Ohio Water Environment Association Volume 89:2 | Issue 2 2016

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#### Get Involved - Join a Committee Today

The Ohio Water Environment Association has 25 committees which focus on various aspects of the water quality field and association operations.

Contact OWEA at *info@ohiowea.org* or the chair of a committee that interests you for more information.

# **OWEA NEWS**

#### Staff Changes



Alexandria Welch is the newest Office Assistant at OWEA. She recently joined us from property management, with advanced knowledge in office administration, bookingkeeping and budgeting skills. Alex is scheduled as a junior to re-attend The Ohio State University, where she will complete her Bachelor degree in Communication-

Analytical Practice. She is married, with two children. Her son Ayden is three and daughter Ayla is one. She is very excited to start a new journey with OWEA and the opportunities it has to offer!

#### Find OWEA on your favorite social network



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# **OWEA 2016 Calendar**

#### MAY

- 11 OWEA Executive Committee Meeting
- 12 Water for People Fundraising Social
- 12 SW LAC Spring Meeting
- 18 OWEA Collection Systems Workshop
- 19 NE Annual Business Meeting & Training
- 19 SE Section/Awards/Biosolids/ Small Systems Meeting
- 19 SW Section Meeting
- 25 NW Section Meeting

#### JUNE

- 26 OWEA Executive Committee Meeting
- 27-30 OWEA Technical Conference and Exhibition

#### AUGUST

- 5 NW Spouses and Friends Day
- 14 SW Friends and Family Night

# WELCOME NEW MEMBERS

January 2016 - March 2016

Steve Applegate Adam Athmer Bernard Bahaya Anissa Bell Keith Bledsoe Megan Borror Michael Canfield Peter Carpenter Jose A. Castameda Donna Corvo Sara Cramer Heather M.Curtis Douglas Dietzel Chuck Douglas Jeffrey A. Eiford Greg J. Erdman Carolyn Frierich David Gleason Tamar P. Gonttvnik Deanna Hamilton Mary E. Holmquist Julie Hough Erin Huffman Shakthi Jayavelu Richard S. Keith Chris M. Lewis Tongyan Li Steven E. Madej Devona Marshall Melanie Marshall Craig Mason Paul McGuire Robert Meholif Jason Melko Gabrielle Metzner Kevin Meyer Dan Mitchell Monica Morales Alicia Morgan Rebecca Parry James Petruna Bill Porteus Mitch Rader Rosemarie Read Alison Schreiber Randy Severns Nicholas Sheffield Guy Singer Sam Smallwood Andrew Spurgeon Thomas Swansiger Sam Swanson John Sopko Anthony Vitale Sam Walther Paul Wilson Brandon Wyant Julia Zhang Dawn Zhu

Thank you for joining the Ohio Water Environment Association and the Water Environment Federation. We welcome your contribution to preserving and enhancing Ohio's water quality environment.

Visit http://www.ohiowea.org/memberships.php for OWEA membership information

## **P**RESIDENT'S **M**ESSAGE

As all presidents have said before me, "I can't believe this is my last President's Message!" How can one year go by so fast? When I look back on the year, it's a blur. Some things have changed, but some have remained the same. OWEA remains strong, active, and relevant. Nutrients are still a hot topic. There is another new face on OWEA staff. We're all one year older and a little bit wiser.

Our members are strong and dedicated to providing a clean water environment for all Ohioans to enjoy. This is evident by the amazing award winners that will be recognized at the Awards Breakfast during the Annual Technical Conference and Expo.



Elizabeth Wick, P.E. OWEA President

Be sure to attend this event and congratulate your peers on a job well done. This year, we also had several members nominated for national WEF awards. It would be great to see Ohio people recognized at WEFTEC in New Orleans. Even if they don't win, it's quite an honor to be nominated!

In early April, Dale Kocarek, Tom Angelo, Doug Clark, Fred Smith, Amy Davis, Steve Wordelman, and Jason Tincu went to Washington DC for the fly-in. OWEA has participated in this event for several years. It affords us the opportunity to have in-person discussions with members of Congress and federal regulators about the importance of issues facing Ohio's local communities. Every time our team comes back from this event, they are energized about our future. It's great to have leadership that can be our voice in Washington.

Nutrients continue to be a hot topic for all of us. Whether you're a regulator, permitee, consultant, or farmer, every time you pick up a newspaper, there is an article about

**Elizabeth Wick, P.E,** is currently the Manager of the Division of Surface Water in Ohio EPA's Northwest District Office, where she has worked for the past 28 years. In addition to being a Professional Engineer, Elizabeth holds a Class 3 wastewater operator license and is a member of the Select Society of Sanitary Sludge Shovelers (5S). She has a Bachelor of Science degree in Chemical Engineering from the University of Toledo.

Elizabeth resides in the Bowling Green area with her husband, Dave. They have four sons. Two are successful college graduates and two are currently attending the University of Toledo where they are majoring in engineering and recreational therapy. Elizabeth enjoys spending time with her family (especially her granddaughter), camping, hiking, and just hanging out around a bonfire. nutrients. The Western Basin of Lake Erie seems to be the hot zone. In this issue of the Buckeye Bulletin, you'll see an article written by the Farm Bureau that outlines programs they have implemented to address nutrients and improve water quality. In order to reach the 40% reduction in phosphorus that is being required in the Lake Erie watershed we are all going to have to work together.

There is another new face in the OWEA office. Alexandria Welch joined the staff as an office assistant. Alex came to us from the property management arena. She has experience in office management, bookkeeping, and communication. We

are now fully staffed. Thank you to everyone for your patience as we moved through our staffing transition. With three staff, the office will be much more efficient in meeting members' needs.

