INSIDE

• Reducing DBP at the Stones River Water Treatment Plant
• Water Tanks and Severe Weather
• The Marble Column
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PIPELINE is a publication of the Alabama/Mississippi Section of the American Water Works Association. PIPELINE is mailed to all members of the Section. In an effort to keep all community water system officials informed, the AWWA trustees voted to provide a complimentary copy to all community water systems within both states. This will help keep water systems current on events affecting the water supply industry and aware of products and services through the AWWA. Current circulation is over 2,900.

Articles and photographs are encouraged and appreciated. All submissions, comments, or other matters concerning this publication should be directed to:

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Shuckin’ at the Beau

It’s getting close to that time of year again; time for the Annual Conference. We are back at the Beau Rivage in Biloxi, one of the best venues we have had over the years. The dates are October 11-13.

What you may not have realized is that the Beau has a new next-door neighbor, MGM Park, home to the new minor league baseball team, the “Shuckers”. The baseball season will be over by the time we arrive, but the team has allowed us to have our Sunday party at the ballpark. There will be a band, food, and some “special” activities. Word is that a contest of some sort, between the YP’s and the OP’s may be in the offing!!

Our Annual Conference is shaping up to be a good one. We will have an operator track this year during the technical papers that we are hoping will attract more operators to the conference. A special one-day pass is also going to be available for those operators who just want to come for the day.

Registration is brisk, and vendors are picking their booths. Nominees for the various awards are being scrutinized and water taste test contestants are lining up. Competitors for the various contests, including pipe tapping and meter madness are honing their skills.

Our Section Scholarship program, which had its inaugural year last year, has gained some good traction this year. Our Scholarship committee meets in June to sort through all of the applications. We expect to pass out some nice checks during the Annual Conference.

Dana asked me to put in a plug for the Spouse Program. As always, there are fun activities in store. This year, a field trip to the Orr-O’Keefe Museum of Art, including lunch and some fun activities, will be the highlight. And don’t forget that activity which we cannot call by its true name, due to the fact that it would be considered competing with the Beau. You know, that game with the round balls, letters and numbers.

All around the states of AL and MS, we have been having multiple education and training sessions. Some are “small system” sessions, funded through the EPA, and some are organized and put on by the Section and our volunteers. I was able to attend a couple of sessions myself. One on leak detection and control and the other was one of the small system programs. They were both very informative and well-attended. Hats off and thanks to the hard work of our Education Committee.

By the time you read this, our June Planning meeting will likely be finished. We meet at the Beau, June 13, 14 and 15. Final plans for the Annual Conference and final Scholarship selection will be occurring then.

I cannot brag enough on the dedication and hard work of our volunteers. We are lucky indeed to have the help and support of all of these fine folks. Be sure and thank your committee chairs and assistants. They are listed elsewhere in this magazine.

Better yet, volunteer yourself, and see how rewarding it is to participate in such a fine organization! Our motto for this year “value through service” is truly apparent when you see what is done and offered by our Section. Come be a part of the planning and execution.

I’m looking forward to seeing each and every one of you in October at the Beau.
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Why should I participate in AWWA?

You may think, why should I take the time to participate in AWWA? After all, it takes time and money to attend meetings that could perhaps be expended on other endeavors. There are other organizations, some technical and others perhaps more regulatory oriented that have their own attributes. But none of these can provide you what AWWA does—that is valuable information that will help advance your knowledge of drinking water.

Established in 1881, the American Water Works Association is the largest nonprofit, scientific and educational association dedicated to managing and treating water, the world’s most important resource. With 50,000 members, AWWA provides solutions to improve public health, protect the environment, strengthen the economy and enhance our quality of life.

As part of the AWWA community, you get the latest information on the state of water infrastructure, treatment, quality, regulation, legislation, distribution, sustainability and more, covering the full spectrum of the water cycle. AWWA provides hundreds of learning opportunities each year. Members can build and expand their professional networks at AWWA conferences, local Section events, and through online opportunities. AWWA is your one-stop resource for information on water.

When you look at all the things that AWWA offers its membership, it becomes very clear what a great investment AWWA really is, as AWWA provides many benefits that no other organization can provide. AWWA provides lobbying efforts to protect our profession from harmful legislation, as we provide aggressive advocacy for bottom line results. AWWA also provides you educational opportunities and resources to keep you informed of the latest trend in the water industry. In addition, AWWA provides exceptional group rates and savings on various services including life/health and other insurance programs and much more. Most importantly, AWWA is the voice of America’s drinking water industry. As a member of AWWA, you are a part of a force to promote our needs and goals, as AWWA is a network of more than 50,000 members worldwide. When you consider all of these outstanding benefits, AWWA is undoubtedly a very wise and sound investment of your time.
WATER AND WASTEWATER GRADE IV OPERATOR CERTIFICATION PROGRAMS

Working in collaboration with General Managers, Superintendents, Grade IV Operators and other key contributors within the Alabama/Mississippi Section of the American Water Works Association and the Alabama Water and Wastewater Institute, the Office of Continuing Education at Jacksonville State University has developed a certification program that serves the needs of individuals, municipalities and industry, alike. We call it CWTP!

