email vscott@amigofarms.com
SCHOLARSHIP ENDOWMENT FUND DONATION FORM

YES, I want to support the AZ Water Scholarship Endowment “For the Future” Fund

FOUNDER – Special Designation Through May 31, 2010

____ Individuals $1,000 & above  ____ Company/Business $5,000 & above

Contribution Levels

____ Platinum - $1,000 & above  ____ Copper - $50 –249
____ Gold - $500 – 999  ____ Contributor – Up to $49
____ Silver - $250 – 499

Name ____________________________________________________________

Address _______________________________________________________________________

City __________________________________ State ________ Zip ______________

Phone ________________________________ Email ________________________________

Name(s) for donation acknowledgments:

____________________________________________________________

Enclosed: ____ Check in the amount of ________ (Payable to AZ Water)

____ Charge my Credit Card (VISA, MasterCard, American Express)

Credit Card # ____________________________ Expiration ________ Security# ______

Signature _______________________________________________________________________

Mail Donations to: AZ Water Association, 1042 Willow Creek Rd., A101-510, Prescott, AZ 86301.
A. July 1, 1847 (New York City, NY); 5 cent and 10 cent stamps, bearing the images of Ben Franklin and George Washington, respectively.

B. May 10, 1869 @ Promontary Summit, Utah. A golden spike was used for the “last spike” ceremony … it was quickly removed and replaced with an iron spike - right after the ceremony.

C. An attempt by the USDA to bridge the gap between farmers with unsold crops/products and the hungry urban poor. Again, the date: 16 May 1939.

D. The Johnstown PA flood/disaster on May 31, 1889; the South Fork dam collapsed after two days of record rainfall – sending 20 million tons of water down on Johnstown, PA … killing 220 people. 25,000 survivors were aided by the Red Cross.

E. 1949 (March 2). The plane was refueled four times mid-air during the flight. The name of the B-50 aircraft was “Lucky Lady”.

In 2009 the RWIC expanded their training opportunities across the state. The Rural Community Assistance Corporation-RCAC offered one-day sessions for financial managers on rate structures in Phoenix and Prescott. The North American Development Bank-NADB/Utility Management Institute provided two-half day training for utility managers from the border–region in Tucson. The RWIC will continue to work to provide greater training opportunities for small rural communities across the state. The RWIC would also like to encourage small communities to visit the RWIC website and complete a Project Information Form. This will insure that your community receives all the benefits that the RWIC provides. For more information on training opportunities, please visit www.rwic.az.gov
Leading technology, Proven solutions

For the Reduction of Disinfection By-products, Color, Nitrate & Arsenic.

The industry's leading provider of DBP and TOC solutions through our MIEX® Technology.

Orica Watercare offers a full range of ion exchange treatment solutions for the reduction of numerous contaminants, including disinfection by-products, color, nitrate and arsenic.

As part of the Orica Group, with 14,000 staff in over 50 countries, we have a team of sales, engineering and technical staff dedicated to water and wastewater treatment solutions.

With many installations around the world, we take pride in creating water treatment solutions that are environmentally friendly and designed to be sustainable.

For case studies on successful installations and technical information on our range of water and wastewater treatment solutions, visit www.miexresin.com

MIEX®

For inquiries, contact your local rep MISCO.
1820 West Drake Dr., Ste 105
Ph: 480-940-6923 Fax: 480-940-6935
VE ALWAYS BEEN INTERESTED IN THE HISTORY of the western frontier – how it developed, when certain events occurred, the sacrifices made and the resulting impacts on our current way-of-life and the environment. One facet of the western frontier that was forever changed was its wildlife and, in particular, the buffalo. The buffalo (in essence) gave its all for the (as then perceived) good of man-kind as the west was developed; their story deserves telling – primarily, so similar ones don’t happen again! And, yes, this story has virtually nothing to do with “sewers” – but, there indeed may be something to be learned from it.

Approximately 25,000 years ago, Bison (the genus) passed over the Bering Strait land bridge from the Asian continent to North America. Those creatures were much larger than their present-day descendents. They were twice the size, weighing nearly 5000 lbs each with upwards of 6 foot horn spans.

The bison eventually spread far and wide (and, changed/adapted along the way) through North America – from what is now Upper New York State to the Rocky Mountains. By the early 1700’s, it is estimated that nearly 60 million bison roamed North America. Their natural foes were not too numerous – mostly wolves, who would in effect cut out the weak and sickly ones for food. Native Americans found spiritual inspiration (with only the Great Spirit being considered to be “above” the bison) in the bison and they also hunted them – killing only what they needed to and using virtually every part of their body for some beneficial purpose. The Sioux Nation gave the buffalo the name “Tatonka” – “The Great Spirit”. [One legend tells “… the Great Spirit brought the pipe to the people. She came as a young woman wearing a white buckskin dress and moccasins. After the Great Spirit presented the pipe to the people and explained the significance of that pipe, she left the teepee as a white bison calf.”]