Recently, I was reviewing OWEA's programs as I was compiling information to nominate OWEA for a WEF Member Association Excellence Award. The criteria for the award were position of financial strength, membership retention, public outreach and education, scholarship program, student achievement and support, technology transfer, and awards program and participation. As I went through supporting information for each of those areas, I was reminded of what a great organization this is. We are financially secure thanks to the Executive Committee and staff making responsible financial decisions and to our sponsor program. Our membership numbers continue to grow. We have a public education and outreach funding assistance program that can be used to help schools and non-profit groups pay for educational field trips or equipment. We give students free OWEA memberships. OWEA members take part in technical advisory groups organized by Ohio EPA. We always have good response to our awards program and recognize our members who are outstanding in their community. Yes, OWEA is strong, full of passionate people, and moving into the future.

I am very proud to have been part of this organization and to have served on the Executive Committee and held the office of President. Steering this ship can sometimes be daunting, storms can pop up at any time, but the ship always moves in the right direction eventually. If you have a passion for volunteering and water quality, consider stepping forward to join the Executive Committee or a section committee. The time commitment is not too difficult to manage and you could be that person that has the really good idea for moving our ship forward!

Thank you to our paid staff and all of our volunteers for making this organization strong. Thank you for supporting me as your president!

#### KOCAREK KORNER

# IF NOT US, WHO? IF NOT NOW, WHEN?

by Dale E. Kocarek, P.E., BCEE, OWEA Past President 2010-2011

#### Life Defining Moments

Most people agree that their lives are punctuated by life defining events and include periods of inflection that have shaped their lives. Some of these events come in the form of epiphanies – so called life defining moments – and others become special memories, which are forever treasured.

#### Thornton Wilder's Our Town

In the 11th grade at Painesville Riverside High School I was introduced to a short story titled *Our Town*, by Thornton Wilder (1897 – 1975). The story was written in 1938 and tells the story of the fictional American small town of Grover's Corners New Hampshire between 1901 and 1913.

The story was written to be a three act play. The play was on Broadway and still performed in schools and local



*Our Town* is that it is done entirely without props and special scenery. The only furniture as stage props was hardback chairs and several small ladders. Even the local cemetery is depicted by the town's deceased sitting very still in hard back chairs, and sometimes talking back and forth observing events of the town through the passage of time.

theatre today. One of the most

interesting aspects of the play

Author and Playwright Thornton Wilder

The story revolves around the characters George and Emily Webb and her unexpected death from childbirth in 1913 at

age 26. Another interesting aspect of the play was that much of the dialogue and backdrop was by a narrator that sometimes interacted with the cast. In the very early years on Broadway, the narrator was played by Thornton Wilder.

The central character is Emily Webb following her death during childbirth. The play begins as the funeral procession across the stage. Emily, dressed in white, emerges from behind the mourners' umbrellas and sits next to her mother in the graveyard. Emily starts to question what



Cast Members in the Play "Our Town" by Thornton Wilder

it means to live and die, and is allowed to relive the favorite day of her life – her 12th birthday on February 14, 1899. This day for Emily was one of the most important and best days of her life and marked a point of transition between childhood and young adulthood. Throughout her visit to the past, she continually remarks how young everyone looked in 1899, how quickly time passed and how many small details she never observed in life. Rather than being an overtly sad story, it is more poignant and invokes a closeness of the townspeople that defined Emily's world.

We have all had similar experiences, but hopefully not as tragic as Emily's. I recall my 35th birthday in 1992 as if it was yesterday. While a Tuesday, a workday, and unseasonably warm, I recall it being a lot of fun. The office manager of my company, at the time R. D. Zande & Associates was a wonderful woman adored by all. She was in the habit of baking birthday cakes and I was presented with my very own birthday cake! Those were the days when my co-workers were like family and we sincerely liked and cared for each other much like the cast of *Our Town*.

One reason the day was so noteworthy for me was that it marked a point of inflection in my life. From then on, the passage of time is much faster. It was almost as the rate of time prior to age 35 passed at one rate, while afterword time passed at a faster rate.

#### The Time to Act is Now!

I am drawn to the expression *If Not Us, Who? If Not Now, When?* This is a call to action and recognition of the carpe diem – seize the day - mentality that I like. This saying helps define part of the American persona – bold, impatient, and courageous. I have grown to like the expression as it is important to make each day count to its fullest. Like the fictional Emily Webb, we have one opportunity to live each day before it is gone.

The origins of this expression are interesting. I – along with many – long felt that the expression was associated with a discussion held between Senator John F. Kennedy and his brother Robert F. Kennedy in contemplating a run for President of the United States in 1960 following the humiliating defeat of Adlai Stevenson to the popular President Eisenhower in 1956. This was the second trouncing of Stevenson, and it was clear that the Democratic Party was never going to run Stevenson again. However, in doing research for this article, I was surprised to learn that the true originator of this expression was a person named Hillel the Elder (110 BC – 10 AD).

Apparently, I was not the only one that did not know the originator of this quote. Many were very surprised as I. Hillel the Elder was a famous Jewish religious leader associated with the development of the Mishnah and Talmud.

#### A Personal Thank You

I wish to express my thanks and appreciation to the Ohio Water Association (OWEA) Board for electing me to a second consecutive term for the WEF House of Delegates. In discussing my desire to run for a second

# KOCAREK KORNER

term with fellow WEF Delegates Doug Clark and Tom Angelo last year, both agreed that the WEF experience is difficult to achieve in one three year term. The way the system works is that a new delegate often is not "plugged in" until his/her second year. While being part of a work group can be very satisfying, it is not the same as being part of WEF committees, which gives meaning to the experience.

I wish to point out that a number of member associations (MAs) re-appoint WEF Delegates, but Ohio has not traditionally done this. One reason pertains to the good talent pool OWEA has historically had. Therefore, I consider this

to be an honor to be essentially the first to achieve this distinction in recent history. Very important and from a



Emperor Marcus Aurelius

practical standpoint this allows me the opportunity to maintain my relationships and continuity that I have formed with WEF leaders and fellow Delegates and Board of Trustee (BOT) members. It also will provide me more knowledge to participate with WEF at a higher level than I could in my first term. If I wish to go further in the organization to the Board of Trustees this additional term will only benefit me and the Ohio Water Environment Association.