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While you weren’t looking

It’s been a while since our October Conference at Point Clear, with a while yet to go before we meet at the Beau Rivage in Biloxi Mississippi this coming October, however, a lot happens with your Section in the meantime.

If you are an Alabama-based member you should have been receiving periodic updates on bills of interest to our industry pending in the Alabama State House. Some of those include “Design-Build” legislation that purports to give utilities some increased flexibility in how they let construction projects. The bill would give them the option of letting a design-build contract for certain projects in excess of $25 million in value.

Another bill is aimed at reshaping the Birmingham Water Works Board by restructuring both the number of Board members and the part of the BWWB service area they would represent.

Yet a third bill seeks to amend current law, which places a tort cap on governmental entities. Currently the cap is set at $100,000. But using certain language in the bill, plaintiffs have sued the actual employee involved in at least three cases rather than the governmental entity. By doing so they avoid the cap on damages and subject individual employees to unlimited judgments. House Bill 119 seeks to change the law so employees would receive “limited immunity” in such cases and under certain conditions. The proposed law is opposed by the trial lawyer lobby.

Watch for e-mails from your Section Manager each weekend to track these and other laws that have a potential impact (bad or good) to the water works industry. If you have comments regarding the legislation or need further information you can...
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Finally, the Conference Planning Committee will wind up preparation for this year’s conference at the Beau during its last meeting in June. Preparations are well under way and you won’t want to miss the entertainment this year. Be sure to plan on being at the Opening general Session on Monday morning of the conference and hearing Chad Pegracke talk about his life-long mission to clean up the rivers of the United States. We were very fortunate to get him. He is a highly sought after speaker and has been featured on several nationally broadcast television shows. Of course there will be entertainment just for the fun of it as well. Watch for the next issue of Pipeline to get the full update on what the 2015 conference will have to offer.

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Did you know that May is Electrical Safety Month? If you work at a treatment plant of any kind than you might be faced daily with challenges that involve being around electrical equipment or machinery. Electrical hazards on the job can be avoided by following approved NFPA 70E and OSHA guidelines. Attention to safety is the important first step to an effective safety program.

Skilled employees, trained in electrical safety procedures, should make sure they understand and follow safety precautions. Those not trained to recognize and avoid electrical hazards, or not under the supervision of those qualified in electrical safety procedures, should avoid contact with electrical equipment and systems. Follow these helpful tips in order to stay safe in your workplace.

- Understand the construction and operation of the electrical equipment and the hazards involved.
- Identify all possible energy sources that could pose on-the-job hazards.
- Know the safety requirements and follow them.
- Calculate the energy potential.
- Select the appropriate personal protective equipment (PPE). Remember, PPE must be worn at all times until the electrical system is in a safe condition.
- Complete a detailed job plan and communicate it to all coworkers.
- Before working on or around electrical systems or equipment, identify the load circuits and disconnect. Remember, in some cases, turning power off may cause other hazards. Such hazards and additional guidance should be addressed in your work plan.
- Use lock-out/tag-out procedures.
- Verify that the equipment or system has been de-energized by testing.
- Make sure your test equipment is working; both before and after you use it.
- If at any time the job becomes more hazardous than anticipated, stop and revise the plans.

Above all, never assume that the equipment or system is deenergized. Remember to always TEST BEFORE YOU TOUCH. Stay safe out there everyone.

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Organizational vision and setting up staff

By John M. McCollum – Public Works Director, City of Ridgeland, Mississippi

If your Public Works Department is larger than one or two people a good organizational chart is a great tool to translate the Director’s or Manager’s vision on accomplishing everyday tasks. It also establishes a chain of command, lines of communications and establishment of personnel rating schemes. I suggest before starting is to have a good conversation with the Mayor, or other top executive of the organization and discuss its overall mission. Do a good analysis of this and develop your own restated mission that must include: who, what, when, where and why that supports the organization or higher manager’s mission and intent.

Utilizing your new mission statement (approved by your supervisor) develop a task and purpose for all organizations and people who are directly below you in the organizational chart. Once subordinates have the time to analyze your mission statement you must have them back brief theirs to you and then come to an agreement on the final version.

