SPRING 2015

OHIO SECTION
NEWSLETTER
AMERICAN WATER WORKS ASSOCIATION

Evaluation of Water Main Replacement Program Helps Greater Cincinnati Water Works Achieve Asset Management Goals

Bo Copeland, PE, Associate, Hazen and Sawyer, Cincinnati, Ohio
Jamie Weinle, EIT, Assistant Engineer, Hazen and Sawyer, Cincinnati, Ohio
Becky Calder, PE, Senior Engineer, Greater Cincinnati Water Works, Cincinnati, Ohio

The key goals of an asset management (AM) program are to maintain an acceptable level of service, maximize the useful life of infrastructure, and minimize life-cycle costs. As water utilities implement their AM programs, they are faced with the challenges of rehabilitating and replacing aging water mains (WMs). In the process of addressing these needs, "each utility's objective is to make these investments at the optimal time for maintaining current service levels and to avoid replacing pipes while the repairs are still cost-effective." (AWWA, 2012) Thus, two common hurdles these utilities encounter are determining the most cost-effective replacement rate and targeting the appropriate pipes for replacement.

Few water utilities have analytical processes in place that allow them to accurately measure the effectiveness of their water main replacement program (WMRP) to validate or improve upon the decision process by which WMs are selected and prioritized for replacement. Nonetheless, in order to optimize an AM program and ensure adequate ongoing funding, a defensible evaluation of a WMRP's effectiveness is important. Assessing failure causes, failure trends, risk factors, and impact of replacement efforts can improve understanding of replacement dynamics and better inform decision-making. A well-tuned selection process for WM replacement helps maximize system reliability, minimize premature pipe replacements, and reduce life-cycle costs.

"… a crucial responsibility for utility managers now and in the future is to develop the processes to continually improve their understanding of the 'replacement dynamics' of their own water systems. Those dynamics should be reflected in an Asset Management Plan (AMP) and, of course, in a long-term capital investment plan." (AWWA, 2012)

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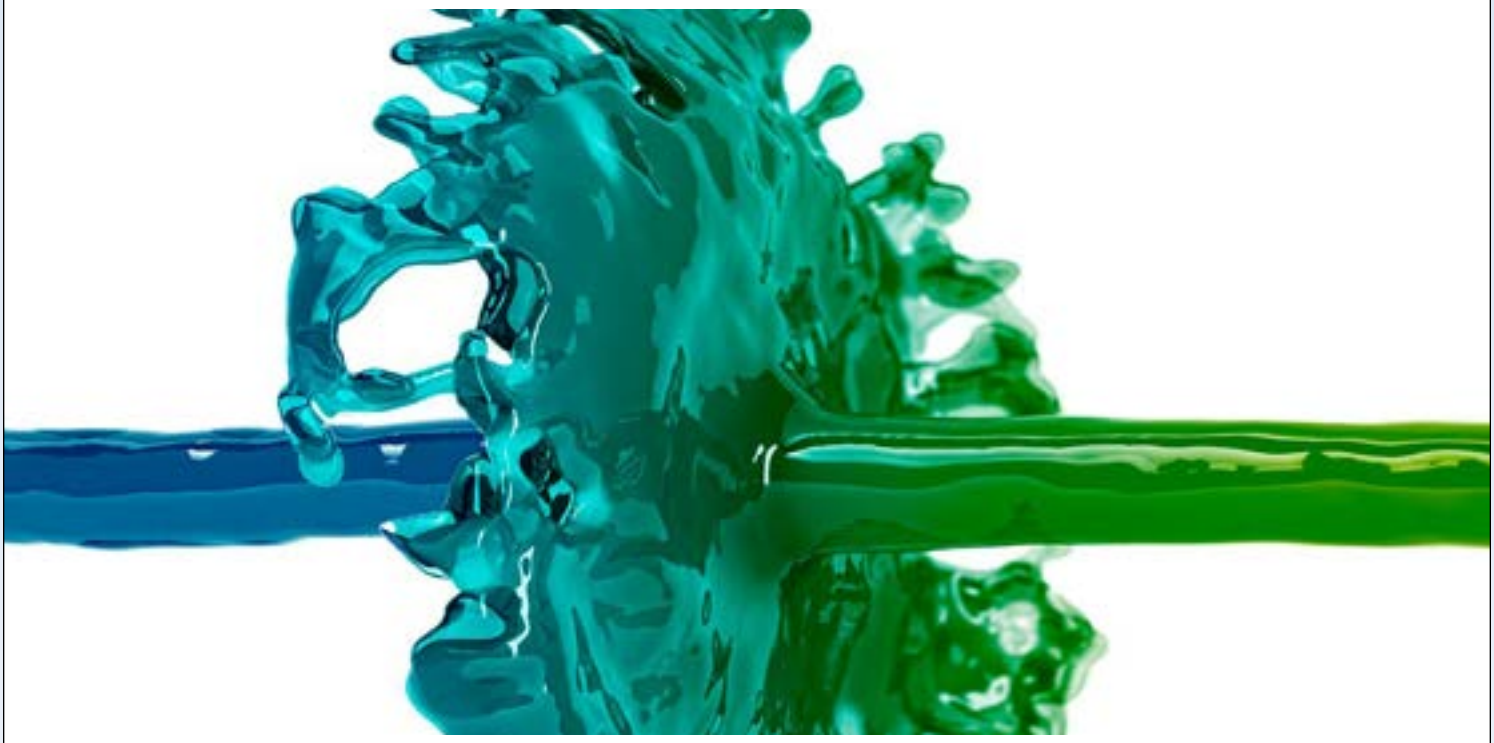

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STRAIGHT FROM THE CHAIR

Dan Barr,
Ohio Section Chair

I am now halfway through my term as Chair and I can't believe how the time is passing. The state conference in Cleveland will be here before we know it.

Progress has been coming quickly on many fronts at the Section too, and I am excited to tell you all about it.

The first one is the biggest one. As I mentioned in my last Chair Report in the 2014 Winter Newsletter, the Governing Board has been evaluating the direction of our Professional Services while also researching and evaluating different providers in Ohio. The reasoning behind this move was to better equip our Committees, Councils, Districts, and volunteers with expanded professional services in order to bring about future success, increased membership benefits, and a stronger Section as a result.

I am really excited about this new relationship and our new Ohio Section AWWA manager whose name is Dallas Williamson.

This process has been completed, and I signed the contract in mid-January with an association management company called Accent on Management based in Columbus. I am really excited about this new relationship and our new Ohio Section AWWA manager whose name is Dallas Williamson. She has been amazing in her short time on the job and will be a major asset going forward with the Section. You can find out more about her and her role with the Section in the article included on page 5.

I do want to thank The Operators Training Committee of Ohio (OTCO) who has been providing professional services to the Section for more than 18 years. Their hard work has enabled the Section to be in this position of strength that we are now in and being poised for a bright future serving the Ohio drinking water industry.

For the last several months, the Ohio Section has been publishing a weekly e-newsletter called H2O in the Know, and it has done an amazing job of helping us communicate better with the membership. If you haven't seen it yet, you can see back issues or subscribe by using this link: http://www.multibriefs.com/briefs/OAWWA/ . Check it out!

The website (http://www.oawwa.org/) is always being updated too. Make sure to make it a regular stop for information on upcoming events and news about the Ohio drinking water industry.

See you at the next Ohio Section AWWA event!

In This Issue

DIRECTORS REPORT

**Cliff Shrive,
Ohio Section Director**

Over the past year, AWWA has spent considerable time and effort on moving forward with several initiatives. Three have gained momentum over the past few months, and are highlighted below.

AWWA is opening an office in India! This will be the first of hopefully many International Communities that AWWA has the opportunity to develop. The hope is to be part of the local community within India, rather than a partner from afar. The initial focus for the India Office will be on building a community of water professionals who collaborate to support public health, environmental protection and best management practices. AWWAIndia will also develop training for operators and managers. You can read more info about AWWAIndia on the AWWA website.

AWWA will be modifying the membership structure. Although in the early stages of discussion, a 21st Century Membership Model will will reduce confusion, provide the potential for increased number of members (including international), increase operational and Section effectiveness, and facilitate opportunities for member engagement. Additional information will be provided as the discussions continue over the next couple years.

Several webinars have been presented since summer 2014, with the common theme of One AWWA. The report "AWWA2020 A Path to One AWWA" was finalized in June, and is now being implemented. There are five specific Strategic Themes as guides for a 2020 future of One AWWA, each one meant to bring the sections and Association together working as one entity – Communication, Education, Branding, Finance, and Membership. The Board of Directors is in full support of the Report and the implementation of the strategic themes, and affirms that to become "One AWWA" it is critical that all AWWA organizations actively participate in the implementation of the AWWA2020 strategic themes. This topic is key to our future success, both as an Association and as the Ohio Section.

Each year the Board of Directors approves several AWWA Award Recipients, and this year David Weihrauch of the City of Oxford received the AWWA Volunteer of the Year Award. Dave has been a good friend for many years, and I cannot think of anyone more deserving for his tireless efforts on securing WIFIA's success. Congratulations David!

One final bit of information from the Board of Directors… the following AWWA Officers were recently elected and will take office in June, at the close of ACE. One Director-at-Large Position was also elected. I have had the good fortune to work beside several of the new officers, and know they will continue AWWA's vision and direction over the next few years.

President-Elect
Jeanne Bennett-Bailey, Virginia Section

Director-at-Large
Sally Mills-Wright, Texas Section

Vice Presidents
Steve Dennis, Cal/Nevada Section
Jon Eaton, Minnesota Section
Martha Segal, Kentucky/Tennessee Section
Brian Steglitz, Michigan Section

Looking towards the Ohio Section, we've had implemented several changes over the last year. From the Realignment of our Section Strategic Plan, to hosting a very successful OneWater Conference with OWEA, to planning new training opportunities with AWWA, to changes within our Professional Services – the past several months have had its share of excitement. And I expect there's more to come…

In closing, I'd like to thank You for allowing me to represent the Ohio Section on the AWWA Board of Directors. I look forward to helping shape the Future of AWWA and the Ohio Section.

If you have suggestions about the Ohio Section, or questions about the activities of the Association, please do not hesitate to contact me at cliff.shrive@stantec.com or 513.824.6744

Meet Dallas Williamson

OHIO SECTION AWWA'S NEW MANAGER

I am so excited to be writing to you in my new role as the Ohio Section AWWA Manager. It is such an honor to step into this position and to become involved with such a great organization.

I come to you from the association management firm, Accent on Management (AOM). Our office is located in downtown Columbus, and we are proud to say that we have provided proven association management to state, regional, and national associations for over 40 years.

My role as your Manager will be to make sure that all facets of the Section run smoothly.

- In aiding the Governing Board and District leaders, I will be maintaining a weekly e-news update to the Section leadership. This helps keep all Board, District, Committee, and Council chairs up-to-date on upcoming events, deadlines, and procedures.

- I will also be coordinating the planning and preparation of conferences, meetings and events, as well as managing exhibitor and vendor contracts.

- In turn, I will assist in the preparation and printing of all OAWWA publications, the management of Section Finances, and sponsorship coordination.

I am also very excited to be working with the Board on two great goals this year.

- First off, we will be working to build a complete database of the Section membership that will include each individual's contact information, employment, job description, district membership, awards received from the Section, offices held within the Section, past chairs and directors of the Section, and membership status.

- Secondly, we will be transitioning to the OEPA online certification system. In other words, not only will I be managing the contact hour reporting process for meetings and events, but I will also be uploading attendance records to the OEPA's online certification system, which will result in less wor k and worry for you!

Although I have already begun working with the OAWWA Governing Board over the past few months, I am excited to really jump in this spring as the event schedule kicks into high gear, and I am looking forward to working with and getting to know each of you. I believe that it is the members that make an organization strong, and I am eager to work with all of you to keep your strength and your dedication to the Ohio Section AWWA going and growing.

Dallas Williamson
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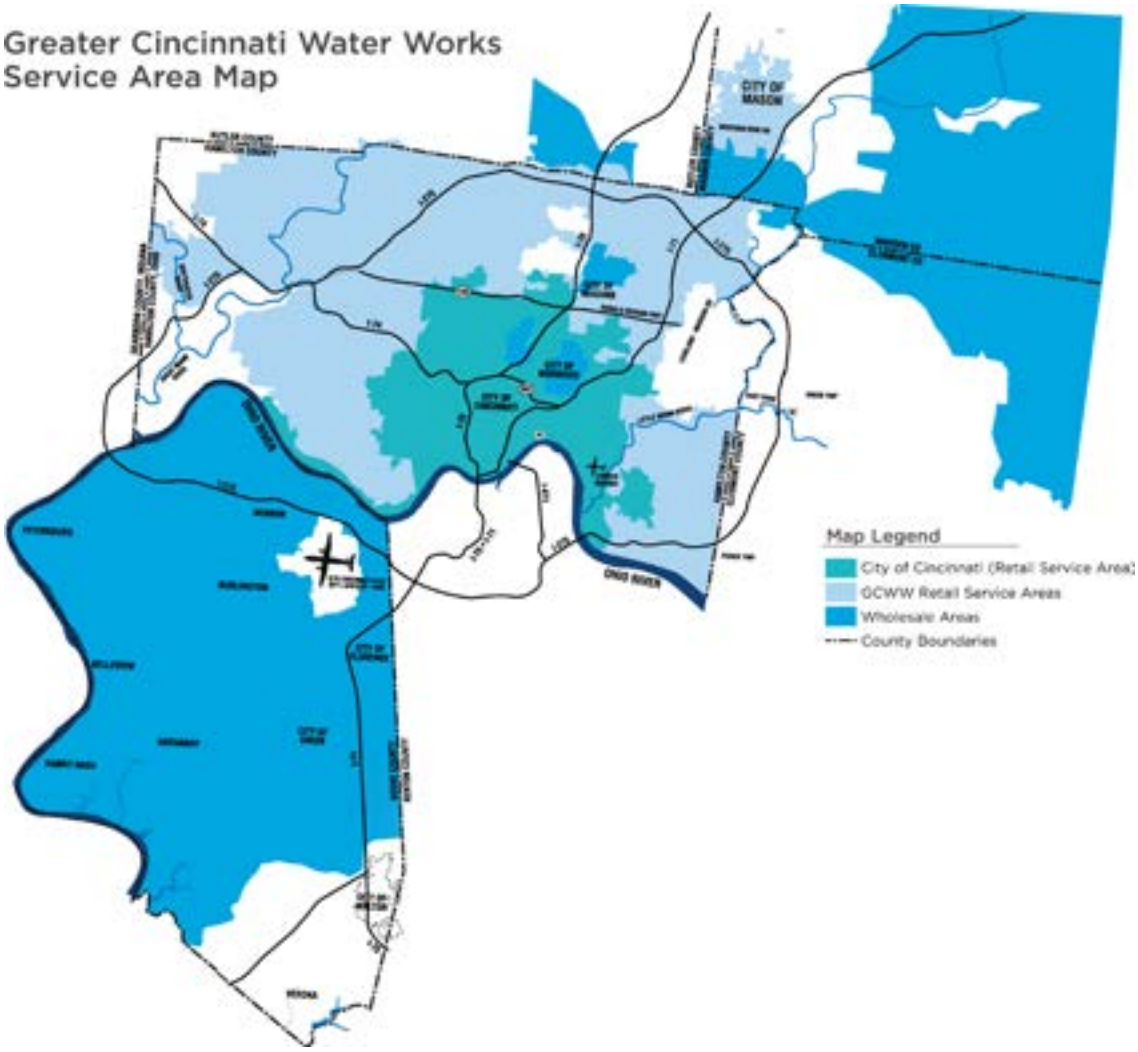
continued from page 1 - cincinnati

THE GCWW STORY

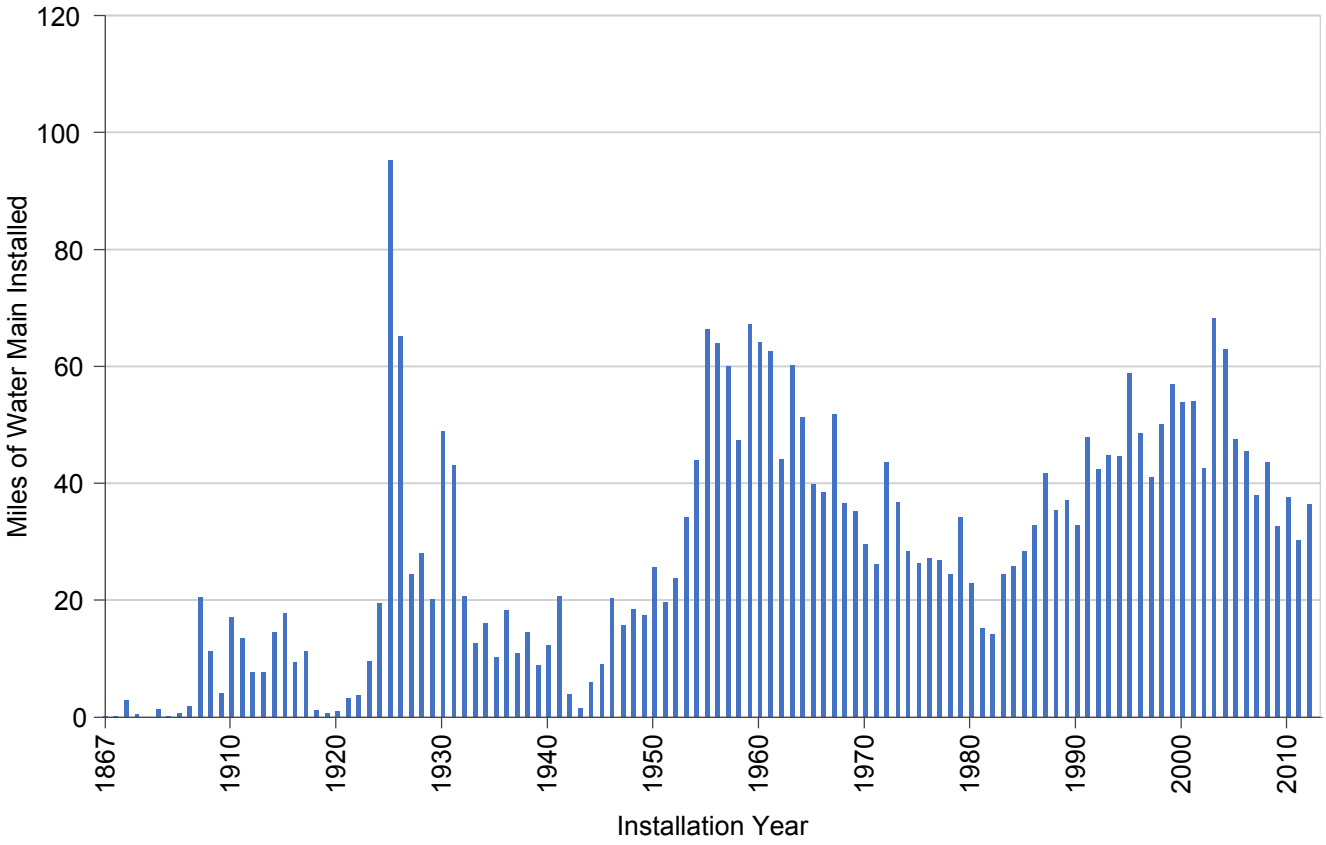
This article reviews the successful effectiveness evaluation that was conducted by Hazen and Sawyer (New York, NY) for Greater Cincinnati Water Works (GCWW), a large water utility with 3,100 miles of WM. GCWW is owned and operated by the City of Cincinnati and serves a population of approximately 1.1 million through 247,000 retail and wholesale customer accounts in five counties within southwest Ohio and northern Kentucky (Figure 1).