Hillel the Elder

I would be remiss to not state that the commitment to serve WEF in this capacity also comes at a price in terms of time and energy. I recognize that there will come a time, when I will not be able to do these things as I am today. So, I am seizing the moment and opportunity while I can.

#### A Call to Action

Life is very short. To quote Roman Emperor Marcus Aurelius (121-180 AD): *Do not act as if you have ten thousand years to live.* 

One frequently discussed topic at WEF and OWEA is how to recruit new members and ung Professionals (VPs), which are those new

engage Young Professionals (YPs), which are those new to the industry (less than 5 years) or 35 years of age or younger.

As a member of the OWEA Board since 2004 I can state that we understand the need to do a better job recruiting YPs in all areas including universities, two year schools, in consulting firms, industries, and in wastewater treatment plants (especially front line operators). It is our responsibility to create an organization that is inclusive - and create an environment of belonging similar to the intimate setting depicted in *Our Town*. We recognize that the YPs of today are our leaders of tomorrow.

Conversely, once we create opportunities it is important for YPs – and other volunteers to follow through with enthusiasm and action. I have seen many YPs in my travels through WEF who are amazing and have risen to great heights in the organization and their careers. Therefore, *If not us who; and if not now when*?

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## WEF Delegates' Report



Dale Kocarek

#### **Promoting Who We Are**

The Annual Fly In was April 11-13, 2016. Again, WEF joined with NACWA and other groups to form a strong coalition of water professionals on Capitol Hill. Our Fly In to "the Hill" is part of the outreach effort promoted by the House of Delegates Work group called the Voice of Water (VOW). One prong of the VOW is to support to Water Coalition, which is a consortium of many organizations joined to promote the message of clean water and infrastructure funding, and the campaign called "A Day without Water," which WEF will rally around this fall.

Our day on Capitol Hill was Tuesday April 12, 2016. Our group of seven, which included Amy Davis, Steve Wordelman, Tom Angelo, Doug Clark, Fred Smith, Jason Tincu and myself, met with representatives of our Ohio Congressional offices. Our message to our elected representatives was kept simple. We advocated \$2 Billion for the SRF, funding of research through WERF, and several House Resolutions (including HR 1705), which include a number of provisions including support of integrated planning, revision of affordability metrics and set asides for small rural communities to offset high cost projects. HR 1705 is a bipartisan effort between Representative Bob Latta of Ohio and Timothy Walz of Minnesota.

Going to the Hill makes us practices our "elevator speech," which is a speech that could be given in a moving elevator to a captive audience. The idea is to present who we are and what we want in a clear, succinct manner. This takes a lot of practice. One good example by WEF is as follows:

#### 2016 - Creating the Future of Water – General Public

- Protecting the water environment is what we do.
  - The Water Environment



Tom Angelo

Federation's community of water professionals creates a healthy global water environment that protects public health and our quality of life.

• We support the men and women who work everyday to ensure that water is cleaned and returned safely into the environment for reuse.

• We pursue progressive, integrated management approaches that expand water treatment to recovering valuable resources for society.

• We promote water resource recovery facilities that operate smarter and more efficiently to reduce costs, increase revenue, and provide sustainable, positive impacts to our environment.

#### Storm Water Work Group Update

After a few months delay, the storm water work group is just getting started. The Chair is Dean Miller of Pennsylvania. For reasons, which are becoming clear to all of us, storm water issues hold more interest with than they did a decade ago. Several reasons are evident. With more focus placed in integrated planning, which includes storm water, communities are looking for more advice on how various control measures can be quantitatively implemented to provide benefits for water quality. This requires research. In addition, the subject of nutrient reductions continues to gain momentum. Given that a large percentage of nitrogen and phosphorus is generated from nonpoint sources, more information and research is needed to quantitatively understand how non-point sources can be controlled and regulated. To meet this need. WEF started the Storm Water Pavilion at WEFTEC. This has become a much recognized and visited landmark at WEFTEC.

The Storm Water Work Group has two initial tasks. The first is to identify Member Associations that have a



Tom Fishbaugh

storm water committee. (For example, OWEA currently does not have a separate storm water committee.) The second task is to identify other storm water organizations of statewide and regional focus outside of the WEF umbrella. In Ohio, a good example is the Ohio Stormwater Association.

Expect to hear more on the subject of storm water in the future.

#### **WEFMAX Meetings**

We are not in mid cycle on the WEFMAX meetings, which start in early April and run through May. WEFMAX stands for WEF-Member Association-Exchange. Over the last dozen years, WEFMAX meetings have been some of the best growth experienced in the organization. This year, the meetings are in Orlando, Philadelphia, Chicago, and Vail. WEFMAX meetings have a number of benefits including:

• Meetings are typically less than 75 persons from all MAs, so there is a good opportunity to get to know other people from across the United States and Canada. For example, I got to know WEF Vice President Jenny Hartfelder from the Rocky Mountain WEA years before she became a member of the WEF Board of Trustees.

• Given the small size of the venue, WEFMAX is an excellent opportunity to know WEF staff members and officers. Dianne Crilley from WEF manages WEFMAX, and she is awesome. She is a dignified, wellspoken professional, knowledgeable, well organized, and down to earth. She is held in high esteem by all that have had the pleasured to get to meet her.

• Discussions are fast paced, candid, sometimes intense, and MAs share successes and challenges. There is high energy in the room, and at the end of the two and a half day session, we are exhausted.