Setting up a Staff: Depending on the size of your Department you may want to establish a staff. A manager’s basic staff will include: personnel, operations, logistics and communications (this may vary a little depending on your mission) sections. These Staff members may report to the manager, or if you are big enough, to a chief of staff (or assistant manager). Division Heads (on the ground supervisors) report to the manager because that is where the job gets done. The Staff is there to support them in the accomplishment of their tasks.

I hope this will give you some insight on one way to organize your Department that is consistent and will provide you with the tools required to manage your organization.

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On the state level, there was very little activity in the State Legislature regarding water issues. Election year is coming up, which could account for the inactivity, and should provide some very interesting races. Of course, the District One Congressional seat will be heavily contested with a number of candidates entering the contest. There is at least one PSC seat up for grabs, and that will be in the Central District, due to retirement. While PSC issues seldom affect the water and wastewater business, there appears to be more populist type issues that tempt this board to over reach. That is the case, at least considered by many, with rules concerning victims of domestic violence. This rule continues to be challenged by the MsRWA and we’ll keep you updated as this effort continues. Other state races could prove interesting as well, but at least for now, there hasn’t been anything that would directly impact our industry.

I want to encourage any member to assist in these efforts. And I would welcome any input in this regard. I will be meeting with the Water Utility Council in Anaheim during ACE 15 and will update everyone on any national issues that may arise.

MISSISSIPPI GOVERNMENT AFFAIRS UPDATE
– ALMS MISSISSIPPI GOV’T. AFFAIRS CO-CHAIR MARK SNOW

Water leaders to Congress: ‘Free WIFIA’ from tax-exempt bond prohibition
In hundreds of meetings on Capitol Hill in March 2015, water utility leaders urged the US Congress to increase the effectiveness of the Water Infrastructure Finance and Innovation Act (WIFIA) by repealing a ban on the use of tax-exempt bonds in WIFIA-funded projects.

Signed into law in 2014, WIFIA provides low-interest federal loans for up to 49 percent of large drinking water, wastewater and water reuse projects. However, as written the law prohibits tax-exempt bonds from funding the remaining 51 percent, taking away the most cost-effective tool for communities that seek WIFIA loans.

More than 130 water utility leaders from 48 states were in Washington, D.C., March 18-19 for AWWA’s Water Matters! Fly-In. Delegates wore “Free WIFIA” buttons as they went to Congress to discuss infrastructure and other water issues.

“Let’s free WIFIA to reach its full potential,” said AWWA CEO David LaFrance. “The water and wastewater infrastructure needs in the United States will likely top two trillion over the next 25 years, and WIFIA is an important tool to help communities manage those costs. But the prohibition on the use of tax-exempt bonds is an unnecessary barrier that impairs WIFIA’s effectiveness.”

During deliberations over WIFIA – which was enacted in 2014 as a part of the Water Resources and Reform Development Act – the Joint Committee on Taxation scored WIFIA as inducing the issuance of additional tax-exempt debt and thus generating a small tax expenditure requiring a revenue offset. At JCT’s suggestion, House
and Senate conferees included the prohibition on combining tax-exempt bonds with WIFIA as the required offset. There is no infrastructure policy supporting this prohibition; it was included to address a tax score when no revenue offset could be identified.

If the ban were repealed, utilities would likely use lower-cost tax-exempt debt for the non-WIFIA share of project costs, lowering the overall cost of using the WIFIA program. As a result, WIFIA would be a cost-effective option for the much broader range of utilities it was intended to serve.

Water Matters! Fly-In delegates also called on Congress to support full funding for WIFIA and for drinking water and wastewater state revolving loan fund programs, and to protect the tax-exempt status of municipal bonds.

Hosted by AWWA’s Water Utility Council since 2002, the Fly-In has greatly increased the leverage, credibility and name recognition of water professionals in national water policy discussions. Here are the key issues that AWWA delegates brought to Capitol Hill in 2015:

- WIFIA’s prohibition (PDF) on bonds handicaps a crucial infrastructure finance tool
- Support water infrastructure finance tools (PDF)
- Cybersecurity (PDF)
- Algal blooms (PDF)
- Chemical spills (PDF)
COLUMBUS, MISSISSIPPI
Columbus Light & Water

It was New Year’s Day 2003. A day off for most Mississippians, it was certainly not time to rest for a group of engineers and contractors who had gathered at a soon-to-open combined cycle power plant near Caledonia, Mississippi.

Outside the plant, built by Cogentrix, Steve Barksdale lowered his head and tilted his body just right, so that his ear was pressed against an exposed 24-inch water line leading into the plant.