[Notes: Bison belong to the Bovidae family – the same family as do cattle. They have cloven hoofs and are ruminant (cud-chewers) with unbranched horns – on both females and males. Their horns consist of a bony core (that is a permanent part of the skull) covered with a bony sheath. Bison are larger than cattle (beef). Cattle have 13 pair of ribs; bison 14. Bison’s legs are larger and stronger than those of cattle and they can jump higher and longer (a healthy bison “cow” has been known to broad jump 8’ from a standing start). Bison eyes are large and their eyesight is good; they also have a very acute sense of hearing. They have been known to comfortably run upwards of 30 mph for thirty miles at a stretch.]

One of the first “outsiders” to see the great herds that once grazed the North American grasslands was Cabeza de Vaca and other members of the Spanish expeditions in the 1530’s. Their journals note that one of the Spanish Captains stated that they had to wait four days for a herd of “wild cattle” to cross a river in what is now the Texas/New Mexico region.

The influx of horses (starting with the ones the Spanish brought in to North America) created new ways of travel for the Native Americans, more effective ways to hunt and, eventually, better ways of defending their lands.

The buffalo was to the Native Americans as a modern day shopping center is to present day people. The flesh was food, the blood drink, the skins were used to make shelters, robes made blankets and beds, hair was twisted to make rope, hide from bull’s necks made war shields, from hooves came glue for feathering arrows, from sinew came thread and bow strings, from horns came cups and spoons, and even from the bison’s gall stones a “medicine” paint was made. Buffalo bones were used to make handles for knives, utensils, awls, digging tools, pipes (for smoking), fish hooks, arrow heads, ornaments – to name just a few. The West’s early explorers/pioneers found that the trails formed over the years by bison to be quite manageable (and well laid out!) – the paths were well packed down and did not lead to swamps, etc.

As noted earlier, in the early 1700’s, it is estimated that approx. 60 million buffalo roamed North America. By the late 1800’s, bison had been driven to the brink of extinction. Both the Army and the railroads encouraged their slaughter. An active (for profit) “fur” trade first began in North America in the 1600’s – initially focusing on the beaver. But a demand began to develop in Europe for buffalo robes. Thus, the on-slaught began! In the early 1800’s, that demand resulted in approx. 200,000 bison being killed annually on the western plains. The 1830’s through the 1870’s (the time during which the population of the US doubled) were the decades in which most of the slaughter occurred. Wagon loads of robes, tongues (and, occasionally, bison meat) moved east. As the construction of the transcontinental railroads and the aggressive settling of the west occurred after the Civil War, the killing of bison accelerated – reaching an estimated peak annual kill rate of nearly 5 million bison in 1872.

[Note: By the 1870’s, along the eastern sea-board of the United States, commercial hunting had already led to the extinction of the Labrador Duck, Heath Hen, and Great Auk. People were beginning, even then, to push for laws to regulate the wholesale killing of game animals. The concept that people should actually be stewards of the land and its wildlife was beginning to spread among facets of the population; especially(and, initially), educated professionals. This idea of stewardship was indeed in its infancy, however, the drive to develop the new lands in the west far out-stripped the new ethics of conservation!]

Professional hunters were hired by the railroads and the Army to kill buffalo. A long range Sharps rifle could kill a buffalo at a thousand yards. William F. Cody, better known as “Buffalo Bill” claimed he killed 4230 buffalo in 18 months. After 1873, only scattered bands remained southerly of the Platte River – to few for commercial hunting; cowboys, settlers, etc. shot the remaining ones. By the mid-1870’s, the tens of millions of bison that had once roamed the prairies of Colorado, Montana, Kansas, Oklahoma, Arizona, Texas and other areas had almost all been killed. And, for the most part, their carcasses left to rot! Indeed, there was carnage and waste involved with the slaughter of the buffalo … but not all was wasted. Many a wild carnivore and hungry predator made use of the rotting carcasses. Buffalo meat fed the Army, railroad workers, miners and settlers. Buffalo hides made robes and commercial belting to drive the industrial machines back east. Hair was used to stuff furniture. Horns and hooves produced glue.

Another “side-bar” industry evolved as a result of the slaughter … the collection of the animal’s bones and skulls. The bones were to be found almost everywhere on the prairies; the bones and skulls collected were ground up (back east) to make phosphorous fertilizer, bone char, buttons (for clothing), knife handles, refine sugar, to make bone china, an additive to poultry feed – to strengthen the egg shells, etc.; to name just a few.
From 1868 to 1881, $3,000,000 was paid for bison bones/skulls. A ton of bones sold for an average of $8; it took 100 buffalo skeletons to make a ton of bones.

Settler families who were hard pressed for cash, gathered bones. Not only did such efforts result in some cash, but grasslands were cleared for plowing. Local freighters (wagons) stopped at people's homes and purchased piles of bones and then hauled them to railroad yards for shipment back east. Initially, the grinding of the bones was done back east. Over time, companies such as Sears, Roebuck and Co. and Montgomery Ward sold smaller grinders – for use on small farms.