Figure 1. GCWW Service Areas



The pipes in GCWW's system are up to 150 years old with an average age of 46 years (Figure 2). GCWW has long recognized the importance of good asset management practices, including an ongoing WMRP, to help reduce occurrences of main failures and to prevent a significant increase in failure rates as pipes age. As such, GCWW has maintained WM failure records and employed a proactive WMRP for 30 years while making a significant investment in replacement of aging and deteriorating water mains through its WMRP.

Figure 2. GCWW Annual Water Main Installation



GCWW's process for selecting and prioritizing mains for replacement has evolved since it began an organized, proactive program to replace aging and deteriorating water mains in 1985. Prior to that time, water main replacement was strictly reactionary based on emergency water main repairs. Initially, budget constraints limited water main replacement projects to an annual replacement rate around 0.25% of the entire distribution system. The goal was to address the worst maintenance problems, usually limited to a few individual streets. In the late 1980s, as a result of an effort by the mayor and Council to restore the condition of the City's assets, GCWW began to target an annual WM replacement rate of 1%. Replacement rates since the early 1990s have averaged slightly below the 1% goal. Today, the WMRP budget allows GCWW to both react to failures and to actively plan the future of the water distribution system. Projects in the program now are multi-street projects which address more than just maintenance, but can also help with flow issues, system upgrades, etc. In the past 10 years, the average replacement rate has been 0.95%; and the 1% goal has been exceeded 3 times (Figure 3).

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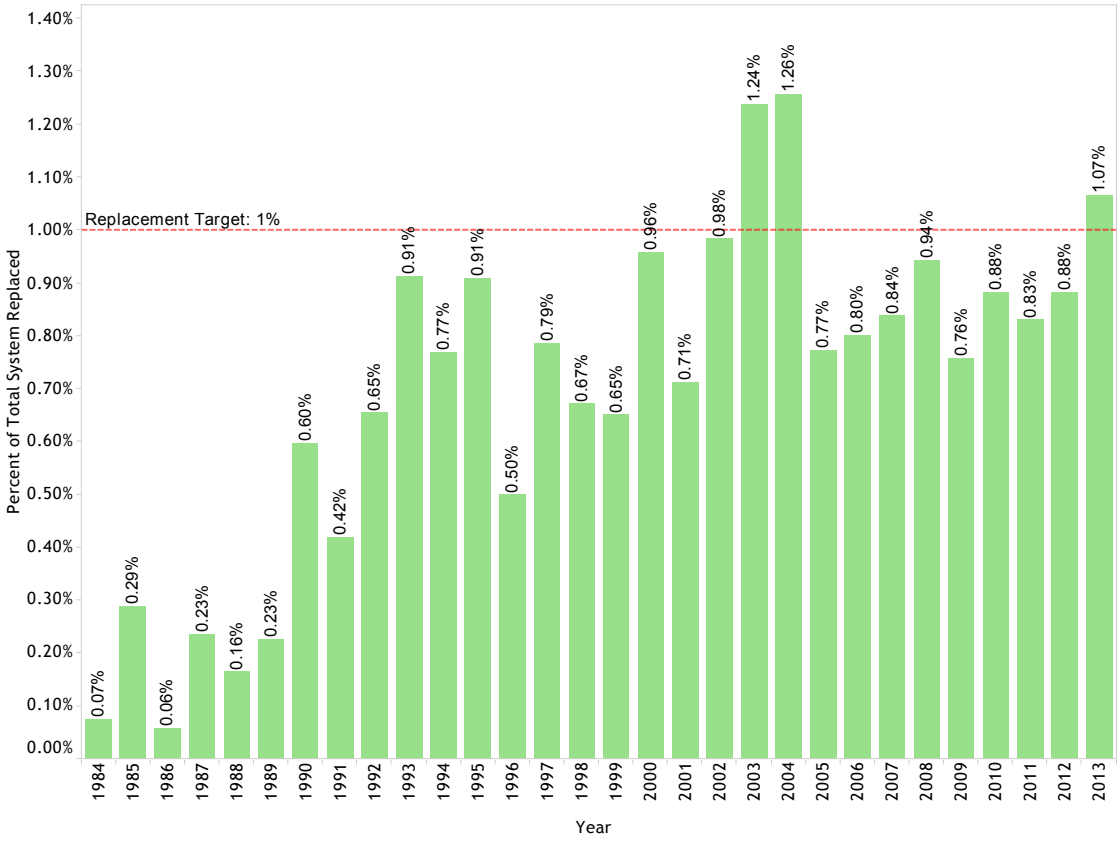
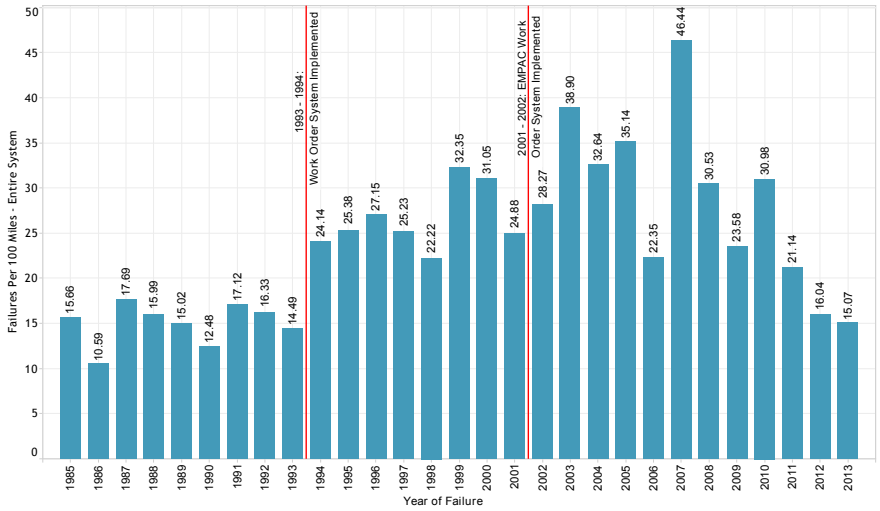
Figure 3. GCWW Annual Water Main Replacement



EVALUATING WATER MAIN FAILURE RATES

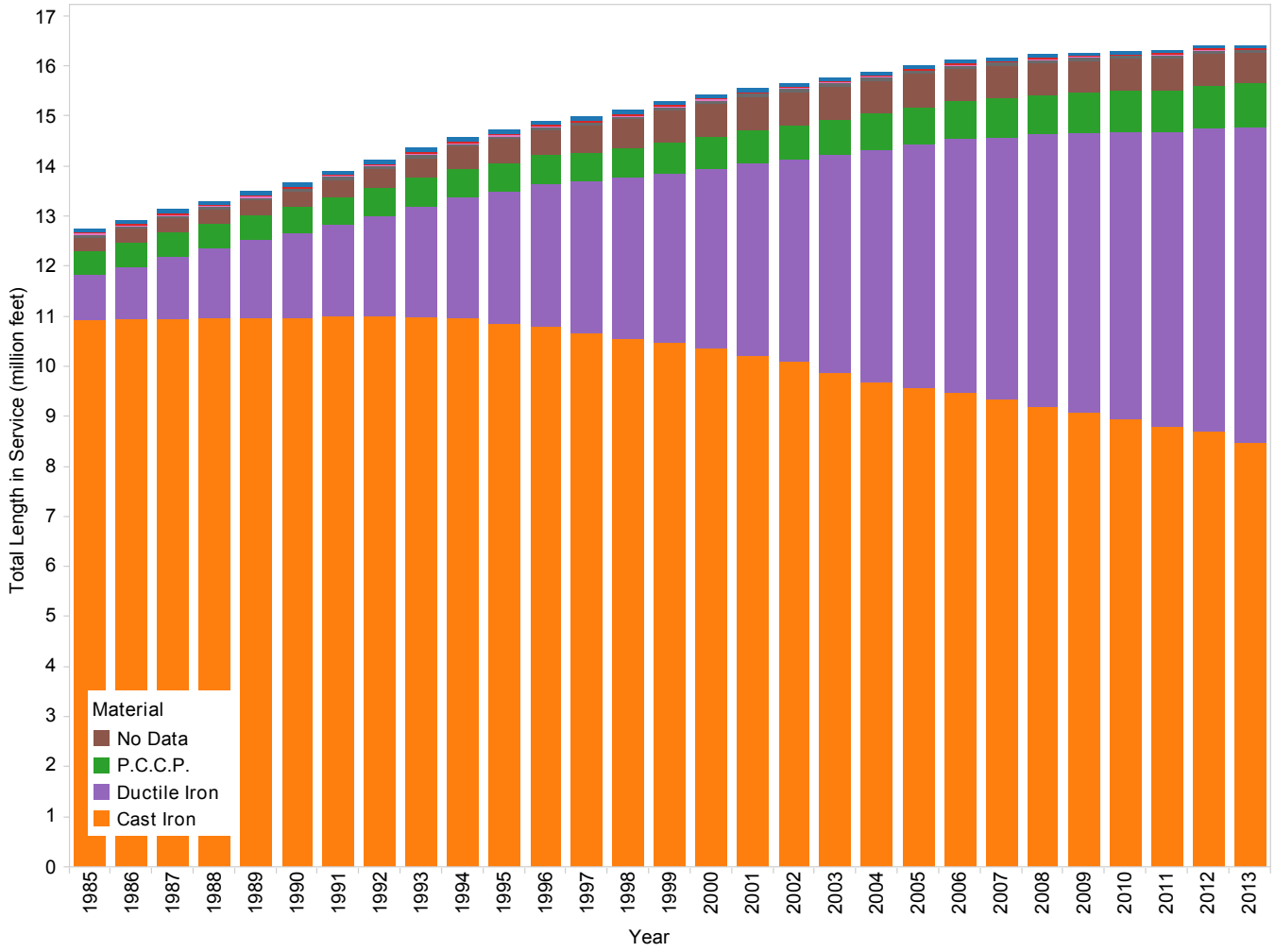
For purposes of evaluating the effectiveness of GCWW's WMRP, failure rates (including both breaks and leaks) were normalized (to number of failures per 100 miles of pipe) by pipe attributes (such as material, diameter, and installation decade) and by spatial attributes (such as soil corrosiveness and operating pressure) in order to identify failure causes and trends. This allowed GCWW to better understand which factors most influence WM failure rates in its system, identify recent failure trends for individual pipe classes, and evaluate the effectiveness of nearly 30 years of WM replacement efforts.

Figure 4. GCWW Annual Water Main Failure Rates



Failure rates from 1985 – 2003 trended upward (Figure 4). The analysis showed that the failure rates increased substantially in 1994, but this is likely due to better record-keeping as an electronic record-keeping system was implemented and fewer breaks and leaks went unlogged. Except for 2007, which had atypical weather conditions (discussed later), failure rates have been trending downward in the last 10 years (Figure 4) as a result of more aggressive main replacement spending—especially in 2003 and 2004 (Figure 3). Since inception of the WMRP, the average failure rate has been 24 failures per 100 miles of pipe; but failure rates were reduced to 16 or less in 2012 and 2013 (the most recent year for which complete data are currently available), which is in line with the top quartile of comparable large water utilities. (AWWA, 2014) The AWWA Partnership for Safe Water Distribution System Optimization Program goal for a fully-optimized distribution system is 15 breaks per 100 miles of pipe annually. (AWWA Partnership for Safe Water, 2011)

Figure 5. GCWW System Composition by Water Main Pipe Material



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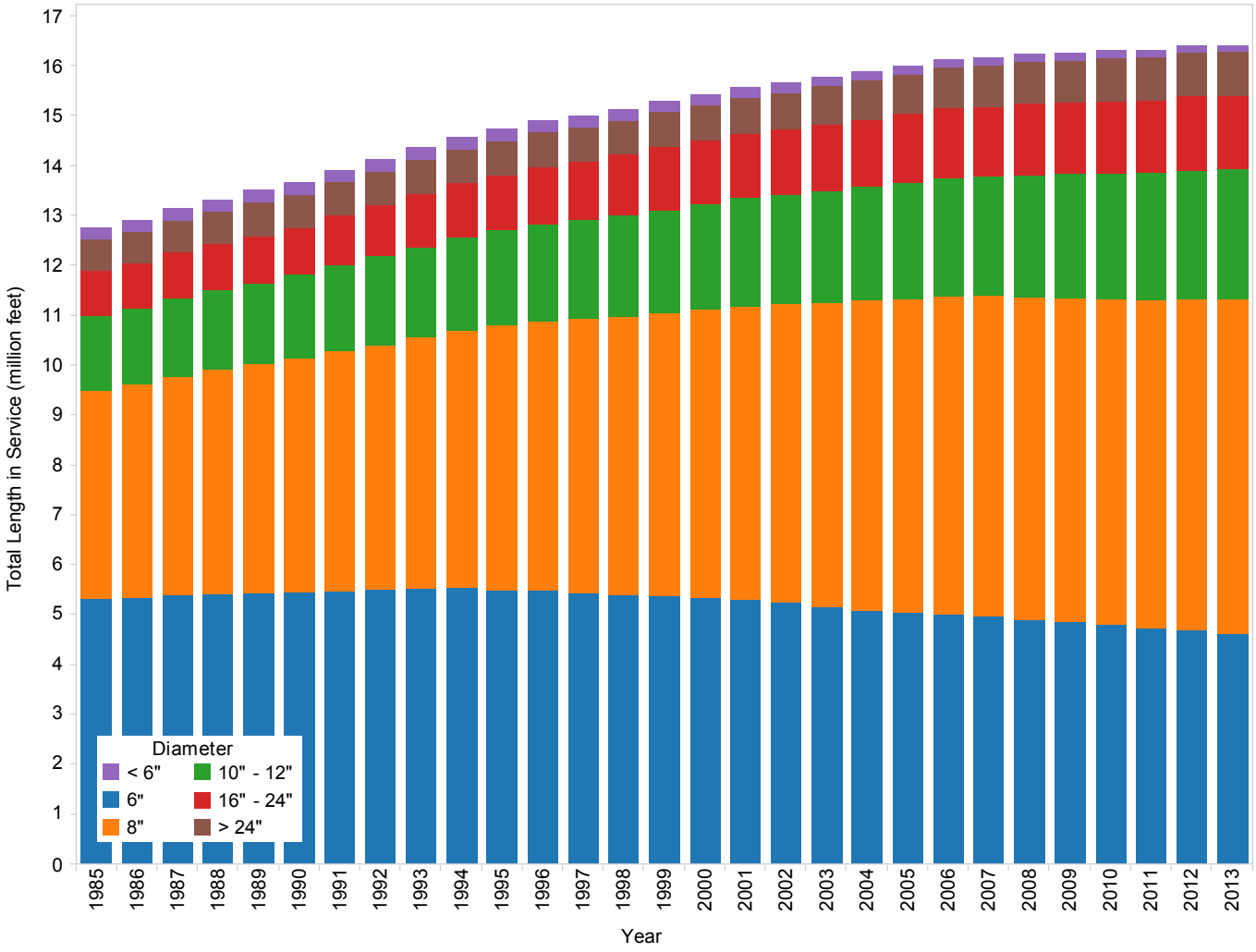
continued from page 9 - cincinnati

The detailed analysis confirmed information that was already known either intuitively or from previous reviews, but is also revealed several new discoveries and clarified some prior [mis]understandings about which pipes were failing at the highest rates. Ninety-eight percent (98%) of the water main failures in GCWW's system have been on gray cast iron pipes, which still account for the majority of piping in the system, despite ongoing efforts to replace cast iron with ductile iron piping (Figure 5). Sixty-four percent (64%) and twenty-five percent (25%) of failures, respectively, have been on six-inch (6") and eight-inch (8") diameter pipes (Figure 6); and sixty percent (60%) of failures have been on pipes with leadite joints. There are at least two reasons for high failure rates associated with leadite joints: "First, leadite has a different coefficient of thermal expansion than cast iron and results in additional internal stresses that can ultimately lead to longitudinal splits in the pipe bell. Secondly, the sulfur in the leadite can facilitate pitting corrosion resulting in circumferential breaks on the spigot end of the pipe near the leadite joint. The failure rate in the industry for leadite joint pipe is significantly higher than for lead joint pipe even though the pipe may not be as old." (American Water Works Service Co., Inc., 2002, p3)