“It was a little scary,” recalls Barksdale, the water and sewer superintendent for Columbus Light & Water (CLW). “We weren’t sure how it would go. How do you pump water 17 miles to supply a power plant, and know it’s going to work?”

“So I put my ear to that pipe and listened.”

And soon he was smiling, because he could hear the sound of success: Water flowing, from Columbus to Caledonia.

Soon afterwards, the power plant went online, starting a relationship that continues to thrive a dozen years later.

CLW supplies effluent that helps power the 765-megawatt Caledonia Combined Cycle Plant, which is now leased by the Tennessee Valley Authority and is one of 12 combustion-turbine sites in the TVA power system.

The effluent is piped 17.5 miles through a 24-inch ductile iron pipe, where the majority of the water received each day is used to cool the gas and steam fueled turbines during the energy producing process. About 80 percent of the water is evaporated daily. The excess is returned to CLW’s plant in Columbus, where we take care of the site. It’s bringing that water back discharging into a tributary around the surrounding aquifer. CLW and Neel-Schaffer developed the concept of using treated effluent for the plant’s cooling supply.

Neel-Schaffer performed environmental studies, including wetlands delineations, to determine a route for the pipeline that would have the least environmental impact.

The firm also obtained clearances and permits from the U.S. Army Corps of Engineers, Mississippi Department of Environmental Quality, the Mississippi Department of Archives and History, the U.S. department of Wildlife and Fisheries, and the Mississippi Department of Wildlife, Fisheries, and Parks. Neel-Schaffer also helped acquire private right-of-way and obtained ROW permits from public entities such as the Mississippi Department of Transportation, the City of Columbus, and Lowndes County for the 17.5-mile pipeline corridor.

Gale joined CLW in 2006, so he did not work for the utility when the pipeline project was conceived and implemented. But he applauds it.

“A lot of municipalities are land-locked,” said Gale. “They don’t have other avenues for revenue unless they go out and purchase other things like rural water associations. So I commend the people in front of me for being able to find other revenue sources.”

What Gale also applauds is the environmentally friendly aspect of the project.

“We are using treated water for cooling,” he said. “That’s a whole lot better than going into the aquifer and using ground water for cooling purposes. And the TVA is not discharging into a tributary around the site. It’s bringing that water back to Columbus, where we take care of it, and that helps the environment.”

Two years ago, CLW added more automation to the process that controls the pumps that send the effluent to Caledonia. The system includes four, 250-horsepower pumps, designed to pump up to 7.5 million gallons per day.
“The new controls gauge the demand,” said Gale. “They automatically know when the other pumps need to be turned on and pump more water. And when we don’t have enough effluent, the potable water kicks in. This all helps us provide better service to TVA, to help them get water when they need it.”

“It is a very smooth operation,” said Barksdale, CLW’s water and sewer superintendent. “We have a very good relationship with TVA’s operational staff. When they need water, they send a signal to our pumping station, and we pump more water.

“This is something we’ve wanted to do for quite a while,” Barksdale added. “Now that it’s in place, it’s like, ‘How did we ever live without it?’ There are still some mechanical things you have to do, but we’re not constantly having to adjust things. It’s really helped.”

The next technologically advanced step for CLW could be using solar panels to provide power to run those pumps.

“We’re always looking for ways to be more efficient, to keep our rates low,” said Gale. “Peak demands can really drive those pumps, so if we can get to that point (solar panels), it would be a great cycle. We use solar to pump water to TVA, which generates power that we buy and distribute.”

Barksdale, who has been with CLW for 35 years, welcomes new technology.

He was there from the beginning of this project, through the planning and construction, that first day the water flowed, and now daily implementation of project that continues to pay dividends.

“It’s been fun to watch,” Barksdale said. “And it’s a wonderfully green project. We are selling treated wastewater to help produce electricity. That’s the big story here.”
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Reducing Disinfection Byproducts (DBP) at the Stones River Water Treatment Plant in Murfreesboro, TN

By: Lindsay Bryant, Mike Bernard, and Joseph Griffey – Smith Seckman Reid, Inc.

Reprinted with permission from Straight From the Tap (KY/TN Section AWWA) Winter/Spring 2015

Background

Analyzing historical Stage 1 Disinfection Byproduct Rule (DBPR) sampling data for the Murfreesboro Water and Sewer Department (MWSD) indicated compliance with the more stringent federal Stage 2 DBPR could be a challenge at some locations in the distribution system. Therefore, staff at the Stones River Water Treatment Plant (SRWTP) and Smith Seckman Reid, Inc. (SSR) conducted a study of the water treatment plant (WTP) and distribution system aimed at reducing disinfection byproducts.