Regional freighters (wagon and railroads) would bring goods and material out west. Often, to avoid going back empty, railroad cars that had initially delivered barbed wire, water and sewer pipe, etc. to western area customers; then carried buffalo bones/pelts back east for grinding/sales.

In 1886, zoologist William T. Hornaday needed specimens of the plains bison for the National Museum in Washington, D.C. Knowing that the numbers of bison had been drastically reduced, he traveled west and collected in 8 weeks time only 25 bison – in a region of Montana that had supported tens of thousands only a few years earlier. His thorough search demonstrated that the species was in immanent danger of extinction. By 1893, estimates were that only slightly more than 300 bison remained in the west.

In December 1905, the American Bison Society was formed; Theodore Roosevelt served as its honorary president. Congress soon established a number of wildlife preserves; with the help of private bison owners, the Society began to stock the preserves with bison. By 1929, 3400 bison were counted within the involved preserves. Today, the National Bison Assoc. estimates approx 150,000 bison live in public and private herds in the United States. Of these, the Federal government manages approx. 6000 and tribal authorities another 5000. The largest public herd is now located in the Yellowstone National Park (approx. 4500).
(Denver-Colo) – December 4, 2009 – Charity Navigator, America’s leading charity evaluator, has awarded Water For People its highest rating of four stars for the seventh consecutive year. This award is reserved for charities that demonstrate the highest levels of operational excellence and fiscal management.

Only 2% of the 5,000+ charities rated by Charity Navigator have achieved the remarkable feat of earning this award for seven or more consecutive years. With this exceptional designation, based on 2008 fiscal performance, Water For People again demonstrates to supporters that the organization is transparent, accountable, and trustworthy.

“Charity Navigator provides an important service to donors looking for independent verification of a charity’s fiscal effectiveness. We are pleased to be recognized for our careful stewardship of donor dollars,” says Ned Breslin, CEO of Water For People.

“We look forward to continued recognition not only for our fiscal responsibility but also for the transformative field results we achieve in Africa, Asia, and Latin America.”

One of the key metrics used in Charity Navigator’s rating process is the functional allocation of resources, as measured by the percentage of revenues used for program expenses as opposed to administrative and fundraising expenses. As measured by this standard, Water For People has always achieved the highest rankings.

Charity Navigator plans to expand the ratings system beyond one based purely on financial factors into one that also measures accountability and outcomes. According to a recent public blog written by Charity Navigator president & CEO Ken Berger, “The most critical dimension in evaluating a nonprofit has to do with achieving meaningful results.”

Breslin supports Charity Navigator’s new direction. “Meaningful results in the water and sanitation sector can only be measured by whether water is flowing, toilets are being used, and people are paying for their services long after we have finished our work in a particular village. Water For People is well placed to maintain its high standing because we value and invest in programmatic monitoring, allowing us to understand how donor dollars are impacting people’s lives. We are committed to providing lasting water and sanitation services in the most effective and sustainable manner,” he explains. “We believe that our focus on programmatic outcomes verified by annual monitoring visits, along with our financial strength and accountability translates into the highest level of service for the people we support around the world and our donors.”
Register by February 17 to receive the Super Saver Rate!

Top Four Reasons To Attend Odors and Air Pollutants 2010:

- Your opportunity to learn from world-renowned experts who focus on practical solutions from within and beyond the wastewater sector.
- Uniquely structured to engage attendees through in-depth interactions that will provide insight to your toughest questions.
- Sponsored by key technical organizations, Odors and Air Pollutants is widely recognized as the leading training and education event in the field.
- A stringent peer review ensures this event provides only the highest quality training and resources available.

Join fellow Odors and Air Pollutants attendees staying at the Omni Charlotte. Book your room by March 1, 2010, and receive the discounted conference rate of only $134 per night, on a first-come, first-served basis.

www.wef.org/OAP
McCarthy Building Companies Completes Chandler Airport Water Reclamation Facility Expansion for the City of Chandler

The Southwest Region

of McCarthy Building Companies Inc. recently completed construction of the $75 million Chandler Airport Water Reclamation Facility Expansion project for the City of Chandler. This project represents the expansion of an existing wastewater treatment facility’s liquid processing from 10 million-gallons-per-day (mgd) to 15 mgd and includes new equipment and reservoirs for the water reclamation distribution system and new processes in treating the 15 mgd of equivalent solids.

Located at the southwest corner of Queen Creek and McQueen roads, the completion of the Chandler Airport Water Reclamation project has increased the capacity of the sewer collection system to accommodate Chandler’s growth. Through careful planning and mitigation, McCarthy was able to assist the City of Chandler in saving $3 million on this expansion project.

In addition to increased capacity, the plant also boasts enhanced reclaimed water capabilities, which support the use of recycled/reused water for irrigation purposes.

“The City of Chandler has one of the most robust reclaimed water systems in the state,” said Robert Knochenhauer, Vice President and Business Unit Leader of McCarthy’s Water Services team. “The expansion of this facility, including the new reservoir and pumping station, will allow the City to meet peak demands for reclaimed water without experiencing a decrease in pressure.”