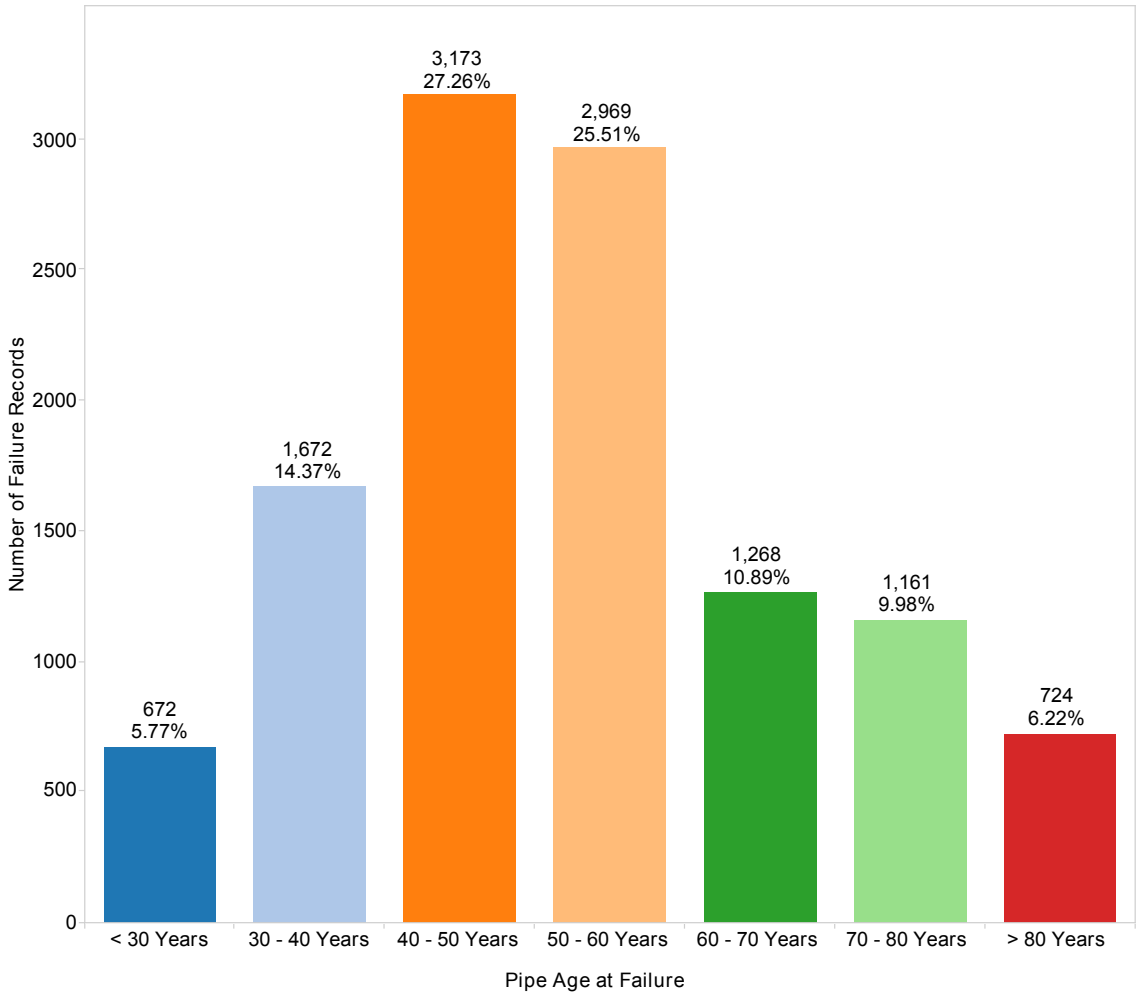
Figure 6. GCWW System Composition by Water Main Pipe Size



PIPE VINTAGE – NOT TO BE CONFUSED WITH AGE

An interesting finding of the evaluation was that pipe vintage (e.g. decade installed) affects failure rates more than does pipe age. In particular, pipe installed in the 1940s has, on average over the past 30 years, had a significantly-higher failure rate than pipe installed in any other decade. Thus, as the system has aged over the last three decades, the median pipe age at failure (Figure 7), i.e. considering all failures to date, has increased from approximately 48 years to approximately 53 years as a result of very low failure rates in pipes installed over the last five decades (Figure 8).

Figure 7. GCWW Pipe Age at Failure



Another observation of note is the average failure rate of 3.67 failures per 100 miles for pipes installed in the current decade (Figure 8), which is relatively high compared to pipes installed during the previous three decades. This is due to the high failure rate that sometimes occurs right after installation, when failures are typically associated with material defects and poor installation. The same phenomenon occurred in the 1990s with pipe installed during that decade. This effect is described as the "burn-in" phase by Kleiner and Rajani, who note, "The life cycle of a typical buried pipe is often described by a so-called 'bathtub curve' ... [which] often distinguishes between three phases in the life of a pipe. The first phase, also known as the 'burn-in' phase …." (Kleiner et al., 2001)

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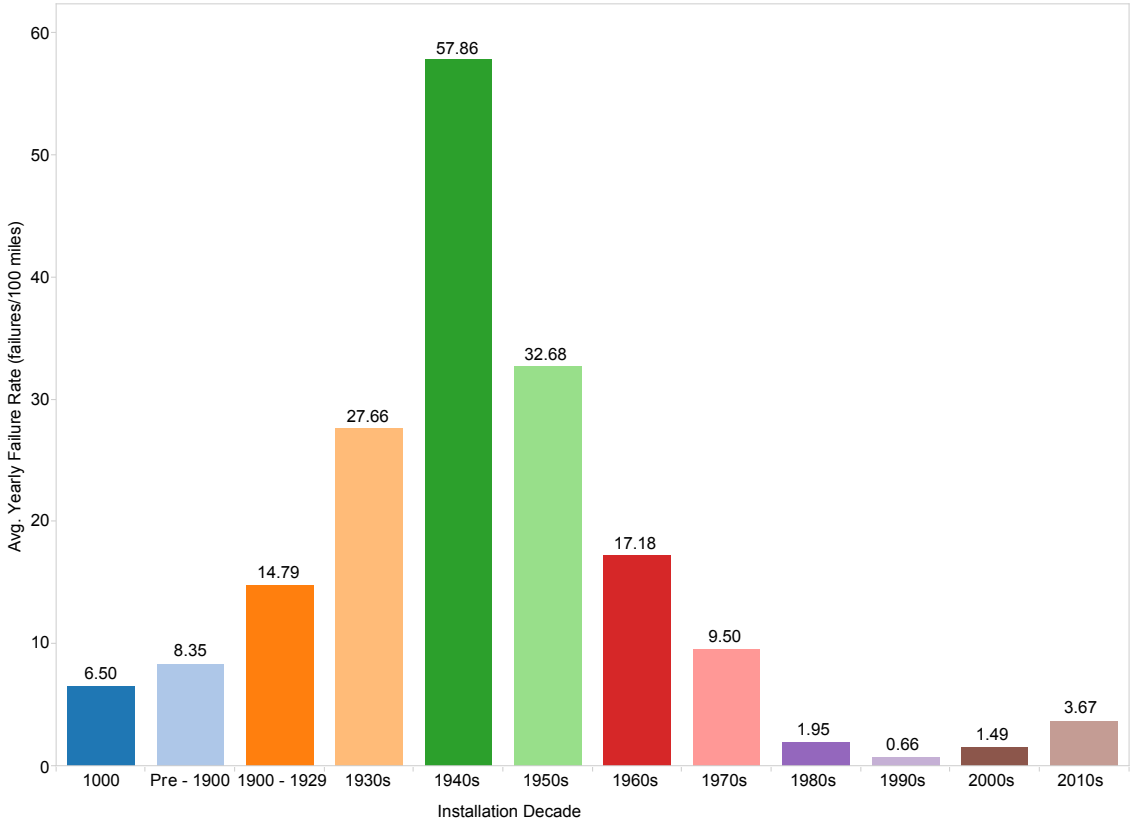
continued from page 11 - cincinnati

Figure 8 GCWW Water Main Failure Rates by Pipe Installation Decade



CLIMATIC AND ENVIRONMENTAL IMPACTS

Climatic conditions—particularly sustained very-low temperatures or sustained hot, dry weather—were found to have a significant effect on main failure rates. A seasonal trend (Table 1) is clearly evident in the historical failure data. Failures occur most frequently in December, January, February, July, and August. Individual years with very high failure rates can often be attributed to a very cold period in the winter and/or hot, dry weather in the summer. For example, 2007 was atypical with an unusually-cold winter and prolonged hot, dry weather in late summer, which resulted in particularly-high failure rates in February, March, September, and October (Table 1). GCWW staff have observed that main failure rates increase dramatically once water temperatures fall below approximately 38 – 39 degrees Fahrenheit, which occurred in February 2007, when the area experienced three consecutive weeks of average ambient temperatures below 22 degrees Fahrenheit and again in early 2014. This phenomenon is discussed in a report by American Water Works Service Co., Inc. (American Water Works Service Co., Inc., 2002, p12)

Table 1. GCWW Water Main Failures by Month, Average vs. 2007

	1985 – 2013 Average*		2007	
Month	Number of Failures	Failure Rate per 100 miles	Number of Failures	Failure Rate per 100 miles
January	105.4	44.6	80	31.4
February	59.6	25.2	322	126.3
March	33.5	14.2	181	71.0
April	32.4	12.2	58	22.7
May	32.9	13.9	121	47.4
June	45.9	19.4	52	20.4
July	64.3	27.2	80	31.4
August	68.6	29.0	90	35.3
September	57.6	24.4	146	57.3
October	51.0	21.6	104	40.8
November	42.8	18.1	80	31.4
December	70.3	29.7	107	42.0

* Excluding 2007

Environmental conditions such as soil corrosiveness and frost potential also affect water main failure rates. Using NRCS soil map shapefiles, corresponding soil attributes were spatially joined to the failure records. As expected, there has been a correlation between soil corrosiveness and pipe failure rates. Since the majority of GCWW's distribution network is located in highly-corrosive soils, this is particularly disconcerting. However, in the past 3 years the correlation between failure rates and soil corrosiveness has been decreasing, which is thought to be the result of using polyethylene encasement on all new iron pipe, which has been GCWW's standard since 1977. Hopefully, this practice will eventually eliminate the correlation between soil corrosiveness and water main failures.

continued on page 14

continued from page 13 - cincinnati

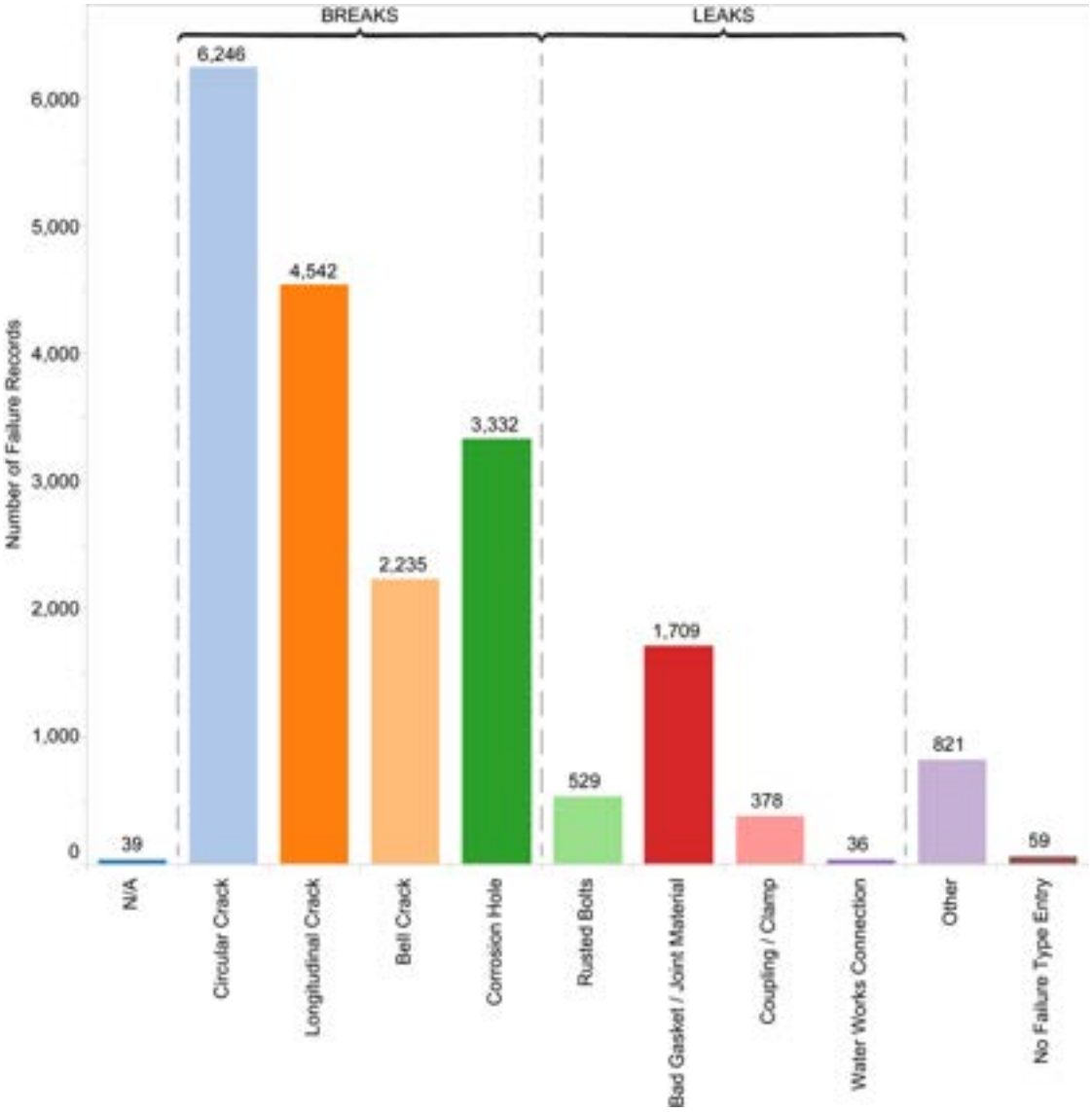
OTHER FINDINGS

For purposes of this study, failures were classified as either breaks or leaks as follows:

- Breaks – Circumferential cracks, longitudinal cracks, bell cracks, and corrosion holes
- Leaks – Joint leaks due to rusted bolts or failed gaskets/joint material, leaks at couplings or clamps, and leaks at connections between two pipelines (e.g. tee, tapping sleeve, etc.).

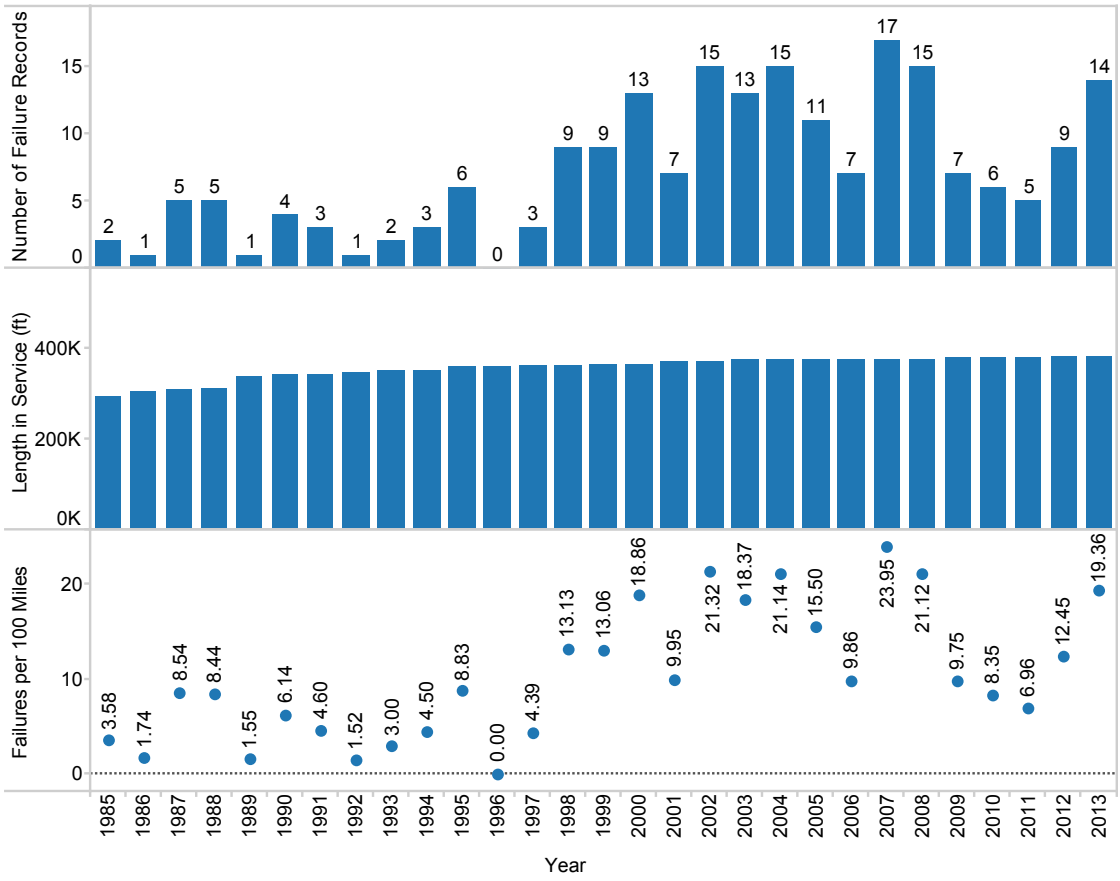
An unexpected finding of the study was that, among known failures, water main breaks occur much more frequently than leaks, with five times as many break records as leak records in recent years (Figure 9). Also, the majority of the failures (greater than 54%) were circumferential or longitudinal cracks, and fewer than 20% of failures were attributed to corrosion.

Figure 9. GCWW Water Main Failures by Failure Type



Although most pipe classes have followed the overall trend of decreasing failure rates, there are some exceptions. Figure 10 shows one example of a community where the failure rate has actually increased in the last couple years.

Figure 10. Atypical Water Main Failure Trends for an Example Community



RECORDKEEPING AND OTHER BEST PRACTICES

Through this evaluation, the importance of compiling accurate, complete, and consistent records of all pipe failure incidents was very apparent. These records are essential to a proper understanding of historical failures, risk factors, and the effects of WM replacement efforts. Not only do these records allow a utility to identify and understand the pipe attributes and risk factors that most influence pipe failure rates in its system, but they also provide the means by which to analyze the impact of WM replacement efforts over an extended period of time. In order to manage the data most efficiently and ensure maximum usefulness, each failure record should include at least the following information:

- Failure date
- A unique Failure ID
- GPS coordinates
- Unique pipe Asset ID (e.g. from GIS or CMMS)
- Classification of failure, using standardized terminology
- Pipe attributes

continued on page 16

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Some other lessons learned through this evaluation were: 1) water main replacement should not be prioritized based solely on pipe age, 2) don't be misled by the quantity of failures in a certain pipe class, when that pipe class represents a majority of the system—i.e. consider failure rates, and 3) it's important to identify and track all costs for emergency repairs in order to weigh these costs versus the cost of main replacement.

THE FUTURE

GCWW has already successfully used the results of their WMRP effectiveness evaluation to influence their WMRP budgeting process and refine the process by which WMs are targeted and prioritized for replacement. The findings of this study will help maintain ongoing support for the WMRP and improve the program's efficiency. As budgets allow, future activities to enhance the study may include:

- Investigate pipe classes with above-average failure rates.
- Investigate pipe classes with a recent increase in failure rate.
- Investigate how system and operational changes have impacted failure rates.
- Investigate the impacts of pipe rehabilitation on failure rates.
- Estimate failure curves for major pipe classes.
- Assess risk of failure (i.e. likelihood and consequence) for individual water mains.
- Determine target level(s) of service and key performance indicators related to main failures and replacement efforts.
- Predict long-term water main replacement funding needs.