The federal Stage 2 DBPR (effective October 2012) maintains the same maximum contaminant levels (MCLs) for both total trihalomethanes (TTHM) and haloacetic acids (HAA5). MCLs remain unchanged at 80 µg/L and 60 µg/L for TTHMs and HAA5, respectively. However, the new regulation changes compliance calculations to a locational running annual average (LRAA) from a system-wide running annual average. This change requires each individual sampling site to comply with MCLs calculated by averaging the last four (4) quarterly samples.

Plant operational records between February 2008 and November 2011 showed consistently elevated quarterly TTHM levels at one location in the distribution system. During this time period, a single-day maximum of 182 µg/L and a 7-day maximum of 168 µg/L were recorded at this location. Figures 1 and 2 show the calculated LRAA from historical TTHM and HAA5 sampling data for Stage 1 DBPR compliance at this sampling point of concern. The solid line indicates the compliance threshold for TTHM and HAA5 under the Stage 2 rule.
Reducing Disinfection Byproducts (DBP)

The LRAA values calculated were not required or reported for Stage 1 DBPR compliance. These values were calculated to evaluate the potential difficulty MWSD might have meeting the tighter regulations of the Stage 2 rule without additional treatment technologies.

Given the anticipated difficulty in meeting compliance requirements of the Stage 2 rule, a brainstorming session was conducted including management staff, operations and maintenance personnel, and engineers. Roughly a dozen alternatives were proposed at that session; however, all but three were excluded from further consideration due to potential adverse effects. The three alternative solutions examined in the study included: (1) feeding hydrogen peroxide at the plant in lieu of sodium hypochlorite for pre-oxidation, (2) replacement of GAC contactor media more frequently, and (3) aeration systems in the distribution tank(s).

**Hydrogen peroxide**

Hydrogen peroxide is a strong oxidant used as a pre-treatment chemical for algae control, mitigation of taste and odor issues, and iron oxidation. Recently, hydrogen peroxide has shown promise at reducing concentrations of disinfection byproducts in the treated water. Unfortunately, its efficacy is difficult to predict, and certain facilities see limited benefit.

Hydrogen peroxide was piloted at the plant in the sedimentation basins and in the combined settled water as an alternate oxidant to sodium hypochlorite. The trial dosages varied from 0.30 ppm to 0.65 ppm. Preliminary results showed hydrogen peroxide reduced TTHM levels in combined settled and GAC filtered water samples. Though not specifically targeted in the study, hydrogen peroxide also improved HAA5 levels in the combined settled water.

Distribution data was more ambiguous, however. The application of hydrogen peroxide did not immediately decrease DBP levels in the distribution system; rather it seemed to prevent concentrations from peaking to historical levels seen in previous years. Review of historical TTHM data from the past five years shows that TTHM levels trend higher in the second quarter. In 2013, the second quarter TTHM data shows a substantial decrease in the byproduct level compared to historical levels as shown on Figure 3. As the media in the two GAC contactors had not been replaced during the pilot program, the reduction of the TTHMs is likely attributed to the introduction of hydrogen peroxide into the treatment process.

**Granular activated carbon (GAC) replacement**

The reduction of TTHM and HAA5 species through GAC contact is well documented. However, because the removal mechanism is adsorption, all carbon contactors have a finite removal capacity. Once this adsorption capacity is depleted, costly reactivation or replacement of the carbon material is necessary to re-establish DBP removal objectives. Four (4) GAC contactors are operated at the SRWTP. The contactors were commissioned in 2009 with virgin media, however the media had not been replaced or regenerated in four years.

The plant replaced media in contactor

---

**Figure 3**

H₂O₂ Effects on 2nd Quarter TTHM Testing

4/9/13: H₂O₂ turned on

**Figure 4**

TOC Leaving Filter based on GAC Media Type

Reduction Disinfection Byproducts (DBP)
No. 1 with a lignite based media on July 2, 2013 and GAC contactor No. 2 with a bituminous based media on July 14, 2013. Because total organic carbon (TOC) is a DBP precursor, a reduction in TOC levels leaving the plant reduces the likelihood that TTHM formation will be observed in the distribution system. The study measured TOC levels on the inlet and outlet of both contactors with new media and a control contactor (i.e., contactor without new media). Figure 4 demonstrates the substantive but finite TOC adsorptive capacity of the GAC media.

Test results indicate that the TOC adsorptive capacity of both new carbon materials is consumed within three to four months of replacement. As shown in Figure 4, the lignite material demonstrated a slightly faster rate of decline than the bituminous material. Based on this study, replacing GAC media can significantly reduce DBP precursors for a narrow window of time before media replacement is necessary.