Highlights of the project include construction of a new cast-in-place, pre-stage basin; aeration basins; secondary clarifier basins; floculation basins; solids storage tanks; new solids thickening building; reclaimed water storage reservoir; and support facilities. All equipment, piping, electrical and controls for
a functional facility were also included. This project extensively utilized process piping modeling to ensure quality and expedite procurement, fabrication and self-performed installation of the process piping.

Planning and pre-construction began in March 2007. McCarthy Building Companies and Wilson Engineers worked together to develop a thorough coordination plan to address maintenance of plant operations (MOPO) throughout the expansion. A MOPO (or tie-in) is simply defined as a process in which a contractor disturbs the plant’s process for a period of time to complete a tie-in for expansion purposes.

“McCarthy completed upgrades to every process at the City of Chandler’s existing water reclamation treatment facility. They identified and executed more than 100 plant tie-ins,” said Kim Neill, Utility Operations Manager for the City of Chandler. “McCarthy took the lead, carefully planning the requirements of each tie-in, and collaborating with both Wilson Engineers and our plant staff to make sure nothing was left to chance. They stayed focused on keeping the facility running and never once caused the plant to be out of compliance.”

McCarthy self-performed approximately 60 percent of the work, including concrete, equipment setting and mechanical process piping. McCarthy reported zero recordable injuries on the project. Additionally, McCarthy maintained a 43-acre jobsite that was named to Maricopa County’s Air Quality Department honor roll in 2009 for its dust control efforts.

In addition to McCarthy’s work for the City of Chandler, the company has a number of other significant water/wastewater treatment plant projects underway in Arizona, including the 91st Avenue UP05 Waste Water Treatment Plant Expansion and City of Phoenix Deer Valley Water Treatment Plant Phase 2. Nationally, McCarthy’s Water Services team has completed more than 40 water/wastewater treatment facilities, totaling more than $1.2 billion.
Water For People 5th Annual Hike-a-Thon

With over 100 hikers and 30 volunteers, this year’s hike at Phoenix South Mountain Park was our most profitable yet! We donated thousands of dollars to Water For People, and we couldn’t have done it without you.

Thank You For Your Support!

GREELEY AND HANSEN

BROWN AND CALDWELL
Environmental Engineers & Consultants

carollo  SIMPSON Co., Inc.

MALCOLM PIRNIE
The Water For People Committee would like to express its appreciation to all the AZ Water supporters who helped to spread goodwill, safe water and adequate sanitation in 2009 - don't miss our 2010 events:

Volleyball Tournament (Phoenix) March 20th
Motorcycle Poker Run (Phoenix) Spring 2010
AZ Water Annual Conference Silent Auction May 5th and 6th
Phoenix Golf Tournament June 12th
Southern Arizona Golf Classic August 28th
Hike-A-Thon (Phoenix) November 6th
El Tour de Tucson November 20th
Pedal With Purpose!

On Saturday, November 21, over 9,000 cyclists took to the streets of Tucson to ride 109, 80, 66, or 35 miles in the University Medical Center El Tour de Tucson, presented by Diamond Ventures ("El Tour"). El Tour promotes wellness on wheels for those participating and benefits several non-profit organizations that promote wellness in their work. For a full description of El Tour and related festivities, visit www.perimeterbicycling.com.

Thirteen cyclists from this year’s El Tour and two cyclists riding stationary bicycles for “Indoor El Tour” participated in Pedal With Purpose!, raising funds and awareness for Water For People. Water For People became an official beneficiary of El Tour in 2007. The 2009 El Tour raised over $3,400; in 3 years, the event has netted over $18,000 for Water For People. Organizers see room for growth through the AZ Committee and beyond. This year Michael Di Biase, Water For People’s Creative Director traveled from Denver, CO to join the Pedal With Purpose! team. Michael and the AZ Committee would like to see Water For People have an even bigger presence at El Tour next year. It’s a fun-filled, one-of-a-kind event, so join the crowd next year: Saturday, November 20, 2010 (don’t miss Water For People special dinner the night before). There are benefits to early registration, so look for the special Water For People application available this Spring! Visit www.pedalwithpurpose.org for details and more information.

The AZ Committee is very grateful to the staff and volunteers at Perimeter Bicycling Association, who put so much effort into making El Tour the most amazing event of its kind and for supporting the work of charitable agencies (like Water For People!) that benefit from its programs, and to Jeanette Mare-Packard, of the Ben’s Bells Project, this year’s El Tour Dedication recipient, who made possible Water For People’s participation in Indoor El Tour.