ACKNOWLEDGEMENTS

The authors would like to thank Greater Cincinnati Water Works and its staff (past and present) for their involvement in providing extensive documentation and anecdotal information, as well as compiling and validating copious data, all of which helped to make this study a success.

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You are Invited to Attend!

Make plans to attend the 77th Annual Ohio Section AWWA Conference and Expo September 15 – 18, 2015, at the new Cleveland Convention Center and the Cleveland Marriott Downtown at Key Center. We hope you will take advantage of this opportunity to network with and learn from the best in Ohio's Drinking Water community.

An excellent technical program will highlight the latest trends and accomplishments in Distribution System Management, Water Quality, Treatment Techniques, Planning and Asset Management, Research, Capital Projects, Regulatory Compliance and System Operation. A half day plant tour will highlight the recent capital improvements and techniques used at Cleveland Water's Garrett A. Morgan Water Treatment facility. An expansive expo area featuring the industry's top Consultants, Suppliers and Distributors showcasing the latest equipment and services awaits your perusal in the new Cleveland Convention Center, where you will also have the opportunity to cheer on your favorite competitors in our annual Tapping, Meter Madness, Top Ops and Water Taste Tests.

A variety of networking events await your participation and enjoyment, whether on the golf course or at Bar Louie on Tuesday, the MAC Luncheon and Mixer on Wednesday or the Reception and Gala on Thursday. Our Water Spouses won't be left out either as they will have the opportunity to explore a number of venues throughout the Greater Cleveland area, including the Rock and Roll Hall of Fame, Cleveland Botanical Gardens, The Cuyahoga Valley Railroad and a sightseeing tour on Lolly the Trolley, as well as some other surprises!

Dan Barr
Chair, Ohio Section AWWA

Melinda L. Raimann
Planning Committee Co-Chair

Paula Morrison
Planning Committee Co-Chair

PRELIMINARY SCHEDULE

TUESDAY, September 15, 2015

8:30 am – 6:00 pm	Golf Outing – Sweetbriar Golf Course
7:00 am – 10:00 pm	Registration – Marriott
9:00 am – 12:30 pm	Morgan Plant Tour
9:30 am – 4:00 pm	Research Workshop-Marriott
3:00 pm – 5:00 pm	Exhibit Setup – Convention Center
7:00 pm – 10:00 pm	Welcome Gathering – Bar Louie's

WEDNESDAY, September 16, 2015

6:00 am – 7:00 pm	Registration – Marriott
7:30 am – 9:30 am	Exhibit Setup – Convention Center
8:00 am – 10:00 am	Kick-Off Breakfast & Awards – Marriott
9:30 am – 4:00 pm	Spouse/Guest Program
10:00 am – 5:00 pm	Exhibit Expo Open – Convention Center
10:00 am – 5:00 pm	Tapping, Top Ops, Taste Competitions
12:30 pm – 2:00 pm	MAC Luncheon in Exhibit Hall
5:00 pm – 7:00 pm	MAC Mixer & Awards – Exhibit Hall
5:00 pm – 7:00 pm	Meter Madness

Marriott Downtown at Key Center
127 Public Square
Cleveland, Ohio 44114
216.696.9200

THURSDAY, September 17, 2015

7:00 am – 6:00 pm	Registration – Marriott
8:00 am – 11:45 am	Technical Sessions – Convention Center
8:00 am – 3:30 pm	Spouse/Guest Program
12:00 pm – 2:00 pm	Business Luncheon & Awards - Convention Center
2:00 pm – 4: 30 pm	Technical Sessions – Convention Center
6:00 pm – 7:00 pm	Reception- Marriott
7:00 pm – 9:00 pm	Gala & Awards – Marriott

Cleveland Convention Center
300 West Lakeside Avenue
Cleveland, Ohio 44113
216.928.1600

FRIDAY, September 18, 2015

7:00 am – 10:00 am	Registration – Marriott
7:00 am – 8:00 am	Awardees Breakfast – Marriott
8:00 am – 11:45 am	Technical Sessions – Marriott
9:30 am - 12:00 pm	Spouse/Guest Program
10:00 am – 12:00 pm	Governing Board Meeting – Marriott

SPOUSES & GUESTS

WEDNESDAY, September 16, 2015 **Board Bus at 9:30 a.m., Return at approximately 4:00 p.m.**
Rock N Roll Hall of Fame
Lunch at the House of Blues
Lolly the Trolly Tour of Cleveland

THURSDAY, September 17, 2015 **Board Bus at 8:00 a.m., Return at approximately 3:30 p.m.**
Cuyahoga Valley Scenic Railroad
Lunch at the Cleveland Botanical Gardens
Cleveland Botanical Gardens Tour

FRIDAY, September 18, 2015 **Board Bus at 9:30 a.m., Return at approximately 12:00 noon**
Playhouse Square Tour

PRE-CONFERENCE WELCOME GATHERING

It's time to touch base with all your Water Industry friends and start the Ohio Section Annual Conference off on a social note! Come join us at Bar Louie on Tuesday, September 15th from 7:00 – 10:00 pm for three hours of meeting and greeting old friends and new. You'll be provided with lots of tasty hors d'oeuvres and a fun atmosphere a short walk away from the Marriott in the heart of the popular Cleveland Warehouse District. This event is expected to sell out quickly – so get your ticket to fun early! Early registration is $40 until August 15. If any spots are left open, the price will rise to $50 beginning August 16.

WATER PLANT TOUR

The Garrett A. Morgan Water Treatment Plant was originally called The Division Avenue Pumping and Filtration Plant. The facility was constructed in 1916 on the site of the original Cleveland Water System of 1856. The plant was rededicated in 1991 in honor of the inventor (Garrett A. Morgan) who successfully rescued several workers trapped by toxic fumes while digging the intake tunnel. Garrett A. Morgan WTP has an Ohio EPA approved capacity of 150 MGD. Recent renovations and upgrades include a new finished water pump station, a new 15 MG reservoir, a central chemical facility, basin chain & flight sludge collectors, residuals handling/storage, and raw water pump station improvements. The Plant Tour will be held on Tuesday, September 15.

PRE-CONFERENCE RESEARCH COMMITTEE WORKSHOP

The Research Committee continues its tradition of offering a high-quality pre-conference workshop this year. Come hear about some of the latest Research and take the opportunity to learn from your fellow water professionals in this value added workshop. The full agenda and total number of contact hours will be published on the Ohio Section AWWA website, oawwa.org when speakers have been finalized.

GOLF OUTING REGISTRATION

Golf Team Contact Name _____

Company Name _____ Title _____

Address _____

City _____ State _____ Zip _____

Email: _____ Phone# _____

Golf Outing, Tuesday, September 15, 2015 at Sweetbriar Golf Course

	Early registration (By August 15)	Late Registration (Starting August 16)	
Team of Four Golfers	___ x $360 per team	___ x $400 per team	= _____
Individual Golfers	___ x $90 each	___ x $100 each	= _____
Hole Sponsor	___ x $200 each		= _____
Refreshment Sponsor	___ x $150 each		= _____
Prize Sponsor	___ x $125 each		= _____
		TOTAL DUE	_____

Golfer Names (Please print)

1. _____ 2. _____
3. _____ 4. _____
5. _____ 6. _____
7. _____ 8. _____

Form of Payment

___ Check #_____ **Make Checks payable to OAWWA**

___ Credit Card [ ] Visa [ ] Master Card [ ] AMEX [ ] Discover

Name on Card _____

Credit Card Number_____ Expiration Date _____ 3 digit CVV code _____

Authorized Signature_____

Send Registration form and payment to:

Dallas Williamson, Ohio Section AWWA Manager
17 S. High Street
Suite 200
Columbus, OH 43215
614-221-1900
Fax: 614-221-1989
oawwa@AssnOffices.com

2015 REGISTRATION CATEGORY EXPLANATIONS

The early registration deadline is August 15, 2015. Your AWWA membership number is required on the registration form to qualify for the member rate. To obtain the retiree rate, you must be recognized as a retiree on your AWWA membership. To obtain the student rate, a current student ID is required. Your receipt will be in the registration packet at the conference.

Full Registration: This includes Technical Sessions (Thursday and Friday), the Exhibits & Educational Tours, the Kick-Off Breakfast, The MAC Luncheon and Mixer, the Business Luncheon, and the Annual Reception & Gala. The Research Committee Workshop, Plant Tour, Golf and Tuesday's Social event are not included.

One-Day Registration (Wednesday): This includes the Kick-Off Breakfast, the Exhibits & Educational Tours, and the MAC Luncheon and Mixer.

One-Day Registration (Thursday): This includes the Technical Sessions, The Business Luncheon, and the Annual Reception & Gala.

One-Day Registration (Friday): This includes the Friday Technical Sessions.

Full Spouses/Guest Program: This includes all Spouse/Guest Activities and Tours, The Hospitality Suite, the Kick-Off Breakfast, The MAC Mixer and the Annual Reception & Gala.

Limited Spouse/Guest Program: This includes all Spouse/Guest Activities and Tours, the Hospitality Suite and the MAC Mixer. It does not include the Kick-Off Breakfast, Business Luncheon or the Annual Reception & Gala.

Research Committee Pre-Conference Workshop: This includes the technical program, lunch and break refreshments. This workshop has an additional fee and is not included in the Full Conference Registration package.

Water Plant Tour: This includes a technical tour of the Garrett Morgan Water Treatment Plant, transportation to and from the water plant, and refreshments at the plant. This tour has an additional fee and is not included in the Full Conference Registration package.

Budget Options: This includes the technical sessions for the day selected or for the entire conference (Wednesday – Friday), as well as break refreshments. It does not include any meal functions, mixers or receptions.

Exhibitor Registration: This includes Exhibit booth fees for three persons working the booth, three MAC Luncheon Tickets, three Technical registrations, six MAC Reception tickets and a $25.00 donation to Water for People. Further information is available in the Exhibitor Registration Packet.

ATTENDEE REGISTRATION

Submit to: Ohio Section AWWA, 17 S. High St., Suite 200, Columbus, OH 43215

First Name	Last Name	Suffix
Company Name	Title	
Address		
City	State	Zip
Email	Telephone	
Member of AWWA? Yes No # _____	Spouse/Guest name (if attending)	
Please note any dietary restrictions:		

Conference Registration	**Registration Type**	**By Aug. 15**	**Begin Aug. 16**	**Row Total**
Full Conference	Full Conference Member	$295	$345	
	Full Conference Nonmember	$395	$445	
	Full Conference Retired Member	$200	$235	
	Full Conference Retired Nonmember	$300	$335	
One Day Registration – Wednesday Only	Weds. Only Member	$170	$195	
	Weds. Only Nonmember	$220	$245	
One Day Registration – Thursday Only:	Thurs. Only Member	$170	$195	
	Thurs. Only Nonmember	$220	$245	
One Day Registration - Friday Only	Fri. Only Member	$ 90	$115	
	Fri. Only Nonmember	$100	$115	
Full Spouse/Guest Program	Spouse/ Guest Program & 3 Events	$195	$245	
Ltd. Spouse/Guest Program	Spouse/Guest Program only	$140	$190	
	Extra Weds. Kick Off Breakfast Ticket	$ 40	$ 50	
	Extra MAC Luncheon Ticket	$ 45	$ 55	
	Extra MAC Mixer Ticket	$ 55	$ 65	
	Extra Business Luncheon Ticket	$ 50	$ 60	
	Extra Thurs. Reception & Gala Ticket	$75	$ 85	
Preconference Workshops, Events & Tours (select one if attending)				
Research Comm. Workshop:	Workshop - Member	$ 85	$110	
	Workshop - Nonmember	$135	$160	
	Workshop - Student (ID req'd)	$ 45	$60	
Water Plant Tour: 1/2 day	Morgan Plant Tour	$ 35	$ 50	
Preconference Social Event	Bar Louie – Food & Networking	$ 40	$ 50	
Budget Options – No Food, Beverages or Events Included				
Technical Program:	Weds. Expo & Ed. Tours Member	$ 50	$ 75	
	Weds. Expo & Ed. Tours Nonmember	$ 80	$105	
	Thurs. Tech. Sessions Member	$ 75	$100	
	Thurs. Tech. Sessions Nonmember	$110	$135	
	Fri. Tech. Session Member	$ 50	$ 75	
	Fri. Tech Session Nonmember	$ 80	$105	
	Full Technical Program Member	$160	$185	
	Full Technical Program Nonmember	$190	$205	
	Full Technical Program Student	$ 50	$ 75	
		TOTAL AMOUNT DUE		

Tickets will be taken for the events below: Indicate which events you plan to attend		**Form of Payment (Payable to OAWWA)**	
Included in Full & Weds. Reg.	Included in Full & Thurs. Reg.	( ) Check #	( ) P.O. #
( ) Kick Off Breakfast	( ) Business Luncheon	( ) Credit Card Type of Card:	
( ) MAC luncheon	( ) Reception & Gala	Name on Card	
( ) MAC Mixer		#: Exp: CCV:	
		Signature	

EXHIBITOR INFORMATION

Place:	Cleveland Convention Center, OH Telephone: 216-928-1600
Hours of Operation:	Wednesday, September 16, 2015 10:00 a.m. to 5:00 p.m.
Shipping:	Exhibit shipments will be received by the General Services Contractor. Information to be provided.
Set-up Hours:	Tuesday, September 15, 2015 3:00 p.m. to 5:00 p.m. Wednesday, September 16, 2015 7:30 a.m. to 9:30 a.m.
Exhibit Removal:	**All exhibits must be removed Thursday September 17, 2015 by 11:00 AM.**
Booth:	10'X10' Booth, carpeted with pipe & drape, skirted table, two chairs, sign w/Exhibitor name.
Exhibitor Fees:	**$625.00 By June 30, 2015** **$725.00 After June 30, 2015** **Additional Booth Attendee: $95 by June 30,2015; $110 after June 30, 2015** **Limited Booth Attendee: $30 by June 30, 2015; $40 after June 30, 2015.**
Return your check, payable to **Ohio Section AWWA**, with a signed contract to:	
	Ohio Section AWWA Exhibits ATTN: Dallas Williamson, Ohio Section AWWA Manager 17 S. High Street Suite 200 Columbus, OH 43215
Exhibit fee includes booth plus Exhibit day registrations, lunch, Mixer tickets and MAC social activities fee for three (3) Exhibit booth attendees, three (3) Technical conference registrations, and $25 donation to Water for People. Additional booth attendees $ 95.00 ($110 late) with items above included, $ 30 ($40 late) for booth attendee only. There are additional fees for electric, internet, phone, water, etc. Fees to be furnished in the exhibitor's packet.	
Registration Deadline:	**August 28, 2015**
For Information:	Ken Rogozinski, 2015 Exhibits Chair BissNuss, Inc. Phone: 440-871-8394 Fax: 440-871-2526 krogozinski@bissnussinc.com
All Exhibits are in conjunction with the Manufacturers/Associates Council (MAC) of the Ohio Section AWWA.	

Exhibitor Registration

The undersigned Tabletop Exhibitor (hereinafter referred to as the Exhibitor) hereby agrees to participate in the Tabletop Exhibits at the Ohio Section AWWA Conference, Wednesday, September 16, 2015 as described herein and in the Exhibitor information. The Exhibitor agrees to pay the designated Exhibitor's registration fee of $625 postmarked by June 30, 2015, or $725 postmarked after June 30, 2015. The Exhibitor also agrees to all terms of the "Liability and Responsibility" clause, which is part of this contract. In the event that an Exhibitor wishes to cancel the contract and forfeit the exhibit space, a full refund of the registration fees will be made up to August 14, 2015. No refunds will be made after that date.

Liability and Responsibility

By signing this contract, the Exhibitor agrees to assume full liability and responsibility for any and all injuries, losses, damages, claims, or expenses (including attorney fees) arising from injury or damage to Exhibitor's displays, equipment, and other property brought upon the Cleveland Convention Center premises. The Exhibitor shall indemnify and hold harmless the Ohio Section AWWA (OAWWA), the Cleveland Convention Center, the City of Cleveland, and the officers, agents, servants, members, and employees of each organization for any and all injuries, losses, damages, claims, and expenses.

The Exhibitor also agrees to hold harmless the OAWWA, the Cleveland Convention Center and the City of Cleveland for any and all injuries, losses, damages, claims, or expenses (including attorney fees) that may occur to the Exhibitor, the Exhibitor's employees or property, or to any other person or property by reason of the Exhibitor's use of the exhibition facilities prior to, during, or subsequent to the period covered by this contract and agrees to expressly release OAWWA, the Cleveland Convention Center and the City of Cleveland from such liability.

The indemnification obligation set forth shall be void as to an indemnitive, including its officers, agents, servants, members, and employees whose negligence or willful misconduct was the sole cause of the incident given rise to the injury, loss, damage, or claim. This indemnification shall not be limited in any way by limitation on the amount or type of damages, compensation, or benefits payable by or for the Exhibitor under workers compensation acts, disability benefit acts, or other employee benefit acts.

The exhibition event is scheduled from 10:00 AM to 5:00 PM on September 16, 2015. It is mutually agreed that **it is the duty and responsibility of each Exhibitor to install their exhibit before the opening of the exhibition event** and to dismantle their exhibit after the exhibition event closes according to the Exhibitor's Information section contained in the prospectus. **Under no circumstances shall an Exhibitor dismantle their exhibit before the closing of the exhibition event (5:00 PM on September 16, 2015) without prior permission of the Conference Exhibition Committee.**

Contract acceptance signature X_____ **Date: / / 15**

EXHIBITOR (please print)

Name:_____ Title: _____

Company:_____ AWWA Member No.:_____

Address _____

City _____ State:_____ Zip: _____

Phone: ( ) - FAX: ( ) - Email:_____

Individuals to receive Exhibitor Registration
Please designate primary onsite contact with an X
[ ] (1)_____
[ ] (2)_____
[ ] (3)_____

METHOD OF PAYMENT: [ ] Visa [ ] Master Card [ ] AMEX [ ] Discover 3 digit CVV code _____

Card No:_____ Expiration Date:__/_____ Name on Card:_____

Authorizing Signature:_____

Check No.:_____ Total payment submitted: $_____ Date:____/___/_____ 2015

Conference Exhibit Chair: Ken Rogozinski krogozinski@bissnussinc.com (440) 871-8394

TOP OPS

Calling all District Teams! Do you have what it takes to be crowned the Ohio Section Top Ops Champion for 2015 and go on to Chicago in 2016? The annual competition will be held on Wednesday, September 16, 2015 and will feature the winners of the summer District meeting competitions. Contact Mike Gradoville at mgrdoville@aymcdonald.com or Kevin Gleich at kgleich@columbus.gov for more information.