Additional analyses of TTHM readings from the distribution system confirm GAC’s positive impacts on disinfection byproducts. Again, this benefit is limited by the carbon’s remaining TOC adsorptive capacity. As shown in Figure 5, significant drops in TTHMs were measured when the four GAC contactors were originally commissioned in 2009 and when media in two (2) contactors were replaced over the course of this study.

In an effort to identify a less expensive alternate to traditional regenerating methods, SRWTP evaluated a new chemical that claims to regenerate the carbon in-situ, thus eliminating a significant component of the regenerating cost. Initial results from this study indicate the new chemical did not achieve any significant amount of regeneration on the carbon material currently installed at the plant. The chemical manufacturer attempted regeneration a second time, but little improvement in adsorption capacity was realized. The manufacturer attributes the poor performance of their chemical to the lignite-based GAC used at the plant. The chemical manufacturer stated their previous successes at other water treatment plants around the country were achieved regenerating bituminous-based carbon. The manufacturer also theorized that carbons with low iodine numbers (i.e., iodine number of 500) utilized at the SRWTP do not regenerate as well with their chemical as other carbons with higher iodine numbers (i.e., iodine number of 900). The study will be repeated this year again to see if better results can be obtained.

**Aeration in distribution system**

Chloroform (one of the regulated THM species) has a high Henry’s Law constant (3.67x10^-3 atm m^3/mol). Given this chemical property, chloroform can be easily stripped from finished water with aeration. Because Henry’s Law constants for HAAs are several magnitudes smaller than THMs, removal of HAAs via aeration is not as effective.

In Murfreesboro, chloroform is the main contributor to total TTHMs. Within the last three years, chloroform levels exceeding 100 µg/L and 60 µg/L have been documented in the distribution system and SRWTP clearwell, respectively.
One Stage 2 compliance location in the distribution system is of particular concern. This location currently hovers near the limit set forth by the Stage 2 DBPR. SSR utilized MWSD’s hydraulic model to analyze the influence zones of four distribution storage tanks that could impact TTHM levels at the compliance location in question. A pilot study of a two-part aeration and mixing technology was conducted at the storage tank identified with the largest influence on the area of concern.

The results obtained from the pilot study, shown in Figure 6, demonstrate the aeration technology’s ability to reduce TTHM levels significantly in the treated storage tank. However, the reduction seen at the aerated tank did not correlate to a similar reduction at the compliance location of interest or any of the other sample locations tested in the system over the course of the study. This appears to be related to the hydraulic configuration of Murfreesboro’s distribution system. Because all of the storage tanks ‘float’ on the same pressure system and their geographic location, a significant portion of the water at the location of interest never travels through one of the storage tanks. Consequently, even if every one of Murfreesboro’s storage tanks was aerated, the expected overall TTHM reduction in the distribution system would not be reduced enough to ensure compliance. For these reasons, aeration technology does not appear to be an effective alternative to reduce TTHM levels in the Murfreesboro distribution system.

**Study conclusions**

Based on the results of the hydrogen peroxide study, a permanent chemical feed system designed for reducing both TTHMs and HAA5s will be installed at the plant. The addition of hydrogen peroxide will also reduce the chlorine dosed at the plant. Because free chlorine is one reagent in forming DBPs, reducing the amount of chlorine fed at the plant should also positively impact the formation potential for DBPs in the distribution system.

Granular activated carbon has proven effective at reducing DBPs in Murfreesboro’s potable water system. Additional benefits are also achieved through GAC treatment including taste and odor reduction, volatile and synthetic organic compound reduction, and microconstituent reduction.

The GAC reaches its adsorptive capacity for different compounds at different rates, but in general it should be replaced every three to five years based on continued taste and odor reduction. SRWTP has four GAC contactors, and plans to replace one of the contactors every year. Furthermore, SRWTP plans to re-evaluate a new chemical that claims to regenerate the carbon in-situ, and thus eliminate a significant component of the regeneration cost. SRWTP will pilot this chemical on the bituminous-based GAC one year after installation.

Based on the distribution tank aeration study, a permanent aeration system will not be installed.
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Severe weather can be devastating, and according to numerous weather sources—occurs more frequently and widespread. Tornadoes are now occurring anywhere from the Rockies to the east coast. Currently, the southern Pacific coast is experiencing a severe drought, many areas in the east coast are flooded, and thousands of people were killed in the Nepal earthquake.

Severe weather does not discriminate and it can damage or destroy everything in its path including water tanks. Necessary water supply for consumption, fire protection, and emergency needs is crucial to everyday well-being, and even more when a severe weather event occurs. Therefore, water tanks should be designed, constructed, maintained, and inspected to withstand severe weather.