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Happy Spring Northwest Section! I would like to thank everyone that came out for our March Section Meeting

in Lima. It was quite an event with over 100 people attending! Plant tours were held at the Shawnee II Wastewater Treatment Plant and our industrial tour took place at the Guardian Ethanol Plant. A short business meeting and technical sessions were held in the afternoon and included topics covering the recent improvements to the Allen County WWTP, flow monitoring technology, chlorine safety and financial and technical resources available from the Ohio EPA.

I would like to congratulate our Science Fair Winners:



Roberta Acosta with Steve Kayatin, Allen County Sanitary Engineers, at the March Section Meeting.

Devi Dheekshita
 Nelnkurti from Shanahan

Middle School won the Marion OSU Science Fair with their project "Efficient Method of Cleaning up an Oil Spill"

• Nicole Knippen from Ottoville School District won the ONU Science Fair for her project "Finding the Best Drainage System for Crop Residue Run-off"

• Zaneh Adya and Israa Handan from Toledo Islamic Academy won the University of Toledo Science Fair for their project "Microorganisms Effect of Run-off and Fertilizer in Streams and Rivers".

Also, big "Thanks" to all the OWEA members that volunteered their time to help judge these events.

Please join me in welcoming Tony Hintze (Fremont) and Terri Brenner (Perrysburg) as our new Lab Committee Co-chairs and Todd Saums (NWWSD) as our new Operations Committee Co-chair. Congratulations and thank you all for donating your time and talents to our Section! We still have open Chair positions, so if you are interested in volunteering, you know the drill...

On April 5th, the Operations and Personnel Committee hosted a free workshop for members, including lunch in Archbold. Topics included: How to Utilize your Lab Data to Optimize Process Control, WW System Operational Efficiency, Fostoria CSO LTCP and Operational Updates, Is it Really Waste? and Compliance Tools for Small WWTPs. On April 29, the Section also held its Semi-Annual Operator Education Day in Bowling Green.

Our next Section Meeting and Golf Outing is scheduled

for May 25th in Perrysburg. Technical sessions will be held in the morning and the golf outing and plant tour will be held in the afternoon. Details are being finalized so look for more information to hit your inbox soon!

I am happy to announce that our Annual Spouses and Friends Day event this year will be held at the Toledo Zoo on August 5th! A picnic lunch and technical session on the Zoo's water management activities with tours is currently being planned. New activities for the family this year include Tower Ridge, a giraffe feeding experience and the Zipsafari and Adventure Course, which includes two high ropes

challenge towers and an 80-foot zipline. Registration will include lunch, zoo admission and parking. Look for more information in the coming months.

As this is my last official Section Report, I would like to take a moment to thank all of our Section Meeting hosts, Lucas County Water Resource Recovery Facility, Allen County Sanitary Engineering and Perrysburg Wastewater Treatment Plant for all of the time and effort you put into preparing your facilities for our section meetings. I would also like to thank the Executive Committee for your continued hard work and support of our section members. And finally, thanks to all of you for the great work that you do every day! It has truly been an honor and privilege to serve as your section president.

If you have any suggestions, comment or questions, feel free to contact me at *rjacosta@wsos.org*.



S W O W E A

Roger Rardain, President

The SWOWEA 27th Annual Industrial Waste Seminar and Section Meeting was held at Manor House in Mason, OH on January 28, 2016 with over 130 in attendance. The technical sessions provided 6 contact hours. The Dr. Karl G. Voelkel Industry Award was presented to Pacific Manufacturing of Ohio, Fairfield.

Thanks to Chairperson Sharon Vaughn and the Industrial Waste Committee for another outstanding Seminar. A big thank you goes to the exhibitors and sponsors that help us to keep the costs down for all SWOWEA meetings and seminars for our members.

Thanks to Dave Wilson, Sharon Vaughn, and the City of Dayton Water Reclamation Facility staff for hosting a successful SWOWEA Section Meeting on March 24th. The plant tours were great and so were the donuts! The lunch was outstanding, and the afternoon technical programs were interesting and informative. On behalf of the SWOWEA, I would like to thank Pelton Environmental Products for sponsoring the donuts and Arcadis, Black and Veatch, Brown & Caldwell and Hazen & Sawyer sponsoring the lunch.

The Winter LAC meeting was held Thursday, February 18th at Montgomery County at the Environmental Learning Center. This meeting was well attended, and provided 3 contact hours.

The SWOWEA has many events upcoming:

• A Plant Operation Education Day is scheduled for April 22, 2016 at Montgomery County Sanitary Engineering Building. These continue to be a low cost opportunity for operators preparing to take the OEPA Wastewater Class 1, 2, 3, or Collection exam to work through a sample exam with instructor provided solutions.

• Join us on May 19, 2016 for our section meeting at the City of Middletown. After our lunch, we'll

convene to vote on the new slate of officers for 2016-2017 as nominated at the March section meeting. The nominees are:

Jason Tincu, President

Steven Reese, Vice President

Erik Torgersen, Treasurer

Dave Wilson, Secretary

Keith Heffner, 1-Year Director

Kelly Kuhbander, 2-Year Director

Dave Reinker, 3-Year Director

Jason Tincu, State Delegate

Roger Rardain, Past President

• June 2, 2016 brings our annual Plant Operations Seminar at the Greene County Media Room in Xenia.

• The Laboratory Analysis Committee has free events on their schedule. The Spring meeting is on May 12, 2016 hosted by the Sidney WWTP in Sidney OH. The Summer LAC meeting will be July 21, 2016 and hosted by the Fairfield WWTP.

• The SWOWEA Young Professionals/Watershed groups are also busy.

On April 8th, 2016, a lunch time tour of the Cincinnati Nature Center Algaewheel Tour took place. In May 2016 afternoon tours of the Upper Mill Creek WRF and Koch Foods to view the recent upgrades to those facilities are scheduled. The tours will be followed by a networking happy hour sponsored by Hazen and Sawyer.