SPONSORSHIP OPPORTUNITIES

Here is your opportunity to get your name, product and services out to professionals in the water and wastewater industry in Ohio. Sponsorship of the 2015 Ohio Section AWWA Annual Conference recognizes your company as an Industry leader and entitles the Sponsor to recognition in all Conference Material, including programs and signage at each event, recognition at the Opening Session, and on the OAWWA website.

Sponsor Levels:

( ) $1500 Platinum ( ) $1250 Gold ( ) $1000 Silver ( ) $750 Bronze

A limited number of event specific sponsorships are also available at a variety of levels. If you are interested in one of these premier sponsorships, please contact Melinda Raimann, Conference Planning Co-Chair, at 216-664-2444 extension 5638 or by email at melinda_raimann@clevelandwater.com.

Sponsorship Registration

Amount of Sponsorship: _____

Firm Name: _____ Contact Name: _____

Address: _____

City: _____ State: _____Zip: _____

Phone: _____ Fax: _____

Email: _____

( ) Check is enclosed, Payable to Ohio Section AWWA

Return Form with payment to:

Ohio Section AWWA – Sponsorship
ATTN: Dallas Williamson
17 S. High Street, Suite 200
Columbus, OH 43215

Ohio Section AWWA Annual Conference Educational Exhibit Tours

A Unique Opportunity to Explain Your Product and/or Services and Help Attendees Earn Contact Hours or Continuing Education Credit At Your Booth.

On **Wednesday, September 16, 2015** during the Ohio Section Annual Conference in Cleveland, exhibitors will have a unique opportunity to showcase their products or services and help attendees**., Ohio EPA Certified Operators, Registered Sanitarians and Professional Engineers** need to earn contact hours (subject to OEPA approval) or continuing education credits. Presenters are sought to cover highlights of products, services, or solutions that they provide. Each presenter will be allowed 15 minutes to speak **at their booth**. Guided groups of attendees will visit booths at scheduled intervals. In order to obtain approval from OEPA, the presentation must be educational in nature. To participate, please complete and submit the below form by **Friday, August 14, 2015.**

PLEASE PRINT

1st Presenter Name: _____ Title:_____
2nd Presenter Name: _____ _____ Title: _____
Company Name: _____
Mailing Address: _____
City: _____ State: _____ Zip: _____
Phone: (_____) ____ - _____ Fax: (_____) ____ - _____
Email Address: _____

Please check **only one** topic below to indicate the subject of your presentation:

( ) Distribution System	( ) Tanks	( ) Safety Equipment
( ) Water Treatment Equipment	( ) Pipes	( ) Chemicals
( ) Lab	( ) Hydrants	

Applicable toward **(check all that apply):**

( ) Water Operators	( ) Wastewater Operators
( ) Registered Sanitarians	( ) Registered Engineers

For additional requirements please contact:
Dallas Williams
Ohio Section AWWA Professional Services Manager
17 S. High Street, Suite 200
Columbus, Oh 43215
oawwa@assnoffices.com

NOTE: YOU MUST BE AN EXHIBITOR TO PARTICIPATE IN THE EDUCATIONAL EXHIBIT TOURS

COMMITTEES & COUNCILS

Planning to meet at the 2015 Ohio Section Annual Conference? Reserve Your Meeting Room Now!

Committee/Council: _____
Chair: _____ Anticipated Attendance: _____
Contact Info for Chair: _____

Please select 1st and 2nd choices for your Committee/Council Meeting

_____ Tuesday, September 15 _____ Wednesday, September 16
_____ Thursday, September 17 _____ Friday, September 18

Preferred Time:
____ 8:00 – 10:00 _____ 9:00 – 11:00
____ 10:00 – 12:00 _____ 1:00 – 3:00
____ 2:00 – 4:00 _____ 3:00 – 5:00

Deadline for requests for Council/Committee Meetings is August 15, 2015.
Please return your meeting requests to Melinda Raimann by fax at 216-664-2378 or by email at melinda_raimann@clevelandwater.com

Planning on an Exhibit?
Please submit the exhibitor registration form to reserve your space. Enter your Committee/Council name as the Company Name. All requests will be filled on a first come, first served basis.

COMPETITIONS

2015 OHIO SECTION AWWA TAPPING CONTEST

The Ohio Section Tapping Committee would like to invite Ohio Water Utilities to send a tapping team to the Section Tapping Contest. This year's contest will be held on Wednesday, September 16th in Cleveland. The winner of our Section contest will be given the opportunity to represent the Ohio Section at the Annual Conference & Exhibit (ACE) in Chicago, June 19 – 22, 2016.

Tapping Contest Entry Form **____ Men's Tapping Contest** **___ Women's Tapping Contest**
Utility Name: _____
Contact Name: _____
Address: _____
City: _____ State: _____ Zip Code: _____
Phone: _____ Fax: _____
E-mail: _____

To register your team for this event, please complete this form (one form per team) and submit by **August 17, 2015** to:

Mike Gradoville
190 Newport Dr.
Youngstown, OH 44512

e-mail: mgradoville@aymcdonald.com
fax: 330-266-7622

The winners of the District Competitions at the April Southern Ohio Utility EXPO (SE & SW) and the Northern Ohio Water & Wastewater EXPO (NE & NW) will compete head-to-head during the MAC Mixer on Wednesday, September 16, 2015. Come cheer on your District champion as they compete to represent the Ohio Section at the Annual Conference & Expo (ACE) in Chicago in June 2016.

For more information please contact Mike Gradoville at mgradoville@aymcdonald.com

BEST OF THE BEST – Ohio Section Water Taste Test

Date: Wednesday, September 16, 2015
Time: Afternoon
Location: Exhibit Hall

Entry forms must be received by July 31, 2015. Water samples are to be dropped off at the Exhibit Hall between 10:00 - 11:30 AM the day of the Competition. Two samples should be brought, each in approximately a 1-liter container. The suggested container is a glass, Teflon-capped container with no air at the top. Each container must clearly identify the name of the water system. **All participants must be a Member of AWWA, with no state or federal drinking water violations (MCL, monitoring, recordkeeping, etc.) during the previous calendar year.**

Official Water System Name	
Water System Address	
Contact Name	
Contact Email	
On Site Representative and mobile phone number	
Treatment and Source Water (for informational purposes only – will not be made available to judges)	
By signing the box to the right, you certify that the water will not been altered, and that the water will be potable for consumption.	

Submit entry form to Cliff Shrive at cliff.shrive@stantec.com or by fax at 513.842.8274.
Phone 513-824-6744 Mobile 513-646-4886

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Putting a Round Plug in a Square Hole

Capt. Travis M. Clower, MBA, PE, Owner of Integrity Aquatic, LLC

Being a diver for the past 24 years, I've been asked numerous times how to fix leaking joints in pipes and conduits. I normally respond back with a dozen more questions such as:

How bad is the leak? Can you drain the pipe/conduit? How long can it be shut down? How far up in is the leak, 50 feet or 500 feet? What does it have in it, potable water, raw water or sewer water? If it can't be shut down, is there flow? What is the access like? What material is the pipe/conduit made of? What is the budget? Does the pipe/conduit see any type of dynamic loading like a nearby road? And a new question that I will be asking from NOW ON, "What time of year are you planning on doing these repairs?" We'll talk about that more later on.

An Ohio water treatment plant asked me this same question about their leaking conduit joints in 2012. Surprisingly I must have portrayed myself as being semi-intelligent about the topic (that doesn't always happen). The plant and a nearby engineering firm invited my company back in 2013 to perform underwater inspections of all their underground conduits and clearwells. This particular water treatment plant, its underground conduits and clearwells were constructed at various times from 1941 to 1976. The concrete conduits connecting the plant to the clearwells and the high service pump building were either 5-foot square or 54-inch square and are the focus of this article.

The plant's staff was well aware of some of the leaks prior to our dive inspection. The swampy area in the middle of the dry field was a dead giveaway for one of them. The others were not so obvious. Some of the older maintenance guys even joked about how, "Those conduits have leaked since the day they were put in." At first I thought he was kidding and later found out he was serious. The smaller leaks are identified underwater using food coloring dye. Once the flow in the conduit is stopped or slowed down, the food coloring is squirted around the leaking joint by the diver. If squirted anywhere close to a leak, the dye will point directly to it. The same approach works for leaking clearwells, water storage tanks and your backyard swimming pool.

In the summer of 2013 after a few weeks on site and a couple of miles of swimming, five damaged leaking conduit joints were identified. Because it was potable water, everything to enter the water including the divers' drysuits and helmets needed to be cleaned and disinfected daily per AWWA C652-92. The quantity of finished water lost through these leaks, 24 hours a day, 7 days a week, year after year is staggering. In addition to the water leaking out, untreated ground water was leaking into two of the conduits. Repairs were needed to "stop the bleeding". Unfortunately whoever performed these repairs would need to do so while the conduits were filled with water. 40+ years ago water plants would typically drain the conduit and send some brave sole (the new

guy) crawling hundreds of feet up the conduit with a bucket of mortar or a tube of calking from the local hardware store to do a temporary, band aid repair. This was prior to the days of formal confined space training and NSF-61 standards. To their credit, I see a lot of these repairs in water plant conduits and some are still working well.

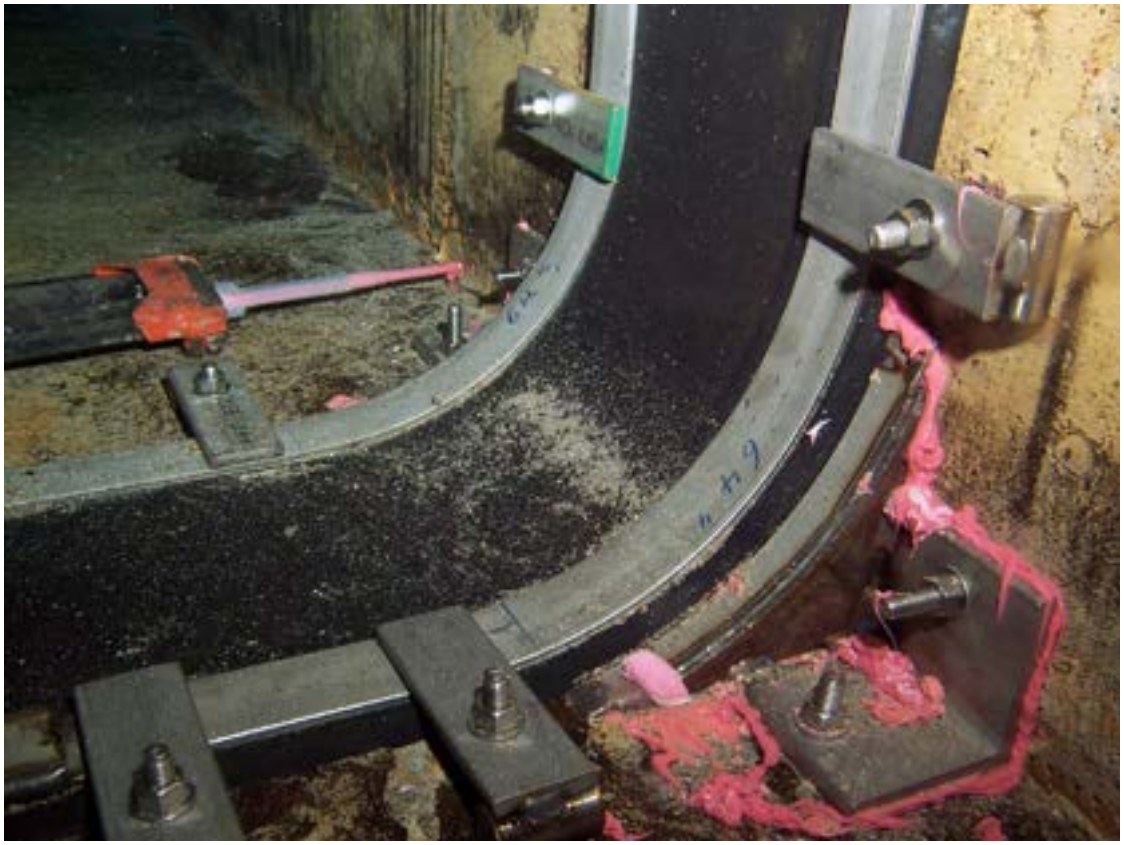
The next step in the process was for the engineering firm to design repairs, create plans and specs and to put the project out for bid. Usually this is the end of our participation.

However unlike other projects, this engineering firm chose to keep us involved with the design phase. They welcomed our input and implemented many of our suggestions about the reality of what could or could not be done underwater. My hat is off to them.

Working together we came up with installing HydraTite internal EPDM rubber joint seals made by HydroTech Engineered Products of Cincinnati, Ohio. These rubber seals are successfully used to cover leaking joints in cylindrical pipes. The rubber seal is compressed against the smooth, curved walls of the pipe using stainless steel retaining bands and a hydraulic expander. Once the retaining bands are expanded, wedges are installed in the gaps and bolts are tightened up to hold the assembly in place. Photos of all of these parts are attached. It sounds pretty straight forward and simple, right? What about the corners? In addition to the round pipes, the seals have been used above water in rectangular shaped culverts with 45-degree corners. In these cases additional anchor bolts were installed in the flat sections and the corners were rounded with epoxy or grout. This would be the "maiden voyage" for a square conduit with sharp corners installed completely underwater. The engineering firm again impressed me by suggesting the use of pre-fabricated stainless steel radiuses in the corners.

continued on page 40

continued from page 39 - round plug, square hole



This would give the stainless steel bands a curved surface to press the rubber liner against creating a tight seal. A total of eight radiuses were needed for each liner, four on either side of the joint.

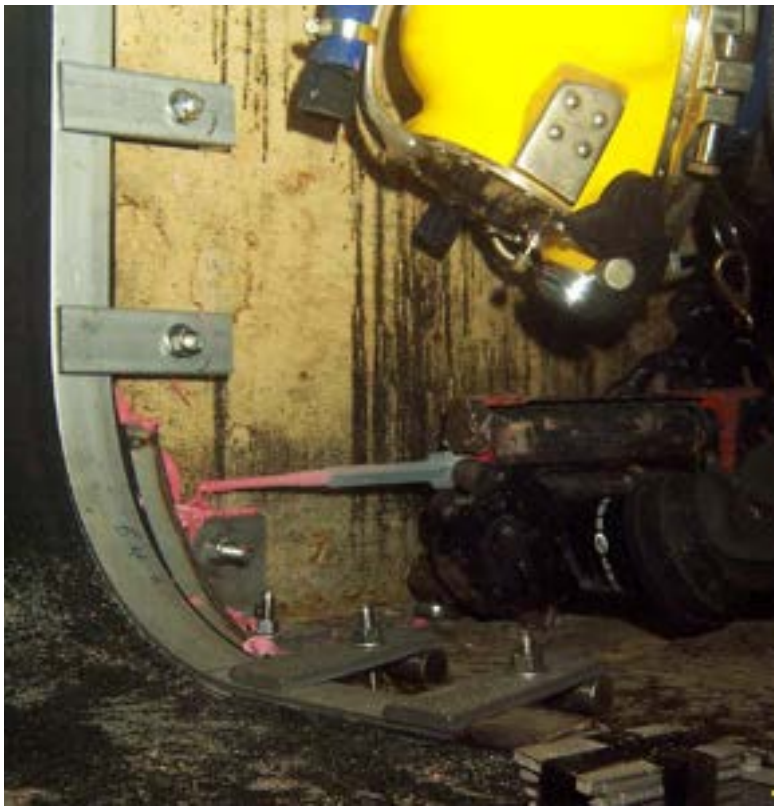
When the job was advertised I said to myself, "We've done the inspection and helped with the design of repairs. It would be a shame not to be the divers who did the actual repairs." It was an interesting project that we wanted to be involved with. I bid the job and won.

Before the HydraTite seals could be installed some of the spalled concrete at the joints needed repaired. The divers cleaned the loose concrete from the damaged areas, cleaned the corrosion from the exposed reinforcing steel and installed steel forms. The concrete was pumped into the forms and filled the voids on the floors and walls well. One of the conduit joints had a honey-combed area at the ceiling drawing a large amount of water. Several unsuccessful attempts were made to pump the concrete into this small void on the ceiling but the material kept getting sucked out.

Bureaucracy and red tape held up ordering the internal joint seals. The warm summer weather came and went. Fall brought a bitterly cold November with snow and air temperatures in the mid-teens along with a water temperature of 36 degrees F. Someone finally placed the order and guess what showed up? You've got it, 5 HydraTite internal joint seals. Perfect conditions to start a dive project! In the cold water commercial divers usually use a special wet suit flooded with hot water. The hot water is supplied through a hose from a diesel water heater on the surface. The divers keep warm and they are able to focus and be productive. Unfortunately this was not an option in the potable water. The divers' bodies needed to be isolated from the water with drysuits. My list of divers eager to go swimming just shrunk.

After the materials arrived, HydraTech's engineer provided onsite "dry run" training for my crew. A 54-inch plywood box was built to simulate the conduit. The photo taken during the training shows the simulated plywood conduit, the rubber seal, the stainless steel retaining bands, the wedges, and the hydraulic expander. As you can see, there were a lot of small light parts in the assembly process. That would come back to haunt us later on.

On November 10, 2014 the first pre-fabricated stainless steel radiuses were installed. A thick layer of Hilti RE-500 two part epoxy was applied underwater between the radiuses and the concrete corners. This epoxy filled imperfections in the concrete and helped secure the stainless radiuses to the conduit. Although the Hilti epoxy was not designed for this application, epoxies that can be applied underwater and that are NSF-61 approved for potable water are scarce. The Hilti epoxy worked well and came in an easy-to-use double barrel calking gun. Stainless steel wedge anchor bolts were used to attach the radiuses and the stainless steel bands to the concrete.



Fitting the radiuses in place proved to be difficult at some of the leaking joints. Several of the joints had up to a 1 inch concrete height mismatch. Also four of the radiuses were installed on a curved wall of the conduit. Both situations caused the sharp corners of the radiuses to rub the soft rubber seal potentially damaging it. After a little love with the underwater torch and a lot of concrete chipping, the tedious job of custom fitting the radiuses was complete. It took one day to attach the radiuses for each joint. The epoxy was then given all night to solidify. The following day was devoted to installing the HydraTite internal joint seal. Overall 56 anchor bolt holes were drilled at each leaking joint. The drill ran nonstop for almost 4 hours. While the first diver was drilling the holes on one side, the second diver worked on the opposite side assembling and expanding the stainless steel bands. Each of the two retaining bands had four locations that enabled the retaining bands to be expanded to compress the EPDM seal. Once expanded, wedges were installed locking the bands in place.