Thanks Pedal With Purpose! volunteers: Asia Philbin, Dennis Rule, Harold Maxwell, Griffin Thomure, Ilene Grossman, Mike Block, Michael McCasland, Ralph Marra, Vikki Hibberd
Thanks and congrats go to this year’s riders, holding Water For People banner at the post-ride hospitality tent, sponsored by CWUACMID (pictured L to R): Ann Youberg Czaia, Bob Czaia, Alan O’Brien, John Getchell, Philip Saletta, Maite Guardiola (taking time from her massage to pose for picture), Philip Peartree, Marie Peartree, Vikki Hibberd (taking time out from 4 hours of massage therapy), Dennis Rule, Michael Di Biase, David Rule, Evan Canfield, Zig Fang missing is Ralph Marra as well as Asia Philbin and Chris Roed, who rode “Indoor El Tour” for Water For People

SAWUA sponsors a dinner the Friday before the ride, treating riders to pre-ride carb-loading (pictured L to R): Vikki Hibberd, Marmora Massage, who provided free massage therapy to Pedal With Purpose! riders, Asia Philbin, Alan O’Brien, Carolyn Saletta and Philip Saletta. Philip is holding his Ben’s Bells El Tour windchime, a prize for being the highest single fundraiser for Pedal With Purpose!
AZ Water Association Membership Form

This information will be added to our database and used to inform you of opportunities specific to your needs. Your contact information will also be used in our annual membership directory. If you do not want this information published in our annual directory, please check here ☐.

Please Print

Full Name _____________________________________________________________

Title _________________________________________________________________

Business (if applicable) ________________________________________________

Address _____________________________________________________________

City/State/Zip _______________________________________________________

Phone __________________________ Fax _____________________________

Email __________________________ Web Site ____________________________

Sponsor ____________________________________________________________

Check here if you are a current member of: ☐ AWWA ☐ WEF

Please help us serve you better by indicating the categories that best describe your business/industry, environmental focus, job title, and field services (if one is more prominent than another, please indicate so).

<table>
<thead>
<tr>
<th>BUSINESS INDUSTRY</th>
<th>FIELD SERVED</th>
<th>JOB TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOVERNMENT</td>
<td></td>
<td>EXECUTIVE: commissioner, board member, city manager, mayor, president, vice president, owner, partner, director</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MANAGEMENT: division head, section head, manager, chief engineer, comptroller, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ENGINEERING/NON MANAGERIAL: civil engineer, mechanical engineer, environmental engineer, planning manager, field engineer, system designer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCIENTIFIC/NON MANAGERIAL: chemist, biologist, biophysicist, researcher, analyst, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PURCHASING: purchasing agent, procurement specialist, buyer</td>
</tr>
<tr>
<td>PRIVATE ENTITY</td>
<td></td>
<td>OPERATIONS: foremen, operator, maintenance, crewman, service representative, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MARKETING &amp; SALES-NON MANAGERIAL: market analyst, marketing representative, sales representative, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STUDENT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RETIRED INDUSTRY REPRESENTATIVE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OTHER __________________________</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Member Dues are Subject to Change

☐ Individual Annual Membership — $40  ☐ Student Annual Membership — $15

RETURN YOUR MEMBERSHIP APPLICATION ALONG WITH ANNUAL DUES TO:

AZ Water Association
1042 Willow Creek Rd., A101-510 • Prescott, AZ 86301

Questions? Call toll free 888-559-8844 • 928-717-9905 phone • 928-717-9910 fax
### Administrative Committees

<table>
<thead>
<tr>
<th>Committee</th>
<th>Chair</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget, Finance, Audit</td>
<td>Brandy Kelso, City of Phoenix</td>
<td><a href="mailto:brandy.kelso@phoenix.gov">brandy.kelso@phoenix.gov</a></td>
</tr>
<tr>
<td>Information Technology</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>Leadership</td>
<td>Vicki-Lynne Scott</td>
<td><a href="mailto:vscott@amigofarms.com">vscott@amigofarms.com</a></td>
</tr>
<tr>
<td>Library</td>
<td>Debbie Muse</td>
<td><a href="mailto:musegroup@aol.com">musegroup@aol.com</a></td>
</tr>
<tr>
<td>Member Services</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>Physical Assets (AV)</td>
<td>Randy Ottens</td>
<td><a href="mailto:randyottens@hotmail.com">randyottens@hotmail.com</a></td>
</tr>
<tr>
<td>Publications</td>
<td>Gustavo Lopez</td>
<td><a href="mailto:glopez@greeley-hansen.com">glopez@greeley-hansen.com</a></td>
</tr>
</tbody>
</table>

### Award/History Committees

<table>
<thead>
<tr>
<th>Committee</th>
<th>Chair</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archives &amp; History</td>
<td>Jon Schladweiler</td>
<td><a href="mailto:jcschlad@msn.com">jcschlad@msn.com</a></td>
</tr>
<tr>
<td>Sewer History Exhibit</td>
<td>Jon Schladweiler</td>
<td><a href="mailto:jcschlad@msn.com">jcschlad@msn.com</a></td>
</tr>
<tr>
<td>Awards Committee</td>
<td>Darlene Helm</td>
<td><a href="mailto:darlene.helm@phoenix.gov">darlene.helm@phoenix.gov</a></td>
</tr>
</tbody>
</table>