As my year as the SWOWEA President begins to wind down, I want to take this opportunity to say "Thank You!" to the membership for giving me the honor and the privilege to serve. Leading the section was quite easy, as the SW Executive Committee is made up of superb wastewater professionals who take their responsibility seriously and do what is needed.

I want to take one more opportunity to thank the Executive Committee, our Committee Chairs and members, and our sponsors for all you do. I am proud to be associated with all of you.

For all the latest you can find us at www.swowea.org. Roger Rardain *roger.rardain@ci.fairborn.oh.us.* 



**SEOWEA** Brandon Fox, President

I hope everyone is doing well and enjoying the spring. Even after a mild winter it is nice to finally get some warmth. The Southeast Section kicked off spring with our annual Collections Section Meeting and our annual Small Systems Training which were both on April 14th. They were both successful and well attended. Thanks to everyone that helped make it great!

Looking ahead we have our next section meeting on May 19th which will be covering Biosolids and Regulatory. We're excited for the great speakers and presentations we have prepared for it. I hope to see everyone come out.

As always feel to reach out to me or anyone else on our section's Executive Committee with any ideas or comments.

# Section Reports





My past president's message focused on the critical work of the Section's leaders. The Executive Committee and the specialty committee leaders continue to provide a high level of service keeping the Section on the go. Being President is easier than I imagined it would be having such an enthusiastic multi-tasking team gettin'er done. The membership is well served and the future is bright because we are always plowing new ground and engaging new voices with new ideas.

In this letter I wanted to share an experience I had recently which reflects the criticality of our frontline members carrying out their daily work. Without mentioning names, I visited one of our community's POTW on the day they were visited by the NE District EPA. It was a scheduled visit wherein a fairly comprehensive examination of the plant's operation was conducted. The focus was on sludge handling and disposal however. The time of the visit was mid-March; a time when many of our facilities that land apply are at capacity with held from biosolids over the winter. With fields not yet ready to take biosolids, this can be the most challenging time of year. By the way I am writing this on April 9th looking out my window at 6" of fresh snow. The expression "What doesn't kill you will only make you stronger" may be running through the mind of many superintendents. For me, an engineer, I can only sympathize, but late snow is enough to sour anyone's digester... Anyway.

The interview lasted about two hours. The discussion was detailed with a close examination of sludge inventory, the new 5/8" screening regulations and the compliance testing method, VSS reduction, vector attraction, SOUR testing, metals and other contaminants and application guidelines. The EPA representative was well prepared, organized, and professional as he pressed on through his numerous forms asking numerous questions about operation, testing methods, results and reviewing the calculations used in the preparation of the city's DMR and other reports. He was equally pragmatic and understood the challenges the plant faced; and was quick to offer advice and options to help the plant in their goal of compliance. The operators needed little help however as they were equally prepared. Their records were ready at hand, concise and for the most part exceeded the minimum standard of practice expected from the regulator. The relationship between these front line workers was very healthy; not adversarial as an outsider might think. My takeaway was that they both realized that they share the same goal "Sparkling Waters" and that made all the difference.

Since our last Section event we held our annual Watershed Workshop on March 30th at Cleveland State

University. It has been a long time since I graduated from there and I am pleased to see the progress that has been made, particularly their wonderful Student Center where we held our conference. Having the Watershed seminar on the shores of Lake Erie, the recipient of both the good and bad impacts to its contributing Watershed, made the event take on special meaning. This event, spearheaded by Bill Zawiski of NE District EPA, is always well attended. This time was no exception with about 120 in attendance. Green infrastructure technology, study of wetland denizens and a case history of the infamous Rocky River fish kill were among the presentations attendees heard. Perhaps the best part of the seminar was the attendance of many CSU engineering, biology and environmental science majors. At the risk of being a broken record, this type of symbiosis between our section activities and potential members is both critical for our sustainability and a boon to young people finding their place. Remember "Encourage - Welcome - Educate". These students got to meet a number of you and began critical networking. To those of you who reached out to them, Thank You!

Looking ahead, Vice President Paul Solanics has arranged to have our May 19th Section/Business meeting in Kent, Ohio with a tour of the plant and technical sessions thereafter; and Mike Cook is already planning the 10th Annual BioMassters golf outing! MaryAnn Driscoll and Art Kimpton are busy planning this years' State Conference, right here in the NE Section in Aurora at the Bertram Inn and Conference Center. The NE Section will follow the NW Section lead to put on a Monday Utility Workshop. Kathy Richards and Jim Cooper are co-chairing and the theme is tentatively "Public Outreach and Education geared towards municipal leaders & administrators facing upcoming regulations".

On behalf of the Executive Committee I trust the program of contact hours continues to be relevant and sufficiently meets your continuing education needs. As always I am available to hear your voice and communicate your interests to keep our Great Section Great!

See you along the way!

Tom Voldrich, NESOWEA President – Reach me at *tvoldrich@ctconsultants.com*.



Presentation at the annual NESOWEA Watershed Workshop at Cleveland State University on March 30th.

# GOVERNMENT & REGULATORY AFFAIRS COMMITTEE

by Dale Kocarek, P.E., Government and Regulatory Affairs Chair John Owen, P.E., Government and Regulatory Affiars Co-Chair

On behalf of myself, John Owen, and the rest of the OWEA Government and Regulatory Affairs Committee, I want to thank all of our presenters and attendees at the workshop help on March 17, 2016.

The workshop was held at the DoubleTree Columbus-Worthington. There were 139 registrations for the 6.0 contact hour/PDH event. While not the highest number of registrations ever for an OWEA specialty workshop, it was an honorable showing.