The divers worked quickly to keep warm. My dive supervisor (in the heated trailer) kept telling us over the radio, "The heat is in the tools." I'm not sure what that meant as I was cold the whole time! We wore 4 layers of clothes under our drysuits. Remember Ralphie's little brother from the Christmas Story movie who had so many layers of clothes on he couldn't move his arms? Yep, that was us. Now add in thick 3-fingered mittens with tiny 5/16-inch bolts and two dozen other small light parts washing away in a fast moving current. Oh yea, I forgot to tell you that one of the conduits was active with a strong flow that would carry away any small unsecured parts or tools. My list of divers eager to get in the water just shrunk again.

Like all new projects, there was a learning curve filled with 'challenges': the conduit height mismatch, the curved conduit walls, working in the strong flow and dealing with 36 degree F water. Just to name a few. Regardless of the 'challenges', we successfully installed five HydraTite internal joint seals over the leaking joints underwater. Yes, with the right amount of persuasion, 56 anchor bolts and a half dozen tubes of epoxy a round plug will work in a square hole.

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Water Smart: A Framework for Smart Water Network Implementation

Jim Cooper, P.E., Arcadis, Akron, Ohio

SMART – IS IT FOR YOU?

Those familiar with the water sector are aware that a "smart water" tag is common among water innovators. All businesses deliver one or more products, services and processes (PSPs). Many advancements in water sector PSPs are branded as smart water. If only a method existed to quantify the amount of smart in a given product or service similar to an IQ determination.

The smart water concept can be segmented into smart water networks, smart water solutions, and smart water services, for example. Following a convention that smart water is any PSP improving upon status quo through machine learning or numerical modeling, it is one intent of this narrative for each reader to think though their daily responsibilities and act as an entrepreneur by identifying opportunities for innovation, err, smart water, in their work. One example of smart water is the defining of Smart Water Networks. While the definition of smart water is subjective, this example is focused upon to assist in defining the opportunities within an individual's sphere of influence.

Perhaps smart is a buzzword that will fade when PSPs are improved over time until every device that exists is a smart device. Most will agree that innovating will not abruptly end. The question that remains is what will be the next buzzword when smart becomes standard.

TRADITIONAL WATER DISTRIBUTION SYSTEMS

Figure 1. Traditional Water Distribution System Activities

With innovation occurring as a continuum, there are not injudicious water PSPs versus intelligent water PSPs. In actuality, smart can be considered simply as today's unique solutions due to leveraging the latest tools in "very good learning". For these reasons, nomenclature refers to "traditional" and "smart" water distribution systems.

Traditional water distribution systems can be characterized, in part, by four themes:

- Achieving the best possible results (reliability, quantity and quality) with the tools in hand.
- Increasingly difficult to operate and maintain in a resource-limited (workforce and fiscal) environment
- Technology innovations (online sensors, improved equipment and data analytics) are apparent, yet not within reach for many systems.
- Energy and water loss are considered and not easily optimized.

Traditional water distribution systems commonly engage in activities such as reactive maintenance, ever-increasing data collection with minimal data analysis, and planning/operations driven by peak conditions rather than typical conditions.

Commonly, tools are presented to these systems out of logical sequence with the anticipation that all aspects of the available technologies will suddenly congeal into a smart water network. In reality, many of these tools offer overlapping services that further increase the complexity of systems rather than simplifying them.

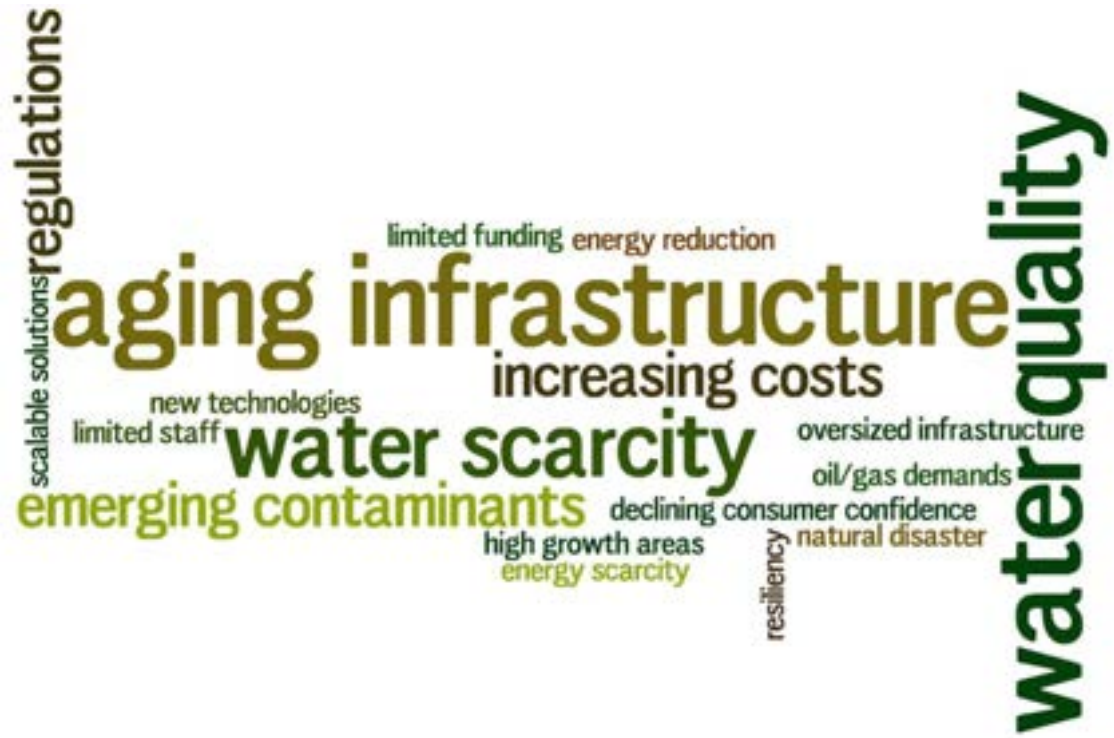
Traditional water distribution systems also frequently participate in non-scalable solutions. A tool that is the perfect fit for a large utility with dedicated design, SCADA and maintenance crews may not an appropriate tool for a utility with few operators who serve process, distribution and collection system roles concurrently. An app that saves operator hours each day by allowing them to input grab sample results into their smartphone will not be worth the investment for a utility with one daily or weekly grab sampling requirement – yet the tools offered at one time (and still in use by many utilities) were the same non-scalable tools.

Smart water may prove to be that answer for traditional water distribution networks – if and only if a clear pathway is defined and followed throughout the smart solutions implementation process.

BUILDING THE CASE FOR MODERNIZATION

Smart water network offerings are commonplace among today's water sector. Smart metering, smart modeling and smart marketing are specific smart water network examples. Considering smart water as a market segment from a business perspective, a 2013 market study reported the smart water management market is expected to grow from $5 billion globally in 2013 to over $12 billion by 2018, a compound annual growth rate of 17 percent (MarketsandMarkets 2013).

Figure 2 Smart Water Drivers



continued on page 50

continued from page 49 - water smart

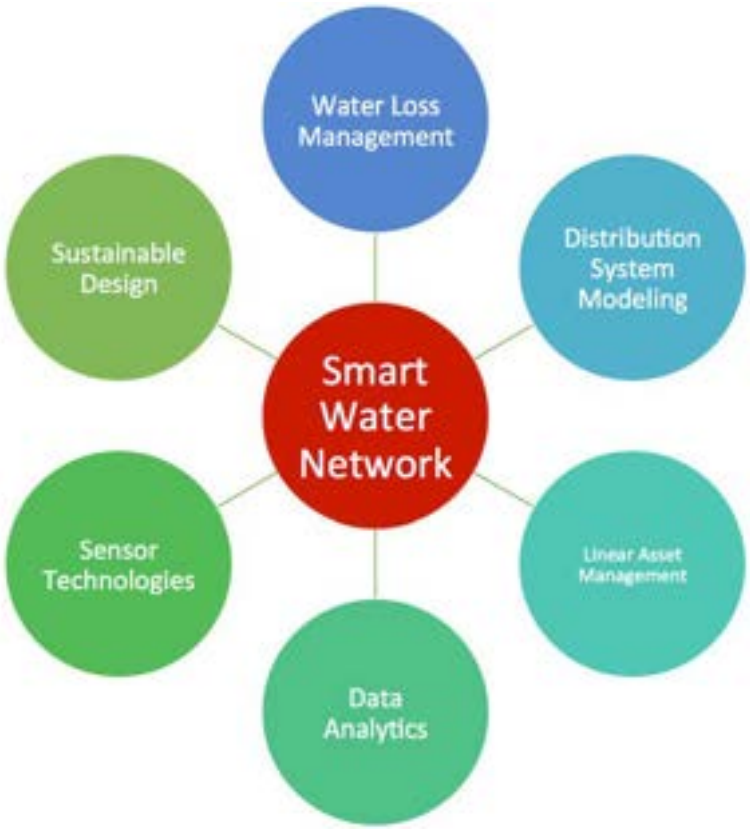
The necessity of modernization is especially clear for operators on the front lines managing, operating and maintaining the infrastructure. It is estimated that repairing and expanding potable water networks in the United States will exceed $1.7 trillion in the next 40 years (AWWA 2012). This is not an issue limited to the United States. Another study concluded of a growing global awareness of the need for modernizing water production, distribution and treatment systems (Navigant Research 2013).

Publications have quantified potential and realized savings due to smart water implementation as a business case. One example publication is Water 20/20 - Bringing Smart Water Networks into Focus (Sensus 2012). While the results appear advantageous, the pathway for identifying, evaluating and implementing smart water solutions for a specific system is not quite clear.

In a traditional water distribution system, many PSPs compete with each other as the single source for system modernization. A need exists to link components and determine areas that can be best-leveraged for a specific utility's benefit resulting in a unified approach to smart water. Developing a knowledge base of the return on investment for implementing smart solutions may catalyze the effort of building the case for modernization.

FROM TRADITIONAL TO SMART WATER NETWORK

Defining a framework for smart water is subjective. A smart solution for one network may be unnecessary for another utility. However, commonalities do exist in the opportunity to apply smart water solutions such as the need to maintain adequate water quality and minimize non-revenue water.



Infrastructure improvement planning is necessary for any sustainable utility. Capital Improvement Plans (CIPs) are a key link in infrastructure planning. Many resources are available to prioritize and plan for upgrades as part of a CIP development. Examples such as evaluation of a distribution system hydraulic or water quality model, or application of a risk-based replacement approach are increasingly utilized as utilities experience the benefits of their use. A similar structure may prove useful when considering smart water technologies. An internal champion of optimization and data-driven efficiency planning has proven successful in developing smart water networks. Development of a Solutions and Innovations Plan (SIP) allows resource-limited organizations the opportunity to consider smart water improvements. As part of a SIP, a gap analysis is performed to identify and pair utility needs with smart technologies. Once identified, a cost-benefit analysis can be performed for each of the smart technologies such as advanced metering infrastructure or real-time modeling and advanced data analytics. Empowered with an SIP, projects can be prioritized on the basis of modernization drivers.

FRAMING THE PATHWAY TO A SMART WATER NETWORK

With new smart technologies going to market nearly every day, customers (i.e. water distribution operators and managers) must be smart when selecting smart technology. This is particularly important with limited financial resources and generally immobile water rates. The use of a framework such as this provides a solid foundation for implementation of these technologies.

CONSIDER THE FOLLOWING THREE-PHASE APPROACH TO SIP:

1. Define Specific Needs

The first task in smart water network implementation is evaluating current practices and identifying pain points throughout the water distribution system. An example might include the delay between grab samples obtained in the field and treatment operators seeing the results such that a process change can be made. Examples might also include a segment of water main that frequently needs repaired, an area with common customer complaints or an increasing amount of non-revenue water (NRW). These are common areas of concern for water distribution systems. It is important to not only identify these, but also quantify them. Recall the definition of smart and the quantification method. Now consider determining an IQ for your water network.

The intent of this first phase is to define specific needs. While smart technologies are appealing, there must be a defined need to support the implementation. With a sufficient number of water systems performing a similar task, determining a water network's IQ will allow a comparison to be made with other water distribution systems such as NRW percentage or water main break rates per mile of pipe. The goal of the water network IQ is to shed light on opportunities for innovation. With concerns identified and quantified, the next task is to consider any links within PSPs that the system may already employ. A feature or tool might exist that simply needs to be polished (i.e. current training) as a solution for one or more pain points identified. The final aspect of this first phase of smart water network implementation is to solidify the core needs of the water distribution system and estimate the return on investment of implementing smart technologies. This is a general estimate based on other system's implementation results. The purpose of this task allows for results-based needs prioritization, or honing in on the low-hanging fruit as the final aspect of defining specific needs.

continued on page 52

continued from page 51 - water smart

2. Invest in Innovation

The second phase of smart water network implementation focuses on actual implementation of smart technologies. Similar to quantifying needs, there must be an implementation pathway to follow and to revert back to in the event of unplanned tangents. This begins with identifying a champion for modernizing the water distribution system. It is common for multiple organizational silos to exist related to a water distribution system such as operations, lab, maintenance, and engineering. If one employee fulfills many of these roles, it's a straightforward selection of the champion. If each of the silos consists of teams of people, the champion must be able to work and relate with people in each one. This leads directly into the next task of investing in innovation which is to identify and leverage any links within the organization. While important, an operator's primary concern during a water main break on a cold Ohio Saturday night is likely not documenting all aspects of the event, rather restoring safe and reliable water service. Months later, lack of data may inhibit a desktop GIS analysis when evaluating the need for water main replacement projects. It is the role of the champion to find a smart solution to capture the data by enabling data collection through smarter means during the main break event. This follows the pathway of smart water networks by removing the silos and leveraging links that positively impact multiple aspects of the water network.

Armed with specific needs and engaged with many team members, the time is now for investment in smart water solutions. Select the area of highest importance (feedback from the silos) and need (refer to water network IQ), then implement the smart technology. Depending on the technology, it may be beneficial to pilot the solution prior to full-scale implementation.

3. Quantify Results

One of the leading tools utilized by thriving business in today's market is machine learning and data analytics. The power of data is catalyzed through data mining and advanced statistical models for improving profit. The third phase of smart water network implementation is quantifying results to drive decisions. Data must be captured before and after implementation of the innovation to quantify its impact. This provides accountability of the technology internally as well as offers an estimate of the return on investment for others in the first phase of smart water implementation. Every SIP project implementation will not go exactly as planned. Next, review the data and make conclusions. Share results of the process and lessons learned. This represents the end of implementation for a smart solution with a focus shifting towards reaping the benefit of it.

Moving forward, the next task is to reevaluate opportunities. Perhaps more than one concern was addressed in the previous SIP project. Update and make it known that your water network's IQ has improved – make the commitment to communicate the improvement and its impact to customers. Finally, return to phase two and make a decision on moving forward with the next highest area of importance.

THE FUTURE OF WATER

Smart technologies must be scalable and address a defined need specific to a water system. For these reasons, a smart water network implementation framework does not focus on specific products, services or processes. However, the author has developed an example smart water network architecture that is a useful starting point for utilities to consider.

It's important to look beyond initial costs of becoming a smart water network. Leveraging increased visibility resulting in an improved value of water for customers is a return that is more difficult to quantify. Costs of inefficiencies are well documented – according to AWWA research in 2012, the average US utility had an annual cost of $5.81 million for non-revenue water, of which up to $2 million can be saved through smart solutions (Peleg 2014). While there is no silver bullet for modernizing our aging infrastructure, maintaining a status-quo approach is not feasible. This is confirmed by studies completed by the Institute for Sustainable Infrastructure (ISI 2012). Implementation of smart solutions have proven to result in cost efficiencies, essentially reducing the financial burden that exists in many communities today.

Resources are available for deviating from the status-quo within the water sector. Perhaps the next step as a water professional in Ohio is to make the decision to continue this discussion.

About the Author: Jim is the discipline leader for water distribution modeling at ARCADIS. He is a Class II Water Distribution Operator and a Professional Engineer. In his free time, Jim is actively engaged in promoting leadership through the Water Leadership Institute, pursuing a doctorate degree focusing on data analytics within the water sector, and serving on the executive committee of the Northeast Section OWEA.

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Cyanotoxin Testing Equipment Grants Available

Based on the harmful algal bloom (HAB) events of last summer, it has become obvious that Ohio's public water systems (PWSs) need a quick and cost-effective means to test their source and finished water for the presence of cyanotoxins (for example, microcystin, cylindrospermopsin and saxitoxin). Having the capacity to analyze samples at the PWS rather than sending samples to an outside lab allows greater flexibility in monitoring and a faster response to any potential finished water detections. Given the dynamic and unpredictable nature of HABs, having this flexibility is critical. Therefore, Ohio EPA's Division of Drinking and Ground Waters established a $1 million grant program to reimburse PWSs for the initial cost of approved equipment, supplies and training for cyanotoxin testing and analysis. The purpose of these grants is to help PWSs increase their technical capacity to complete testing for the presence of cyanotoxins in water.

The grant is available to systems that utilize a surface water source and it must be used to purchase equipment to sample and analyze for cyanotoxins. Grants may be requested for an amount not to exceed $20,000; however, grants may only be requested for testing equipment, supplies and training obtained on or after July 1, 2014. Equipment, supplies and training must be obtained and reimbursement requested within six months of the date on the grant award letter, unless a written extension is granted from Ohio EPA. The following items are eligible for reimbursement.

1. Microtiter plate reader spectrophotometer (ideally linked to computer for software analysis of results).
2. Single- and Multi- (8) channel pipettes, pipette tips, plate covers, reagent basins, vials and glassware.
3. ELISA method test kits for Microcystin (ADDA) and other cyanotoxins.
4. Microscope with an aperture diaphragm (contrast) control, mechanical stage, binocular eyepiece tube, and magnification from 200 times to at least 400 times (10x optic lens and minimum 20x and 40x objective lenses).
5. Datasonde with any or all of the following sensors: Phycocyanin, Chlorophyll, Conductivity, Temperature and pH.
6. Additional equipment associated with datasonde use: wiper system for sensors, handheld device for data viewing and connector cables.
7. Datasonde installation and telemetry. If a datasonde will be mounted to an intake structure or buoy, installation costs and telemetry costs are eligible. Telemetry can include: data logger, cell modem, enclosure, solar panel, regulator, battery and one year subscription to a hosted website. If linking to an existing SCADA system, telemetry can also include adapter, cable and a set of radios for data transmission. Buoy costs are also eligible.
8. Sampling equipment: integrated depth sampler, Van Dorn sampler, Wisconsin-sampler/phytoplankton nets.
9. Training on any of the following topics: reservoir management, phytoplankton identification, treatment optimization for HABs, datasonde operation/calibration, and ELISA analytical methods.