### Education Committees

<table>
<thead>
<tr>
<th>Committee</th>
<th>Chair</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Conference</td>
<td>Vance Lee</td>
<td><a href="mailto:vlee@carollo.com">vlee@carollo.com</a></td>
</tr>
<tr>
<td>Lab Practices</td>
<td>Matt Rexing</td>
<td><a href="mailto:Matthew.rexing@mesaaz.gov">Matthew.rexing@mesaaz.gov</a></td>
</tr>
<tr>
<td>Luncheon Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phoenix Program</td>
<td>Daniel Candelaria</td>
<td><a href="mailto:daniel.candelaria@ch2m.com">daniel.candelaria@ch2m.com</a></td>
</tr>
<tr>
<td>Tucson Program</td>
<td>Joy Terry</td>
<td><a href="mailto:joy.terry@ch2m.com">joy.terry@ch2m.com</a></td>
</tr>
<tr>
<td>Research</td>
<td>Steve Davis</td>
<td><a href="mailto:sdavis@pirnie.com">sdavis@pirnie.com</a></td>
</tr>
<tr>
<td>Safety</td>
<td>John Bannen</td>
<td><a href="mailto:jbannen@stes.com">jbannen@stes.com</a></td>
</tr>
</tbody>
</table>

### Special Interest Committees

<table>
<thead>
<tr>
<th>Committee</th>
<th>Chair</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biosolids &amp; Residuals</td>
<td>Fernando Sarmiento</td>
<td><a href="mailto:fsarmiento@greeley-hansen.com">fsarmiento@greeley-hansen.com</a></td>
</tr>
<tr>
<td>Pretreatment</td>
<td>John Watson</td>
<td><a href="mailto:john.watson@phoenix.gov">john.watson@phoenix.gov</a></td>
</tr>
<tr>
<td>Wastewater Collections</td>
<td>Nathan Lester</td>
<td><a href="mailto:nlester@greeley-hansen.com">nlester@greeley-hansen.com</a></td>
</tr>
<tr>
<td>Wastewater Reclamation</td>
<td>Andrew Gilmore</td>
<td><a href="mailto:agilmore@carollo.com">agilmore@carollo.com</a></td>
</tr>
<tr>
<td>Security/AZWARN</td>
<td>Steve Shepherd</td>
<td><a href="mailto:sshepard@metrowater.com">sshepard@metrowater.com</a></td>
</tr>
<tr>
<td>Water Distribution</td>
<td>Stephen Dean</td>
<td><a href="mailto:stephen.dean@tucsonaz.gov">stephen.dean@tucsonaz.gov</a></td>
</tr>
<tr>
<td>Water Resources</td>
<td>Warren Tenney</td>
<td><a href="mailto:wtenney@metrowater.com">wtenney@metrowater.com</a></td>
</tr>
<tr>
<td>Water Reuse</td>
<td>John Kmiec</td>
<td><a href="mailto:john.kmiec@tucsonaz.gov">john.kmiec@tucsonaz.gov</a></td>
</tr>
<tr>
<td>Water Treatment</td>
<td>Uday Gandhe</td>
<td><a href="mailto:uday.gandhe@wilson-engineers.com">uday.gandhe@wilson-engineers.com</a></td>
</tr>
</tbody>
</table>

### Outreach Committees

<table>
<thead>
<tr>
<th>Committee</th>
<th>Chair</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Outreach</td>
<td>Wayne Proctor</td>
<td><a href="mailto:r.w.proctor@comcast.com">r.w.proctor@comcast.com</a></td>
</tr>
<tr>
<td>‘Tap Into Quality</td>
<td>Christina Hoppes</td>
<td><a href="mailto:christina_hoppes@tempe.gov">christina_hoppes@tempe.gov</a></td>
</tr>
<tr>
<td>Utility Council</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>Water For People</td>
<td>Andrea Odegard-Begay</td>
<td><a href="mailto:AOdegard@pirnie.com">AOdegard@pirnie.com</a></td>
</tr>
<tr>
<td></td>
<td>Levi Dillon</td>
<td><a href="mailto:ldillon@carollo.com">ldillon@carollo.com</a></td>
</tr>
<tr>
<td>Young Professionals</td>
<td>Jacqueline Shaw</td>
<td><a href="mailto:jshaw@pirnie.com">jshaw@pirnie.com</a></td>
</tr>
</tbody>
</table>
AZ Water Committee Volunteer Form

Please Print
Name ____________________________________________________________
Title _____________________________________________________________
Organization ______________________________________________________
Address __________________________________________________________
City/State/Zip _____________________________________________________
Phone __________________________ Fax __________________________
Email ____________________________________________________________

AZ Water COMMITTEES
(indicate 1st, 2nd, 3rd choice)

ADMINISTRATIVE
____Budget, Finance, Audit
____Constitution & Bylaws
____Information Technology
____Leadership
____Library
____Strategic Planning
____Member Services
____Physical Assets
____Publications

AWARD/HISTORY
____Archives & History
____Awards

EDUCATION
____Annual Conference
____Lab Practices
____Luncheon Programs - Phoenix
____Luncheon Program – Tucson
____Research
____Safety
____Tri-State Seminar