This year's workshop featured presentations ranging from regulatory/governmental updates to specific discussions involving topics such as the final update on Ohio EPA's Nutrient Technical Advisory Group involving the Stream Nutrient Assessment Procedure (SNAP) by OWEA's GRA Committee members Guy Jamesson and Elizabeth Toot-Levy. Ohio EPA Director Craig W. Butler returned this year and provided an update on Ohio EPA's direction and goals with an emphasis on issues surrounding drinking water and lead. Following Director Butler, Ashley Ward, the Division of Surface Water's NPDES Permits Supervisor and Harry Kallipolitis, the Division's 401/404 and Stormwater Program Manager provided an Divisional updates. Additional highlights of this year's workshop also included Richard Harrison, Executive Director of ORSANCO, provide and update on Ohio River regulations. Also presenting at this year's workshop was Adrienne Nemura of Geosyntec, whose presentation "EPA's Next Generation Compliance Program - Are We Ready for Big Data" provided an overview of using large data set for developing and complying with NPDES permits, and Jerry Rouch, Assistant Chief with Ohio EPA's Division of Environmental Financial Assistance, provided an update on project funding and compliance assistance programs offered by the newly updated division.

Also attending this year's workshop for the 2nd time was Claudio Ternieden, Water Environment Federation's Director, Government Affairs, who gave an update on wastewater issues on Capitol Hill, and Dorn Sanders and Fidan Karimova of the Water Environment Research Foundation, whose presentation provided an overview and update and the Water Environment Research Foundation, as well as provide information about the Leaders Innovation Forum for Technology (LIFT).

Should any of the membership have topic suggestions for next year's workshop, which will be scheduled in early March of 2017, please contact Chair Dale Kocarek or GARA Vice Chair, John Owen. Please note that the date for the 2017 workshop has not been set yet, but it will be in the first half of March. We try to stay away from the final blasts of winter, which have been known to occur during the first week of March, and spring vacations and March Madness in the later part of the month.

#### **An Evolving Focus**

As a departure from the past, I encouraged participants in the workshop this year to include greater emphasis and discussion on drinking water. In fact, some of the most active discussion was Director Butler discussing the Agency's challenges in moving forward past Sebring's recent challenges to a new and brighter future for regulations involving increased reporting as it pertains to lead. .

As we move into the future, I will not hide my belief that we need to more closely interact with the Ohio AWWA in conferences and workshops such as our GARA workshop. As we are becoming all aware, we live in a "ONE WATER WORLD" with ever decreasing separation between issues and challenges associated with drinking water, stormwater and wastewater.

#### **Fly In Aftermath**

I won't elaborate much more on the Fly In experience except to say that it is rewarding, intense, and exhausting. The amount of walking in dress attire is something for which some of us are poorly suited. Yet, Washington DC is a great city, and one that I find exhilarating. Last year we were there during the Cherry Blossom Festival and it was something of beauty words cannot describe.

Every year we learn something. Mostly we look for ways to become memorable and promote the value of our knowledge as "go to" professionals. One of the things I learned this year was the possible value of giving a congressional rep or aide a tour of your wastewater treatment plant and community so they understand what a plant does and looks like and an actual CSO. Most our representatives want to do the right thing, but their challenges is multiple competing interests -all of merit and value to society. But unfortunately, we need to be heard, or else our voices will be drowned out by others. (Case in point, I heard from several members of WEF that OWEAs letters to Congress on the Kirk Amendment were very helpful in getting that provision removed from the Presidents Funding Bill in late 2016. This is a proof that grass roots advocacy works.)



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# STUDENTS & YOUNG PROFESSIONALS UPDATE

by Alicia Adams, Young Professionals Chair

Are you a student or young professional (35 years old and younger or five years or less in the industry)? Are vou interested in getting involved with OWEA, but not sure exactly how or what is required? This is the first of what I hope to develop into a series of articles that can explain better the various committees that OWEA offers and what would be expected from you if you were to get involved. My hope is that we can find a committee that fits your interests.

With the upcoming election and all of the chatter associated with it, I thought it best to start out this series by explaining our Government and Regulatory Affairs Committee.

The Government and Regulatory Affairs Committee chair is Dale Kocarek. Dale can be reached at Dale.Kocarek@Stantec.com. The committee has been involved with educating the Senators and House of Representatives on both the State and National level. They are also teaming with the Ohio EPA to provide Interested Party Reviews and Early Stakeholder Outreach.

The Government and Regulatory Affairs committee is specifically interested in getting students and YPs involved with the committee through the following:

• Working together to develop a long term approach to build relationships with our own Ohio State House in addition to what we have done every year with WEF and NACWA in Washington DC. To do this, they need to have a small and dedicated group. It is predicted to be a rather short commitment duration, but afford a very meaningful involvement to OWEA.

• The committee is in need of more researchers and writers for the Buckeye Bulletin articles and for letters to public officials.

• The committee wishes to be better engaged with our Sections in their creation of/development of their own emerging Government and Regulatory Affairs Committees.

Like anything we do, we can all agree that success breeds success. If you are interested in becoming involved with the committee, please let Dale know.

Another committee in search of Students & YPs is the Water For People committee. Specifically, we are in the beginning stages of planning for the second Race for Global Water 5K event and could use some help. Let myself or my Co-Chair Afaf Musa at musaab@cdmsmith know if you are interested in helping out. Please refer to the Water For People article in this Buckeye Bulletin or the website (*waterforpeople.org*) to learn more about what Water For People does.

I can honestly say that my experiences with OWEA have been wonderful. I have been afforded an opportunity to meet so many wonderful people that I can honestly say that becoming a member allows you the chance to progress both professionally and personally. Please let me know if you are interested. We'll find a way to get you involved and at a price you or your employer can afford.

Feel free to reach me at AAdams@Munitreat.com or 740.627.0431.

I look forward to working with you!

#### **PUBLIC EDUCATION COMMITTEE REPORT**

by Kevin Stilwell, P.E., Chair

#### **Education Outreach**

We are always trying to grow the (Education and Outreach Funding Assistance Request) EOFAR program to reach as many minds as we can across the state. We hope to continue growing this program, as the future generations learn about our great industry. In an effort to reach more people, we are working on a brochure to make available to schools and educators, broadcasting the benefits of the program. If you would like to get involved in the effort to reach as many as we can, please contact me.