For conditions, allowable purchases, and details on how to apply for funding, please visit: epa.ohio.gov/ddagw/HAB

If your public water system chooses not to purchase a test kit and you have a bloom of concern in your water source, Ohio EPA will sample per the PWS HAB Response Strategy. This sampling will be done on a prioritized basis as described in the Response Strategy, available at: epa.ohio.gov/Portals/28/documents/HABs/PWS_HAB_Response_Strategy_2014.pdf

Administrative Penalty Program (Save a Dime. Sample on Time!)

On Jan. 1, 2014, Ohio EPA's Division of Drinking and Ground Waters (DDAGW) launched the Administrative Penalty Program with the goal of reducing total coliform (TC) and nitrate monitoring violations. Monitoring and reporting for acute contaminants, such as total coliform and nitrate, provides an important tool for evaluating and increasing confidence in the quality of water public water systems (PWSs) deliver to customers. This program makes it more cost-effective to sample than to receive a violation. On average, TC and nitrate samples cost $25 and $20, respectively. Failing to sample for these contaminants will result in a penalty of $150 or more for each violation.

In past years, Ohio's PWSs averaged about 800 total coliform and nitrate monitoring violations per year. Since outreach began for the Administrative Penalty Program, overall monitoring violations have significantly decreased. In 2013, with just a few months of outreach, the number of monitoring violations for the year dropped to about 500. The numbers for 2014 show an even more dramatic decrease in violations; for the first three quarters of 2014, there are a little more than 200 violations.

When a PWS misses a sample, a notice of violation (NOV) will be sent as usual. Additionally, the PWS will receive a separate letter from the Director of Ohio EPA, along with Streamlined Orders (SO) and a proposed penalty. After receiving this SO, the PWS has two options: agreement or disagreement.

Agreement:

Ohio EPA will initially send a set of SO explaining the violation(s), a proposed penalty of $150 per violation and a commitment to conduct required monitoring in the future. If the owner signs the SO and pays the penalty, the penalty may not be appealed. The PWS has thirty (30) days from receipt of the SO to submit payment and the signed Orders.

Disagreement:

If the SO is not signed and returned with the penalty payment, Ohio EPA will withdraw the offer and issue unilateral Administrative Orders (AO) with an increased penalty, ranging between $250 and $1,000, depending on the PWS population size (see table). The AO can be appealed by filing a notice with the Environmental Review Appeals Commission within thirty (30) days. The appeal must be accompanied by a filing fee of $70 and the PWS may also be required to retain an attorney. If the disagreement approach is chosen and the AO is not appealed, the PWS will have 45 days to submit the penalty

PWS Population	Penalty Amount
25 to 3,300	$250
3,301 to 6,700	$500
6,701 to 10,000	$750
10,001 or more	$1,000

continued on page 56

continued from page 55 - epa

payment.
Along with the Administrative Penalty Program, DDAGW will continue outreach efforts to increase monitoring compliance by: mailing monitoring schedules and posting them on the website; making personal phone calls; sending automated reminder phone calls; mailing reminder postcards; presenting at conferences; providing letters, emails and articles to trade organizations/newsletters; posting pertinent information on our website; providing articles in our Spigot newsletters; sending emails to list-serve registrants; and including an ongoing message about the Administrative Penalty Program with all monitoring schedules, sample reminder postcards, automated reminder calls, apparent lists, nitrate delinquency letters, notices of violation, license to operate (LTO) applications and LTO transmittal letters.

This program has helped Ohio EPA exceed shared goals with U.S. EPA for the percentage of transient non-community (TNC) PWSs with major monitoring violations. In Federal Fiscal Year (FFY) 2013, the percentage of TNC PWSs with monitoring violations was 15.47%. This percentage was nearly cut in half for FFY 2014, with only 7.89% of TNC PWS having major monitoring violations. Ohio EPA hopes to see this percentage continue to decrease as the administrative penalty program is enforced.

Administrative Penalty Program Frequently Asked Questions

What kinds of violations will result in a penalty?

Failure to collect your nitrate or total coliform samples (both routine and repeat samples) during the required timeframe is a violation that will result in a penalty. These acute contaminants can cause adverse health effects within a short time period, so sampling for them as required is essential. Violations for other contaminants are not currently included in this program.

Who will be assessed the penalty?

Ultimately, it is the PWS owner's responsibility to ensure samples are taken as required. The PWS owner will receive the penalty. If the sample was missed because of an operator error, the owner can address the issue with their operator.

What if the laboratory was at fault?

Ultimately, it is the PWS owner's responsibility to ensure the samples were taken as required. If the sample was missed due to a laboratory error, the owner can address the issue with their laboratory. For a list of currently certified laboratories, please visit epa.ohio.gov/Portals/28/documents/labcert/LabSum_Nov14.pdf. Independently of the Administrative Penalty Program, Ohio EPA's Lab Enforcement Program is sending notices of violation to laboratories that fail to meet their

reporting obligations.

How can I avoid a penalty?

Conduct all monitoring on time as required. Ohio EPA recommends sampling early in your monitoring period. If you have difficulty collecting your samples consistently, consider hiring a company that provides water sample collection services. For a list of service providers go to epa.ohio.gov/portals/28/documents/pws/DWSample.pdf.

What is your authority to give me a penalty?

Ohio EPA's authorities to assess penalties are located in Ohio Revised Code Section 6109.23 and Ohio Administrative Code Rule 3745-81-04.

Who can I contact with questions?

Any questions about your monitoring schedule should be directed to your Ohio EPA district office. Questions specific to the administrative penalty program should be directed to Anne Speakman, DDAGW Compliance Assurance Section, at anne.speakman@epa.ohio.gov or (614) 644-2752.

Emergency Power Facility Assessment Tool (EPFAT)

Water and wastewater systems face the possibility of needing temporary emergency power under various conditions, such as inclement weather or failing equipment. The U.S. Army Corps of Engineers (USACE) and the Federal Emergency Management Agency (FEMA) developed a tool to expedite the installation of generators after major disasters. This secure, web-based tool is for water and wastewater owners and operators and emergency response agencies to gather and use pre-installation assessment data. Having this data stored and updated assists USACE with providing temporary power more quickly. To find out more, visit the USACE's Disaster Response Missions and Information webpage www.usace.army.mil/Missions/EmergencyOperations/NationalResponseFramework.aspx.

The Need for Asset Management

Asset management can help both large and small public water systems ensure long-term sustainability to provide adequate quantities of safe drinking water. Asset management involves taking stock and evaluating assets, which allows a system to make better decisions on when it is most appropriate to repair, replace, or rehabilitate assets. It also includes determining critical assets, which allows systems to ensure they are being maintained in good working order and establish contingencies in case of an unexpected failure.

Too often, public water systems serving small populations face major system issues because they do not realize the cost of system failure is greater than the cost of maintenance. Cost of maintenance typically includes materials and labor cost, whereas the potential cost of failure is often greater typically including materials, labor (often at overtime rates), public notice, alternative water supplies, fines, sampling, disgruntled customers and legal costs.

continued on page 58

continued from page 57 - epa

Listed below are some characteristics of PWSs with different types of asset management planning.

Consequences of little or no asset management practices

- Reoccurring or compounding equipment failures.
- Lack of contingency to respond to a critical infrastructure failure.
- Inadequate financial capacity to provide for repair or replacement of critical infrastructure.
- Inability to respond to changing water demands.
- Inability to respond to changing water quality conditions.
- Large one time increases in rates.

Benefits of Asset Management Practices

- Infrastructure is replaced when it has reached the end of its useful life cycle.
- Equipment is maintained in good working order.
- Spare parts are available for critical infrastructure.
- Contingencies are developed to respond to emergencies.
- System understands the water demand and can meet projected demands.
- Water quality issues are anticipated and can be addressed.
- Incremental increases to water rates for future needs.

The "fix it when it breaks" mentality will not sustain your PWS and maintain good service to consumers. Completing an asset management plan is only the first small step toward effective asset management. Developing a plan and sticking it on a shelf is as useless as not having a plan at all. Implementing and financing the plan will improve PWS compliance, ease o f operation and consistent reliable service.

"AWWA believes that water utilities must adopt a proactive and sustainable approach to the management of their assets throughout the life cycle of the asset, which starts with effective planning and design, continues through operation and maintenance, and incorporates appropriate rehabilitation, replacement and asset disposal. Asset management should be a key component within a water utility to ensure that it continues to provide, cost-effective, reliable supply and delivery of an adequate quantity of safe water." (Adopted by the Board of Directors June 15, 2003, and revised on January 21, 2007. Revised by the Board of Directors January 20, 2013.)

For more information about developing an asset management plan or best practices, visit the following U.S. EPA sites:

water.epa.gov/infrastructure/drinkingwater/pws/cupss/

water.epa.gov/type/watersheds/wastewater/upload/guide_smallsystems_assetmanagement_bestpractices.pdf

For information about Ohio EPA's development of rules for asset management, please contact Sean Stephenson at Sean.Stephenson@epa.ohio.gov.

Looking for a Low Cost, Pre-Engineered Packaged System Designed to Handle a Wide Range of Water Filtration Applications?

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H&T "Plug & Play" Greensand Plus™ Systems provide the quality and durability you've come to expect from H&T backed by the experience of an industry leader in pure water technology for over 100 years.

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For more information, contact our local representatives

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32nd ANNUAL
AWWA NORTHERN OHIO
WATER & WASTEWATER EXPOSITION
APRIL 16th, 2015

Dear Exhibitor:

We are excited to celebrate our 32nd year of being the best attended show of this type in Ohio. Because of the feedback from our exhibitors and attendees, this year we are trying a **new location!** The Expo will be held at the **Buckeye Event Center in Dalton** (just 12 miles East of the old location). We appreciate the past support you've shown during the 20+ years of the event at the fairgrounds. The new venue will allow our exhibitors to be under one (climate controlled) roof. We have also made allowances for the vendors that enjoy displaying outside. We have reserved space next to the building if you would like to remain out in the fresh air. This year's event will also host educational tours, the Meter Madness competition and door prizes. Don't miss out on what is sure to be our biggest show to date, reserve your booth space now!

Attached is the 2015 Display Application Form. If you are not planning to participate this year, but wish to remain on our mailing list, PLEASE notify us in the next 15 days.

Please fill out your application accurately. Also, describe your products and services completely so that we can separate you from your competitors. If you would like located next to a partnering exhibitor, please indicate it on the application. You will receive a confirmation email with details about accommodations in the area in late March and updated expo information.

Again this year, there will not be any equipment or personnel available to unload, move or load your exhibits. All vehicles, trailers or other units with wheels for highway use must be moved to your assigned interior booth space on Wednesday 4/15 between 11:00AM and 4:00 PM or before 8 AM on the day of the Expo.

If you are going to ship material to the site,
shipments should be sent to 624 Henry Street, Dalton, Ohio 44618
no more than one week before the show.

The Buckeye Event Center can be seen from US 30 in Dalton. From US 30, take Route 94 (traffic light) South for 2 blocks, then West on Henry Street for ½ mile.

Please make your check payable to "**NE AWWA**" and mail, with your application, to:

Northern Expo
c/o Kevin Givins
City of Wooster Utilities
1020 Old Columbus Road
Wooster, OH 44691

Direct questions to Kevin at;
expo@woosteroh.com or
330-263-5285

http://www.buckeyeeventcenter.com/

Technical Session Registration Form

AMERICAN WATER WORKS ASSOCIATION
OHIO SECTION
28th Annual
Tuesday April 14th, 2015

Free OEPA Contact hours for Pre-Registered AWWA Members

Roberts Convention Centre
I-71 to exit 50 (US Hwy 68)
Wilmington, Ohio
(800) 654-7036

For further information or directions,
contact Nichole Sajdak:
Phone: 513.469.5133
e-mail: nsajdak@hazenandsawyer.com

7:30 am . . . . . Walk-In Registration Begins
9:00 am – 11:30 am . . . . AM Session (1.5 Credit Hours) *
11:30 am – Noon . . . . . Lunch ($10)
12:30 pm – 3:00 pm . . . PM Session (1.5 Credit Hours) *

* Participants can earn up to 3.0 credit hours by registering for both the AM and PM sessions.

Technical Session Registration Information

FREE	Pre-registered (before April 9, 2015) AWWA members
$10	Non-AWWA members
$10	ALL Walk-ins

MAKE CHECKS PAYABLE TO: "SW DISTRICT OAWWA"

Mail to:

Nichole Sajdak
Hazen and Sawyer
7870 E. Kemper Road
Suite 300
Cincinnati, Ohio 45249

Registration

AWWA Member No.*: _____
* (**Required** for Free Credit Hours)

Affiliation: _____

Name: _____ AM Session ☐

Address: _____ PM Session ☐

City: _____ State: _____ Lunch ($10) ☐

Zip: _____ Phone #: _____

e-mail: _____

FAX #: _____ PO/Check # _____

American Water Works Association

Dedicated to the World's Most Important Resource®

2015 Ohio Section
Individual Application

Join online: www.awwa.org/join
Mail to: AWWA Customer Service
6666 West Quincy Avenue
Denver, CO 80235-3098 USA

Fax to: 303.347.0804
Contact Customer Service at
1.800.926.7337 or 303.794.7711
service@awwa.org

Contact Information

Name ☐ Mr. ☐ Ms. ☐ Mrs. ☐ Dr.

Title

Company

Address ☐ Home ☐ Business

City

State/Province ZIP/Postal Code Country

Phone

Email

Is your company a member of AWWA? ☐ Yes ☐ No

Company Member Number (if known)

Were you referred by an AWWA member? ☐ Yes ☐ No

Referring Member Name Email

Payment

Annual Dues (A1) $_____

Additional Sections* (A2) $_____

If applicable* **Total $_____

Payment Method

☐ Check enclosed
(make payable to AWWA, US currency only, US bank only)

☐ American Express ☐ MasterCard ☐ Discover ☐ Visa

Card Holder Name

Card Number

Expiration Date

Your membership will be activated when payment is received.

Annual Dues (A1)

☐ **Individual Active $178**
An individual, such as a water utility employee, municipal official, public health professional, engineer, scientist, educator, consultant, or other person interested in or serving in the field of water supply. (02)

☐ **Young Professional $99**
A special discount on first-year dues for individuals interested in or serving in the field of water supply, who are age 35 or younger. (YP2015)

☐ **Operations/Administrative $74**
An individual employed in any operating or administrative position by a water utility with 1,000 or fewer service connections or any employee below the supervisory level in a utility with more than 1,000 service connections. (06)

☐ **Student $20**
A student enrolled in a minimum of nine credit hours (or the equivalent thereof) at an accredited institution. (14)

Additional Sections (A2)

In addition to your primary Section, you may join other AWWA Sections. There is a $33 multi-section fee, plus the assessment fee for the other Sections as appropriate. Please call 1.800.926.7337 for more information.

3 Ways to Join

1. **Apply online at www.awwa.org/join**
2. **Fax completed application to 303.347.0804**
3. **Mail completed application to**
AWWA Customer Service
6666 West Quincy Avenue
Denver, CO 80235-3098

By joining AWWA, you grant the association, through implied consent, authorization to send you commercial electronic messages. Your communication preferences can be updated at any time at www.awwa.org under "My Account."

Signature Date

Tell Us About Yourself All applicants must complete this section.

What one business activity best describes your company?
(Please check only one)

- ☐ A Public Water Supply Utility—Municipally Owned
- ☐ B Public Water Supply Utility—Investor Owned
- ☐ C Government—Federal, State, Local
- ☐ D Consulting Firm
- ☐ E Contractor
- ☐ F Private Industrial System or Water Wholesaler
- ☐ G Manufacturer of Equipment & Supplies (including representatives)
- ☐ H Distributor of Equipment & Supplies (including representatives)
- ☐ I Educational Institutions (faculty & students), Libraries and other related organizations
- ☐ J Fully Retired
- ☐ K Research Lab
- ☐ L Other allied to the field (please specify) _____

What one category best describes your job title?
(Please check only one)

- ☐ A Executive (General Manager, Commissioner, Board Member, City Manager, Municipal Supt., Mayor, President, Vice President, Owner, Partner, Director, etc.)
- ☐ B Management/Non-Engineering (Division Head, Section Head, Manager, Dept. Head, Comptroller, etc.)
- ☐ C Design and Engineering/Both Managerial and Non-Managerial (Chief Engineer, Civil Engineer, Mechanical Engineer, Elect. Engineer, Environmental Engineer, Planning Manager, Field Engineer, System Designer, etc.)
- ☐ D Scientific/Non-Managerial (Chemist, Biologist, Biophysicist, Researcher, Analyst, etc.)
- ☐ E Purchasing (Purchasing Agent, Procurement Specialist, Buyer, etc.)
- ☐ F Operations (Foreman, Operator, Maintenance Crewman, Service Representative, etc.)
- ☐ G Marketing & Sales/Non-Managerial (Market Analyst, Marketing Representative, Salesperson, Sales Representative, etc.)
- ☐ I Professorial (Educator, Teacher, etc.)
- ☐ Z Other (please specify) _____

What one category best describes your field served/principal activity? *(Please check only one)*

- ☐ 9 Both Water Supply & Wastewater
- ☐ 5 Water Supply Only
- ☐ 7 Wastewater Only
- ☐ 3 Other

What areas of the water and wastewater industry are of current interest to you? *(Please check all that apply)*

- ☐ Asset Management
- ☐ Backflow/Cross Connection
- ☐ Climate Change
- ☐ Conservation/Efficiency
- ☐ Customer Service
- ☐ Desalination
- ☐ Design/Construction
- ☐ Distribution/Plant Ops.
- ☐ Drought
- ☐ Emergency Preparedness/Security
- ☐ Groundwater
- ☐ Laboratory
- ☐ Membrane Treatment
- ☐ Public Health
- ☐ Public Info./Communications
- ☐ Regulatory Issues
- ☐ Reuse
- ☐ Small Systems
- ☐ Stormwater
- ☐ Training/Career Development
- ☐ Utility Management
- ☐ Wastewater
- ☐ Water Loss
- ☐ Water Quality/Treatment
- ☐ Water Research
- ☐ Water Resources/Planning
- ☐ Workforce Strategies
- ☐ Young Professionals

Gender ☐ Male ☐ Female (Optional)

_____

Birth Year (Optional)

Dues and Section assessment rates valid through December 31, 2015. Dues are not deductible as charitable contributions for income tax purposes. The following is for USPS periodical mailing requirements only. In some AWWA Sections, a portion of the Section allotment equal to 50% or more of the domestic subscription rate charged for the Section periodical will be allocated toward a subscription to that periodical. Allocation for each publication recipient authorized—*Journal - American Water Works Association*—$50; *Opflow*—$16. Members with APO/FPO addresses will receive e-periodicals only. Print periodicals may be purchased for an additional fee. ***NOTE:*** Members' phone numbers and email addresses are protected under AWWA's Privacy Policy.