Tanks that have experienced winter storms and freezing should obviously be inspected for damage, but seismic activity, high winds, lightning, droughts, and flooding also occur in the summer months and tanks are susceptible to damage from them as well.

High Winds/Lightning Strikes
National Fire Protection Association (NFPA) states, “Anchor bolts shall be arranged to securely engage a weight at least equal to the net uplift when the Foundation damage can easily occur if tanks are subjected to flooding for prolonged periods. Tank sites should have good drainage to minimize or prevent possible foundation damage from flooding. The site design should also include provisions for draining the tank and the discharge from the tank overflow without damaging the tank site or neighboring properties.

Seismic Activity
Tanks are designed and constructed for resisting earthquake damage by complying with the earthquake design load provisions of American Water Works Association (AWWA), in accordance with its Seismic Use Group (SUG) and site class. The SUG is a classification assigned to a tank based on its intended use and expected performance; Tanks that serve multiple facilities use the highest SUG. Site class accounts for the effect of local soil conditions on the ground motion and are based on the soil present and their engineering properties as established by a geotechnical investigation. The SUG and site class help determine the appropriate freeboard and the number of anchor bolts needed. Freeboard is the distance from the Maximum Operating Level (MOL) to the lowest level of the roof framing and is determined by the sloshing wave height that could

Water tanks should be designed, constructed, maintained, and inspected to withstand severe weather.

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occur (3). Freeboard is taken into consideration to prevent a tank from overturning or causing roof damage due to sloshing.

The design of the piping system connected to the tank should consider the effects of foundation movements and potential movement of the connection points during earthquakes. Sufficient flexibility should be provided to avoid release of the tank contents due to failure of the piping system. The piping system and supports shall be designed so as not to impart significant mechanical loading on the attachments of the tank. Mechanical devices that add flexibility, such as bellows, expansion joints, and other flexible apparatus, may be used when designed for the seismic displacements and defined operating pressure (4).

**What to Look For**

Water tanks should be inspected regularly for proper working order and stability before severe weather hits. Overhead obstructions, trees and overgrowth that could puncture or damage a tank during severe weather should be removed, and operators should routinely look for foundation, wind, and earthquake damage. Such damage on tower-supported tanks may be indicated by cracked coating or welds at the tower connections; broken, bent, or sagging rods; buckled struts; dented or twisted columns; or missing or loose rod pins. If any of these conditions are observed, the tank should be professionally inspected. In addition, tanks in areas at high risk for wind or earthquake damage should be inspected more frequently than tanks in low risk areas (5).

**References**


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As we continue to deliver valuable information through the pages of this magazine, in a printed format that is appealing, reader-friendly and not lost in the proliferation of electronic messages that are bombarding our senses, we are also well aware of the need to be respectful of our environment. That is why we are committed to publishing the magazine in the most environmentally-friendly process possible. Here is what we mean:

- We use lighter publication stock that consists of recycled paper. This paper has been certified to meet the environmental and social standards of the Forest Stewardship Council® (FSC®) and comes from responsibly managed forests, and verified recycled sources making this a RENEWABLE and SUSTAINABLE resource.
- Our computer-to-plate technology reduces the amount of chemistry required to create plates for the printing process. The resulting chemistry is neutralized to the extent that it can be safely discharged to the drain.
- We use vegetable oil-based inks to print the magazine. This means that we are not using resource-depleting petroleum-based ink products and that the subsequent recycling of the paper in this magazine is much more environment friendly.
- During the printing process, we use a solvent recycling system that separates the water from the recovered solvents and leaves only about 5% residue. This results in reduced solvent usage, handling and hazardous hauling.
- We ensure that an efficient recycling program is used for all printing plates and all waste paper.
- Within the pages of each issue, we actively encourage our readers to REUSE and RECYCLE.
- In order to reduce our carbon footprint on the planet, we utilize a carbon offset program in conjunction with any air travel we undertake related to our publishing responsibilities for the magazine.

So enjoy this magazine...and KEEP THINKING GREEN.
2015 AWWA Alabama/Mississippi Awards Announcement
REQUESTING APPLICATIONS AND NOMINATIONS

AL/MS Section will select one water plant, distribution system, water operator and Young Professional from Mississippi and one from Alabama whose outstanding performance during the preceding year deserves special recognition by the Section.