#### **Science Fairs**

To our district judges, THANK YOU for taking the time to judge projects in the water/wastewater category. This is always a great opportunity to encourage future generations to continue to generate ideas in the water/ wastewater field.

Kevin Stilwell, P.E., Chair kstilwell@raconsultantsllc.com

# LAB ANALYSIS COMMITTEE UPDATE

by Denise Seman and Melodi Clark, Committee Co-Chairs

#### Hi Everyone!

Thank you Bridget Shiets, for your work as NW section Chair...we'll miss you.

Welcome aboard Anthony Hintze and Terri Brenner as the new NW Section Co-Chairs.

Tony has been in wastewater for 16 years all with the City of Fremont, 11 of those years as an operator. He started working in the lab in 2006 and became a Lab Tech five years ago. Tony does all the sampling and analysis for the industrial pre-treatment program as well as the analysis for the plant. Tony has a Class III EPA Wastewater License and a Class I OWEA Laboratory Analysis Certification.

Terri started working at Perrysburg (a neighbor of Toledo) in 1986 and has been there ever since. It will be 30 years this June, but who's counting?, LOL ! Terri did graduate from ONU in 1985 with a BS in Biology and specializing in Environmental Testing; She also holds an AA degree in Natural Science from Lourdes University. Terri did her college internship with John Hoffman at Alloway in Lima, so many years ago. Her first job after college was in Columbus, working for the OEPA collecting statewide stream field data to be used for NPDES permit renewals. Terri holds a Class III WW Operators License and a Class II Lab Analyst Certification. Terri is a proud recipient of earning the first NW Ohio Kathy Cook Lab Analyst Award, and enjoys being a member of the Crystal Crucible Society. She has two great kids, a boy who is 24 and a girl who is 12 years old.

Terri has taken a turn at being the NW LAC chair a while ago, and has been helping judge the Ops Challenge just about every other year. She has fond memories of actually being a member on an Operations Challenge team in the 90's. Perrysburg's team won the State level and got to fly to Dallas for the National Competition.

Terri and Tony are looking forward to the future and want to mastermind some successful NW Ohio LAC meetings, so if anyone has a topic that they would like to have addressed at a training meeting please let them know.

### **COMMITTEE CONTACT INFORMATION**

**Co-State Chair** Denise Seman (330) 742-8820 DSeman@YoungstownOhio.gov

#### SW Co-Chair

Karen Tenore (937) 333-1501 karen.tenore@cityofdayton.org NW Co-Chair

Anthony Hintze (419) 334-3876 tjhintze@gmail.com

#### **NW Co-Chair**

Terri Brenner (419) 872-8041 tbrenner@ci.perrysburg.oh.us

**NE Chair** Bev Hoffman *NESOWEALAC@gmail.com* 

#### CO-STATE CHAIR & SE CHAIR

Melodi Clark (614) 645-1239 MLClark@columbus.gov

#### SW Co-Chair Jim Davis (937) 496-7051 DavisJi@mcohio.org

#### Join Your Section's Lab Analysis Committee

Certified wastewater analysts are a valuable resource to the industry. Network with and learn from other certified wastewater analysts in your area. Learn how to become certified by contacting the LAC Chair in your section.

#### SW LAC – Jim Davis and Karen Tenore SW LAC Meeting News

Look for information on the upcoming meetings.

To inquire about being added to our e-mail list or to get information about attending, hosting, sponsoring or presenting at a future LAC meeting, please contact:

Karen Tenore, City of Dayton WRF

937-333-1845, karen.tenore@daytonohio.gov

Jim Davis, Montgomery County Water Services 937-496-7051, *davisji@mcohio.org* 

Committee Members:

Lynette Hodnicki, City of Fairfield Lori Kyle, Greene County Teresa Shinkle, Greene County Gregg Mitchell, City of Sidney Roger Rardain, City of Fairborn Dr. Robert Smith, YSI

#### **NE LAC –Bev Hoffman**

#### **NE LAC Meeting News**

We had a great turn out for our March 25th meeting hosted by Northeast Ohio Regional Sewer District.

We discussed MDL's, GLP's and recapped the Globally Harmonized System of the Classification and Labeling of Chemicals. A special thanks to Mark Citriglia from NEORSD for making it all happen.

Our next meeting is still in the planning stage, so If anyone has a topic they would like to have presented or knows someone who would like to present a topic, please let me know. If you would like to be added to the NES LAC membership directory and receive automatic emails for training events, please email nesowealac@gmail.com.

#### SE LAC – Melodi Clark

#### **SE Section LAC Meeting News**

For the first time since I have been the SE Chair I had a meeting that 26 people attended! It was awesome! I want to thank City of Zanesville WWTP especially Amy Hursey and Jerry Ussher for their wonderful hospitality. We had a great day with a tour of the plant and Rhonda Morris from Alloway Labs gave a talk on the new Free Cyanide method. We spent the afternoon refreshing our memories and going back to basics on CBOD and QA/QC in the labs. I want to also thank Darren Reese from Thomas Scientific for sponsoring the lunch which allowed us to offer four contact hours at no cost to anyone! I hope this is a sign of how things will go this year for our other LAC meetings. It makes me very excited! The next meeting will be either the end of May or beginning of June and it looks like we will be heading to Newark for that meeting.

#### NW LAC – Tony Hintze and Terri Brenner

#### **NW Section LAC Meeting News**

Happy Spring!! Terri and I are just getting started planning for this year. Our first meeting is in the works and should be an interesting one, so keep your eyes open for the email. If you're not getting emails from us be sure to send me your email address so I can add you to the list. (tjhintze@gmail.com)

I also wanted to add that we are here to help. If anyone is having difficulties in their lab, please don't hesitate to give us a call or shoot us an email. If we don't have the answer, we will make sure to find one or get you in contact with someone who does. Additionally, if anyone has a topic they would like to see presented or if you know of someone who would like to present a topic at one of our meetings, please let us know!