Berkeley Springs International Water Tasting 2015 Winners

Congratulations to the City of Hamilton (1st Place) and to the City of Montpelier (Three way tie for 4th Place)

OSCARS SCOOPED AT ACADEMY AWARDS OF WATER IN BERKELEY SPRINGS

BERKELEY SPRINGS, WV ----- Indigo H2O is having a good weekend. Their cobalt blue bottle is included in the Oscar swag bag and on Saturday, February 21, they won the gold for best purified water in the world at the 25th anniversary Berkeley Springs International Water Tasting. "We've been calling Berkeley Springs the Academy Awards of water for years," said Arthur von Wiesenberger, perennial watermaster of the event. "This year it came true."

In the municipal competition, it was a battle of titans. Ranked as the top four best tap waters in the world were previous gold medalists. **Hamilton, OH won first adding another gold to their back-to-back golds in 2009 and 10**. Emporia, KS won the silver, Clearbrook from British Columbia, Canada won the bronze and **Montpelier, OH tied for fourth**. Two other waters also tied for fourth: Dickinson, ND and Eldorado Springs, CO. Independence, MO placed fifth.

The importance of a commitment to excellence in providing drinking water was underlined by the selection of Jack C. West, chairman of the Drinking Water Foundation as the 2015 Lifetime Achievement award. In his decades of work in the bottled water industry, West has been involved in international water standards. The event also presented a special award to Scott Shipe for 25 years of support of the water tasting.

"The consistency in winners from year to year with different panels of judges validates the choices," remarked perennial watermaster, Arthur von Wiesenberger. "It also speaks to the impressively high caliber of the waters entered."

Fengari Platinum, a first-time entrant from Athens, Greece, won over 39 other entries for the title of world's best bottled water. Last year's gold medalist, Castle Rock Water of Dunsmuir, CA dropped to silver and previous winners: Halstead Springs Water, Speedwell, TN and Jackson Springs Natural Premium Spring Water of Middlebor, MB, Canada placed third and fourth respectively. Placing fifth was another first time entrant, Capi, Victoria, Australia.

In spite of snow, the audience was filled with water enthusiasts coming from as far as Canada and California. Ten media judges spent hours tasting and selecting from among nearly 100 waters sourced in 19 states, six Canadian provinces and 6 foreign countries. "We added water from Wales this year, and had three waters from Greece," said Jeanne Mozier, an event founder.

Sparkling waters are sourced from three countries and the United States. The best sparkling water in the world is Daphne-Ultra Premium Quality Natural Mineral Sparkling from Athens, Greece. Oaza from Tesanj, Bosnia won the silver after several years of winning gold. Two New Zealand waters from Whatakane won third and fourth place: Antipodes and Otakiri respectively. The only American water to place in the sparkling category is Castle Rock from Dunsmuir, CA.

In addition to Indigo H2O, there are two West Virginia waters: 4th is Le Sage Natural, Le Sage and 5th place Mountain Drop bottling famous Berkeley Springs water. Second place is a tie with Bar H2O, Richmond, MI and January Springs, North Haltey QC, Canada. Third place is Whispering Springs. Pierceton, IN.

"It was another wonderful year for the longest running and largest water tasting in the world," said von Wiesenberger. "Berkeley Springs is the granddaddy of them all."

The crowd was interested in the peoples' choice packaging competition where it was their votes that chose which of the 13 entrants was the most alluring. Eternal Naturally Alkaline Spring Water of Dandridge, TN won the gold handily for their book-end appearing aqua bottles. Nakd Luxury

Artesian Water, Bay of Plenty, New Zealand won silver with many voters commenting with appoval of their Braille name. Third place was Waiwera Artesian Water of Auckland, New Zealand which came in an etched wooden box. Arisu, Seoul, Republic of Korea won fourth with their bottle that had their name in Korean on one side and English on the other. Voted fifth was the appealingly rounded Antipodes Water, Whakatane, New Zealand.

Conclusion of the daylong water tasting is the famed "water rush" where the audience is invited to take home hundreds of bottles of water sent as part of the judging. "I spent about six hours arranging all the waters in a display," said Jeanne Mozier, an event founder. "The crowd spent less than ten minutes making it all disappear. It's like a Tibetan sand mandala," she laughed. "I was pleased to see our favorite couple from Brooklyn in the rush. Peter and Cynthia Lloyd come every year especially for the water tasting – and the rush."

The ten media judges selected by Klein Rone included representatives from various regional and national media including television and online magazines plus Mr. Waterman, the event's first superhero. They were instructed by von Wiesenberger to look, sniff and taste each water under guidelines similar to those in a wine tasting. The waters were rated for each attribute including appearance (it should be clear - or slightly opaque for glacial waters), aroma (there should be none), taste (it should taste clean), mouth feel (it should feel light), aftertaste (it should leave you thirsty for more). Waters were tasted in four separate flights over two days.

The 26th annual Berkeley Springs International Water Tasting is scheduled for Saturday, February 27, 2016. Watch videos of the event and special interviews on watercitizen.com. For more information on Berkeley Springs or its water tasting, call 1-800-447-8797 or check online at www.berkeleysprings.com.

Best Municipal Water 2015

1st – Hamilton, OH
2nd – Emporia, KS
3rd – Clearbrook, Abbotsford BC, Canada
4th – (three way tie)
Montpelier, OH
Dickinson, ND
Eldorado, CO
5th – Independence, MO

Best Bottled Water 2015

1st – Fengari Platinum, Platinum Class Mineral Water, Athens, Greece
2nd – Castle Rock Water, Dunsmuir, CA
3rd – Halstead Springs Water, Speedwell, TN
4th – Jackson Springs Natural Premium Spring Water, Middlebor, MB, Canada
5th – Capi, Victoria, Australia

Best Sparkling – 2015

1st – Daphne-Ultra Premium Quality Natural Mineral Sparkling, Athens, Greece
2nd. Oaza, Tesanj, Bosnia
3rd – Antipodes, Whakatane, New Zealand (prev gold)
4th – Otakiri, Whakatane, New Zealand
5th – Castle Rock Carbonated Water, Dunsmuir, CA

Best Purified Drinking Water – 2015

1st – Indigo H2O, Elkhart, IN
2nd – Tied:
Bar H2O, Richmond, MI
January Springs, North Haltey QC, Canada.
3rd – Whispering Springs. Pierceton, IN
4th – Le Sage Natural, Le Sage, WV
5th – Mountain Drop, Linthicum, MD bottling famous Berkeley Springs water.

Best Packaging -- 2015

1st – Eternal Naturally Alkaline Spring Water, Dandridge, TN
2nd – Nakd Luxury Artesian Water, Bay of Plenty, New Zealand
3rd – Waiwera Artesian Water, Auckland, New Zealand
4th – Arisu, Seoul, Republic of Korea
5th – Antipodes Water, Whakatane, New Zealand

ANNOUNCEMENTS

David Weihrauch 2015 – AWWA Volunteer of the Year Award

AWWA established the volunteer of the year award in 2010 to recognize and honor an AWWA member who has advanced AWWA Denver or DC through his/her volunteer time and efforts and has been a support to AWWA staff.

David Weihrauch, Water Treatment Plant Manager, City of Oxford, Ohio, was presented the award in recognition of his extraordinary volunteer spirit, his indomitable energy, and his unflagging commitment to AWWA and the water community, including his tireless work to secure passage of the Water Infrastructure Finance and Innovation Act (WIFIA).

Dave Weihrauch did more to advance WIFIA in Congress than any other single AWWA member. As chair of the Ohio WUC, he has been instrumental in raising the bar for his state's participation in the AWWA Fly In, and when the Water Utility Council needed a volunteer to serve as liaison to the Small Systems Division, Dave stepped up and solved a "volunteer problem" for AWWA. Dave single-handedly developed a relationship with Rep. Bob Gibbs of Ohio, chair of the House Water Subcommittee, shared that relationship with AWWA staff, and was instrumental in persuading Gibbs to pursue WIFIA legislation in the House. When Dave applied for a seat on the WUC, a national officer who knew him said "if he is appointed, you'll soon wish you had 10 more just like him." Dave volunteers every time something needs to be done and embodies a permanent commitment to the work of the Water Utility Council, before, during, after, and between its meetings.

Tom Baclawski – Passed Jan 3, 1944 - Nov 24, 2014

Thomas Baclawski passed away at the age of 70 on November 24, 2014, after a long illness. Tom was born in Akron on January 3, 1944, and graduated from the University of Akron with Bachelor's Degrees in biology and engineering and a Master's Degree in civil engineering. Tom devoted over 30 years to the Northeast District Office of the Ohio Environmental Protection Agency in the drinking water division.

Tom enjoyed sharing his time after retirement between Lake Milton, Ohio and Melbourne Beach, FL. He was a dedicated member of St. Mary and St. Joseph Catholic Church in Newton Falls.

Tom loved his family unconditionally, enjoyed living life including fishing, tennis, working outdoors and helping neighbors and anyone who needed a hand. Tom's warm smile will remain in our hearts and memories forever. Tom leaves behind his wife of 48 years, Sandra, along with four children, seven grandchildren, and one sister.

Edwin Geldreich, Jr. – Passed

A long time member of ASM and a fellow of the American Academy of Microbiology, Edwin Geldreich died at age of 92, on Oct 7, 2014. A native of Cincinnati, he received both his undergraduate and masters' degree in biological sciences from the University of Cincinnati. He served in the U.S. Army during the Second World War. Initially hired by the noted bacteriologist C. T. Butterfield, his entire professional career was spent with various federal agencies working on water related programs. He was a charter employee of the U. S Environmental Protection Agency (EPA), where he served as both Chief Microbiologist and Senior Advisor for drinking water research activities.

He was the author of numerous peer reviewed scientific research articles and other publications, including the classic Handbook for Evaluating Water Bacteriological Laboratories. The recipient of EPS Bronze and Silver medals, he also received numerous other awards, including the Kimble Methodology Research Award at the 1989 Abel Wolman Award of Excellence from the American Water Works Association. In 1991, he was the ALLEN Hazen Lecturer to the New England Water Works Association. International activities included serving as a consultant for the World Health Organization dealing with water related issues in the Caribbean and Latin American countries. He was held in high esteem among his federal colleagues and by others both in academia and in industry for his numerous contributions to the field of drinking microbiology. He was noted for providing encouragement to young scientists to pursue their research interests aimed at improving water quality.

ANNOUNCEMENTS

Tim Ray – Retired from the City of Troy

Tim started at the City of Troy on December 6, 1993, as Laborer in the Street Department. He transferred to the Water Treatment Plant in August 1995 and worked 4 yrs. as the 3rd shift Operator. During this time Tim acquired his Class III Water Supply license. He was promoted to the Plant Mechanic III position on November 14, 1999. He continued in this position until January of 2003, when he was promoted to Chief Operator. In August of 2008, the Water Treatment Plant Superintendent John Shaffer abruptly retired. Tim assumed the Superintendent position at that time and continued in that capacity until his retirement on November 28, 2014. He is currently doing consulting work with the City of Troy, wrapping up several projects he was deeply involved in.

During his tenure at the City of Troy Tim was always very highly respected for his exceptional intelligence, unmatched work ethic, and quiet generosity and charity.

Tim earned his B.A. in Mathematics from Wittenberg University in 1990. He holds a Class IV Water Supply license. Tim is a Past Chair of the Ohio AWWA SW District. He has since served in many capacities with the Ohio Section AWWA most recently on the State Governing Board.

Tim is a very devoted grandfather. He and his wife Deb plan on traveling extensively upon her retirement.

Greg Petredis Retires from City of Hamilton

Greg Petredis was hired by the City of Hamilton, Ohio, on April 11, 1987, as a Maintenance Worker in the Water Production Division. Greg was promoted several times within the Water Production Division, holding progressively more responsible positions, including Chief Water Plant Maintenance Mechanic and Administrative Specialist III. Among other certifications and licenses, Greg received his Class IV Water Supply License in 2004 from the Ohio EPA. Greg, throughout his entire career with the City, has been extremely dedicated and conscientious and a tremendous asset to the Water Production Division of the Department of Underground Utilities and its customers, the City of Hamilton and its elected officials, appointed staff and residents, and the community as a whole.

Greg was promoted to the Superintendent of Water Production on August 17, 2002. Under Greg's outstanding leadership with the City of Hamilton, the Water Production Division has received Outstanding Sanitary Survey results from the Ohio EPA for the last 12 years, prompting an uncharacteristic comment from an Ohio EPA representative, stating that the City has an "impeccable water system".

During Greg's successful tenure as Superintendent, the Water Production Division received the Gold Medal for "The Best Tasting Tap Water in the World" at the Berkeley Springs International Water Tasting Competition and received "Best of the Best" Awards from the Ohio Section of the American Water Works Association for the "best tasting tap water in Ohio" for the last three, consecutive years and four of the last five annual competitions. Greg retired from the City of Hamilton as the Water Production Superintendent on November 26, 2014. Greg was recognized for his service to the City of Hamilton during the past twenty-seven plus years. We wish him the best in his new journey in life.

Jones and Henry names New Principal

Theodore A. Bennett, P.E., t is a Project Manager and is located in the Toledo office. Ted, with the firm since 2012, has over 13 years experience in the evaluation and design of sewer, water and storm water facilities. He received a Bachelor of Science degree in civil engineering from the Ohio Northern University, is a registered professional engineer in Ohio and Michigan, and is a member of the Water Environmental Federation and the American Society of Civil Engineers.

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(6 contact hours of training)

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- **Improving distribution system operations and management**
- **Information on unsafe field practices**
- **Recommended maintenance procedures**
- **Water Loss Management**

Watch your mailbox in early May for registration information or visit the OAWWA website at http://www.oawwa.org/

Important Dates, Events & Newsletter Information

2015 National Conferences

Jun 7-10	Anaheim, CA - Annual Conference and Exposition
Oct 26-29	Atlanta GA – Water Infrastructure
Nov 16-20	New Orleans - Water Quality

2015 State Water Tests

May 6	Water I / II / III, Water Distribution I / II – Deadline for application February 7
Nov 5	Water I / II / III, Water Distribution I / II – Deadline for application August 7

2015 Specialty Conferences

Jul 14	Water Distribution Workshop
Aug 18	Asset and Utility Management Workshop
Aug 27	Canton Hall of Fame Drinking Water Workshop
Nov 12	Safe Drinking Water Act Seminar

(6 Contact Hours Each)

2015 Review Sessions

Northeast District	TBA
Northwest District	Apr 25
Southeast District	Apr 20 & Oct 19
Southwest District	Apr 25 & Oct 24

2015 AWWA Conference and Exposition

September 15-18, at the Cleveland Marriott and Cleveland Convention Center

District Conferences (Contact Hours TBA)

Northwest District Meetings

Apr 16	Northern Expo/ Meter Madness
TBA	City of Defiance
Jul 16	City of Ottawa
Oct 22	Avon Lake (Joint NW/NE)

Northeast District Meetings

Apr 16	Northern Expo/ Meter Madness
May 14	City of Warren
Aug 27	Hall of Fame Canton
Oct 22	Avon Lake (Joint NW/NE)

Southwest District Meetings

Apr 9	Joint SE/SW Expo - Deer Creek
Apr 14	Southern Expo/ Meter Madness
Jul 26	Montgomery County
Oct 16	City of Zenia

Southeast District Meetings

Apr 9	Joint SE/SW Expo - Deer Creek
Apr 14	Southern Expo/ Meter Madness
Jul 16	Raymond Memorial
Nov 18	Everal Barn @ Heritage Park

The Ohio Section Newsletter is the newsletter of the Ohio AWWA, published three times a year. Send comments, news notes, glossy / digital photos, and articles to:

Larry Valentine, P.E.
717 Shannon Avenue
Cuyahoga Falls, OH 44221
330-328-2137
lvalentine@neo.rr.com

Deadline for material to be in the 2015 newsletters are:

Summer Issue - May 15 - Target mailing week of June 15
Winter Issue - October 2 - Target mailing week of December 7

2015 Advertiser's Directory

If you did not receive a notice for advertising or you want to be on our advertisers manufacturers mailing list, please contact the **Newsletter Editor** at:

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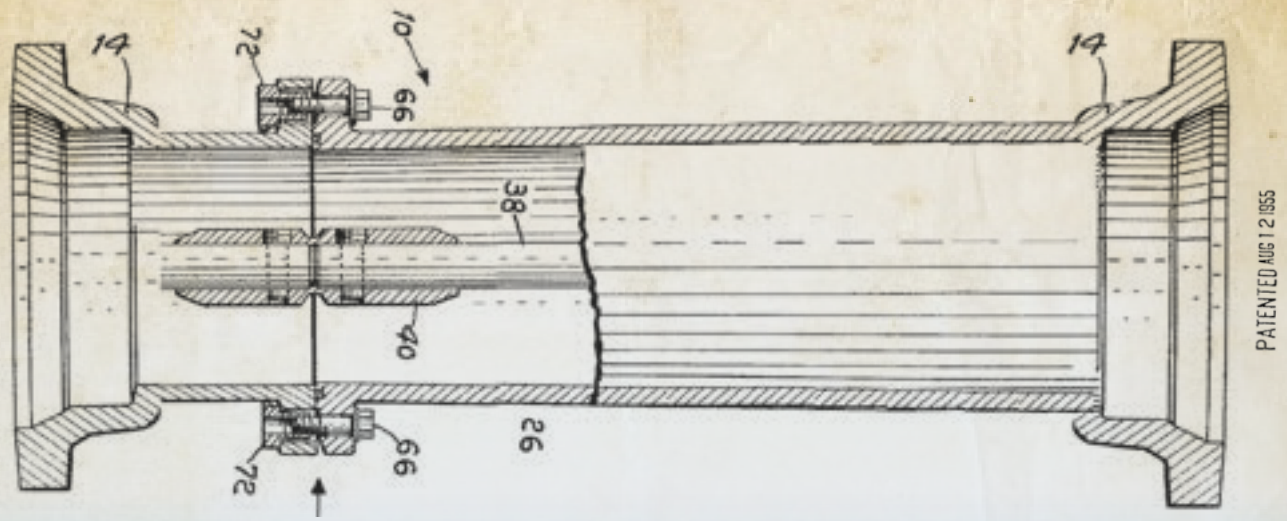

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