Water Operator of the Year Award
• Eligibility requirements:
  - The operator must be employed by a utility which is a member or be an individual member of the AL/MS Section of AWWA
• Submission deadline: **July 31, 2015**

Young Professional of the Year Award
• Eligibility requirements:
  - The nominee must be under 35 years of age with less than 10 years of experience in the water industry.
  - The nominee must be an individual member of the AL/MS Section of AWWA or be employed by a member organization of the AL/MS Section of AWWA.
• Submission deadline: **July 31, 2015**

Water Plant of the Year Award
• Eligibility requirements:
  - The plant must be operated by a utility which is a member or employ an individual member of the AL/MS Section of AWWA
• Submission deadline: **July 31, 2015**

Distribution System of the Year Award
• Eligibility requirements:
  - The distribution system must be operated by a utility which is a member or employ an individual member of the AL/MS Section of AWWA
• Submission deadline: **July 31, 2015**

Completed application forms are available for download from the Awards Section of the website (www.almsawwa.org) and may be either saved to your computer and emailed to HortonMR@cdmsmith.com or printed using the print box on the form and mailed to the following:

Matthew Horton, CDM Smith
210 E Capitol St Ste 1050
Jackson, MS 39201-2300

Applications must be received by July 31, 2015

If there are any questions please contact the following:
Matthew Horton
Phone: 601-960-6440
Email: HortonMR@cdmsmith.com

AL/MS Section – AWWA Annual Conference
CALL FOR PRESENTATIONS

Beau Rivage Resort and Casino | Biloxi, Mississippi | October 11-13, 2015

The AL/MS Section of the American Water Works Association is now accepting abstracts for presentations for the 2015 Annual Conference technical program. Presentations will be limited to 20-25 minutes with 5-10 minutes for questions to be submitted from the audience afterward. Abstracts should include the title, a detailed description of the topic, approximate length (time) of presentation, authors’ names, and short bio for the primary contact. Abstracts should be limited to 500 words or less. The Section plans to place a special emphasis on current and future regulatory changes and operator training so presenters from each of those groups are encouraged to participate. General categories for the technical program include:

- Regulatory Compliance
- Operations/Management
- Finance and Administration
- Billing and Customer Service
- Water Resources
- Surface Water Treatment
- Groundwater Water Treatment
- Distribution System Management
- Water System Security and Disaster Recovery
- Research from Universities
- Emerging/New Technologies
- Asset and Data Management Systems

**SUBMISSION TIMELINE:**
Abstract Deadline: **June 30, 2015**
Presenter Notification: **July 18, 2015**
Submit Materials Digitally: **Sept. 9, 2015**

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REGISTRATION FORM

Please complete and return to AL/MS AWWA, c/o Harry Gong, P.O. Box 4651, Jackson, MS 39296-4651
Make check payable to “AL/MS Section AWWA”.

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Are you a Young Professional (35 age and younger)? Yes _____ No _____ Spouse’s? Yes _____ No _____

Are you/spouse planning to attend Sunday’s dinner: Yes _____ No _____ Are you planning to attend Tuesday’s dinner? Yes _____ No ______

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HARRY GONG APPOINTED SECRETARY-TREASURER

Chris Griffin has stepped down as the Section’s Secretary-Treasurer due to an occupational change that has resulted in him not being able to complete his duties for the remainder of his term, and the Board of Trustees has appointed current PIPELINE Editor and Communications Chair Harry D. Gong, Jr., P.E. to serve out Chris’s remaining term. The Section appreciates Chris’s hard work the past two plus years and wishes him well in his future endeavors.

Harry Gong has been an active member of the Section since 2007 and has served the Section well as was demonstrated by his receiving the inaugural Kenny McCool Outstanding Service Award last October during the Annual Conference in Point Clear, Alabama. Harry works as the Engineering Coordinator for the Drinking Water State Revolving Loan Fund Program at the Mississippi State Department of Health and has been with the Department for 13 years.

The Section appreciates Harry’s continued willingness to serve the Section, and the Board of Trustees welcomes him as he begins serving as a new Officer with the rest of the Board of Trustees.
MEMBER UPDATE

Online Operator Training

Members now have access to an Online Training Site for Continuing Education and Professional Development Hours with 360Water.

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If you have recently been promoted, passed an exam, become certified, retired, become a parent, etc..., the Pipeline would like you to submit a small write-up and a profile picture for consideration in our Newsmakers Section. Please send the information to Harry.Gong@msdh.state.ms.us or call Harry Gong at (601) 576-7527.

COMUNICATIONS COMMITTEE NOTICE

Volunteers are needed to serve on the Communications Committee for the Alabama/Mississippi Section of AWWA. If you are interested in working on the Section Website or the Section’s Pipeline magazine, please contact the Communication’s Chair Harry Gong at Harry.Gong@msdh.state.ms.us or at (601) 576-7527.
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<td><a href="http://www.ch2mhill.com">www.ch2mhill.com</a></td>
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<td>225-295-1200</td>
<td><a href="http://www.ettecsales.com">www.ettecsales.com</a></td>
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<td>256-782-5956</td>
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