SPECIAL INTEREST
____Biosolids & Residuals
____Small Systems
____Wastewater Collections

SPECIAL INTEREST (cont’d)
____Reclamation
____Security/AZWARN
____Water Distribution
____Water Resources
____Water Reuse
____Water Treatment

OUTREACH
____International
____Public Outreach
____Tap Into Quality
____Utility Council
____Water For People
____Young Professionals

☐ I am interested in serving on the committee(s) indicated above.
☐ I would like to know more information about the committee(s) indicated above.
☐ I am looking for suggestions for a committee on which to serve. My skills are: ____________________________________________________________
                                                                 ____________________________________________________________________________

RETURN COMPLETED FORM TO:
AZ Water Association
1042 Willow Creek Rd., A101-510 • Prescott, AZ 86301

Questions? Call Deborah Muse toll free 888-559-8844
NEWSLETTER ADVERTISING INFORMATION

Newsletter Description: Color: Cover full-color, inside pages two-color
Trim Size: 8 ½” x 11” Pages: Between 60-80 Circulation: 3,200

Newsletter Publication Dates/Deadline:
Deadline: December 10 March 10 June 10 September 10
Issue: JANUARY APRIL JULY OCTOBER

General Advertising Size / Rates:

<table>
<thead>
<tr>
<th>Size</th>
<th>Ad Size</th>
<th>Annual Rate (4 issues)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Page</td>
<td>7.5” w x 9.5” h</td>
<td>$1,200</td>
</tr>
<tr>
<td>Half Page (horizontal)</td>
<td>7.5” w x 4.5” h</td>
<td>$900</td>
</tr>
<tr>
<td>Half Page (vertical)</td>
<td>3.5” w x 9.5” h</td>
<td>$900</td>
</tr>
<tr>
<td>Fourth Page (vertical-only)</td>
<td>3.5” w x 4.5” h</td>
<td>$600</td>
</tr>
<tr>
<td>Business Card</td>
<td>3.5” w x 2” h</td>
<td>$300</td>
</tr>
</tbody>
</table>

Acceptable Formats:
High-resolution PDF files, Adobe Illustrator 8.0 .eps files, .tif files, .jpg files, or Microsoft Word files. Include any high-resolution photos or artwork used with Microsoft files separately as either .tif or .jpg.

Copy and Contractual Regulations:
1. Forwarding of an order is construed as acceptance of all rates and conditions under which the advertising was sold.
2. If more or fewer insertions appear than originally specified, charges will be adjusted in accordance with established rates.
3. All advertising material will be destroyed after one year, if not previously instructed otherwise.

Issuance, Closing and Cancellation
1. Published quarterly.
2. Advertising copy is due on the 10th day of the month preceding date of issue.
3. Cancellation or changes not accepted after 20th day of month preceding the date of issue.

Send Artwork to: musegroup@aol.com

Payment Options
Check Number ____________________________ Credit Card (circle): MasterCard VISA AMEX
Credit Card Number ____________________________ Expiration Date ____________________________
Cardholder Name ____________________________ Signature ____________________________

Make checks payable to AZ Water // Mail to: AZ Water Association, 1042 Willow Creek Rd., A101-510, Prescott, AZ 86301.

Advertising Contact Person ____________________________ Title ____________________________

Company ____________________________

Address ____________________________

City ____________________________ State ____________________________ Zip ____________________________

Phone ____________________________ E-Mail ____________________________

Questions, call Deborah Muse - Editor, toll free at 888-559-8844.

NOTE: AZ Water Association (AZ Water) was formerly known as Arizona Water & Pollution Control Association (AWPCA)
Diverse Capabilities, One Mission: Making Our Clients Successful For More Than 100 Years

Contact: Burns & McDonnell
4742 N. 24th Street, Suite 355
Phoenix, AZ 85016
Phone: 602-977-2623
Fax: 602-977-2560
E-mail: bschulz@burnsmcd.com
www.burnsmcd.com

Engineering, Construction, Environmental and Consulting Solutions

Drinking Water
Design-Build
Environmental Management
Architecture

Wastewater
Water Resources
Information Management
Facilities Engineering

Phoenix
4839 E. Indian Bend Road, Suite 360
Phoenix, Arizona 85254
tel: 602 381-9900 fax: 602 687-5999

Tucson
177 North Church Avenue, Suite 809
Tucson, Arizona 85701
tel: 2120 390-3571 fax: 520-694-9836

consulting • engineering • construction • operations

Dibble Engineering
Engineering creative solutions for Arizona water, wastewater & reclaimed water systems since 1962
www.dibblecorp.com

Innovative Technology & Management Consulting
Phoenix: 602.275.0651
Tucson: 520.299.0992
www.ema-inc.com • info@ema-inc.com

Henesy Mechanical Sales
201 S. 26th Street
Phoenix, Arizona 85028
602.946.2140
602.938.2444
Fax: 602.966.9408
www.henesymech.com

COOMBS-HOPKINS
www.coombs-hopkins.com
"Representing quality equipment for the treatment of water and wastewater"

Jay Bailey
Cell: (602) 377-0333
Email: jay@coombshopkins.com
668 North 44th Street, Suite 251, Phoenix, AZ 85008
(602) 275-4303 • Fax (602) 275-4229

Jason S. Vernon, P.E.
Cell: (602) 363-6755
Email: jason@coombshopkins.com

Services
• Fairbanks Morse
• Moyno
• Wemco
• Fluid Dynamics
• Severn-Trent
• Philadelphia Mixers
• Merrick Ind.
• Milton Roy
• FE Myers
• Flowtronex
• Schloss Eng.
• Hi-Tech
• Perifo
• Siemens WT-Dewatering
• Siemens WT-Controls

Siemens WT-Dewatering
4631 E. F.H. Lowell Road
Tucson, AZ 85712
(520) 394-4005

PHOENIX
2910 W. 16th Street, Ste. 140
Phoenix, AZ 85015
(602) 248-7102
Our Services Include:
Water • Wastewater • Recycled Water • Airport Engineering

Kennedy/Jenks Consultants
Engineers & Scientists

www.kennedyjenks.com

Our Services Include:
Water • Wastewater • Recycled Water • Airport Engineering

Kennedy/Jenks Consultants
Engineers & Scientists

www.kennedyjenks.com

David J. Miller
Cell: 602.663.8240
david@sps-now.com

3802 E. La Salle St., Suite #1
Phoenix, Arizona 85040

Phone: 602.437.5555
Fax: 602.437.5114
Toll Free: 877.437.5554

Lockwood, Andrews & Newnam, Inc.
3344 East Camelback Road, Suite 100
Phoenix, Arizona 85018
Phone: (602) 954-4300

PLANNING • ENGINEERING • PROGRAM MANAGEMENT
www.lan-inc.com

STATEWIDE DISINFECTION SERVICE INC

Jim Wright
(480) 981-8859 Office
(480) 984-9616 Fax
CL2Wright@aol.com

344 South Hawes Road
Mesa, Arizona 85208

ROC202634 Disinfecting
ROC254901 Plumbing
ADEQ ID 03563

Dennis Emrie

4500 Atherton Way, Albuquerque, NM 87120
505-898-8728  FAX 505-898-8729  E-mail: dremrie@att.net

Jennifer Isakson, P.E.
Principal
Phone: 480-462-4209
FAX: 480-278-7333
www.tcrgrp.com
jencisakson@tcrgrp.com

WILSON ENGINEERS

Water, Wastewater, and Reclaimed Water Planning, Design, and Construction Management
9633 South 48th Street, Suite 290, Phoenix, AZ 85044
Phone 480-893-8860  Fax 480-893-8968
www.Wilson-Engineers.com
TRASH CHEWING UP YOUR PLANT?
BITE BACK.

Protect your headworks, pumps and processes with JWC’s family of fine screens and grinders. A full arsenal of powerful grinders and stainless steel fine screens can reduce blockages, downtime and emergency repairs. Ask your Misco Water rep about the Monster family and take a bite out of breakdowns.

PRODUCT:
Bandscreen Monster®
APPLICATION:
High-flow MBR
Fine Screen
Perforated UHMW panels remove trash, rags and hair before they can damage MBPs. Prevents carryover with innovative flow pattern.

PRODUCT:
Finescreen Monster®
APPLICATION:
High-flow
Fine Screen
Perforated stainless steel panels (or UHMW) remove more trash and rags than bar screens and help protect the entire treatment process.

PRODUCT:
Channel Monster®
APPLICATION:
Heavy duty pump station grinder
High-flow channel grinder easily grinds almost everything. Easily installs on guide rails into almost any pump station.

PRODUCT:
MonsterCare Service Contracts
APPLICATION:
Are You Covered?
MonsterCare covers your grinders (including factory repair) for the same fixed budget each year.

www.miscowater.com

Dave Redman (480) 415-7303
dredman@miscowater.com
Katie Flanagan (523) 660-7394
kflanagan@miscowater.com
Dennis Emrie (480) 940-6923
demrie@att.net
Retrofit Traveling Bridge Sand Filters with AquaDiamond® Cloth Media Filters for 2-3 times the flow capacity with an equivalent footprint.

AquaDiamond® Cloth Media Filters have much to offer in the way of design and performance compared to sand media filters.

- Utilize OptFiber® pile cloth filtration media instead of sand media.
- Lower operation and maintenance costs.
- High solids loading per square foot of media.
- Reduced backwash water volume.
- Reuse quality effluent.

Retrofit into existing concrete traveling bridge filters with minimum civil work, or install in new plants.

Visit www.aqua-aerobic.com/library-filtration.asp to view additional photos and to read AquaDiamond® Cloth Media Filter Success Stories.

Call 800.940.5808 for a quote, or visit www.aqua-aerobic.com/aquaDiamond.aspx to submit a FREE online Design Request Form.