We look forward to seeing you at the next meeting. And remember, working in the lab is just like cooking in your kitchen, just don't lick the spoon!



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# GETTING READY FOR CONSTRUCTION SEASON SAFETY COMMITTEE UPDATE

by Mike Welke, Safety Co-Chair

After we all have enjoyed the mild winter, Mother Nature threw a monkey wrench into the mix with an April snow. I guess she was trying to keep us on our toes. This is a good reminder of the Boy Scout motto "Always be prepared."

With the days getting longer and warmer plans are being made for construction projects on your collection system. Safety equipment that is used on these projects should be checked during the planning stage. Items such as shoring, barricades, gas monitors, and harnesses are just some safety equipment that should be inspected. You should perform a visible and physical inspection of these items.

#### Shoring

Shoring is one of the most important pieces of safety equipment for a sewer construction project. Do a visual inspection of your shoring for any damage, especially look around the ram and guides. Look for leaks at the hose connections and pump. Make sure the fluid reservoir is full and not leaking fluid. Check the lifting hooks and make sure they are secured to the shoring. Inspect the lifting chains for any defects.

Physically extend the shoring and hold it in the extended position. Watch the pressure gauge to see if it will hold pressure. Look again for leaks in the hose and pump. Inspect the return springs that are used to collapse the shoring. Check the guides for damage while it is extended.

#### **Barricades**

Barricades come in a variety of materials such as wood and plastic. Inspect to make sure that they can stand freely and that they are highly visible. If they have a flasher attached, replace the batteries and test to make sure they work. Check construction signs and stands. Keep an ample amount of barricades and cones available to properly block off the construction area.

#### **Gas Monitors**

Gas Monitors are a very critical piece of safety equipment for both your facility as well as construction projects on your collection system. Test and calibrate these gas monitors often. Most facilities have at least one person trained to calibrate and test these gas monitors. Check to see how long the battery is holding a charge as you need it to last for as long as someone could be in the hole. Change any sensors that failed the test.

#### Harness

Inspect harnesses for any frayed or cut straps. Check buckles and eyelets for any damage. Look at the D-ring and where it attaches to the harness for any damage or if it looks excessively worn. Also check all lanyards for any sign of being compromised. Replace if you are in any doubt.

These are just a few things to look at before going out to do construction on your collection system. Always consult your facility's safety personnel on any question of policy and procedures related to equipment inspection or use. I hope everyone has a safe and productive summer construction season.

The Committee would like to thank all of the facilities who submitted safety award applications this year. We wish them all good luck. As always, anyone who would like to become involved with the OWEA Safety Committee please contact one of us below.

# **COMMITTEE CONTACT INFORMATION**

SAFETY COMMITTEE CO-CHAIR

Nathan Coey City of Pataskala ncoey@ci.pataskala.oh.us SAFETY COMMITTEE CO-CHAIR Mike Welke City of Warren mwelke@warren.org





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# Workshop Chair:

Bill Horst, P.E. Collections Committee Chair Montgomery County Water Services 937.781.2636 horstb@mcohio.org

### Agenda

8:15 - 8:30	Registration and Light Continental Breakfast	
8:15 - 8:30	Welcome/Introductions/Opening Remarks Bill Horst, P.E., Collections Committee Chair	
8:30 - 9:00	Prioritization of Sewer Repairs for the City of Akron Dan Johnson, P.E. , Burgess and Niple	
9:00 - 9:30	Asset Management of Collection Systems Tom Brankamp, Strand Associates	
9:30 - 10:00	Asset Management for Small Communities Rick Miller, FTC&H	
10:00 - 10:15 Break in Exhibit Area		
10:15 - 10:45	Columbus Has Gone Green C. Timothy Fallara, P.E., City of Columbus Eric Onderak, AECOM	
10:45 - 11:15	Green Infrastructure Maintenance Leslie Schehl, P.E., MBA, PMP, MSDGC	
11:15 - 11:45	How To Get That Project Funded Roberta Acosta, Ohio RCAP	
11:45 - 12:45 Lunch		
12:45 - 1:15	City of Akron - Three Green for Gray Projects Patrick Gsellman, P.E., City of Akron Kristen Miller, P.E., MWH	
1:15 - 1:45	Improving Green Infrastructure Michael Cook, ADS Pipes	
1:45 - 2:15	City of Akron FOG Program Fred Neugebauer, P.E. , City of Akron Dan Moss, Burgess & Niple	
2:15 - 2:30	Break in Exhibit Area	
2:30 - 3:00	Bypass Pumping - Selecting Equipment Kevin Baur, Ohio CAT	
3:00 - 3:30	Unmanned Aircraft Systems for Geospatial Data Collection Aaron Lawrence, Woolpert	
3:30 - 4:00		

4:00 Closing Remarks

# **PLANT OPERATIONS UPDATE**

by Kim Riddell and Joe Tillison, Co-Chairs

Please plan to join us for the 2016 Operations Challenge Competition which will be held during the OWEA annual conference at the Bertram Inn in Aurora, Ohio on June 27th and 28th, 2016. We are happy to announce that the event will again be an invitational with up to 12 teams being hosted. Register **NOW** to reserve your spot for this exciting event! Registration is open now and contest rules are available on the website. Contact Kim or Joe with any questions that you have.

Our 2016 Plant Operations and Laboratory workshop will be held at the Doubletree Columbus Worthington this year on October 26th and 27th, 2016. The committee is working on a great line-up again this year! Day One will focus on **Green Infrastructure** and management / maintenance / and certification of those efforts in addition to utility enhancement projects. Day One includes several invited speakers covering the **National Certification Program** under development currently for green infrastructure and several utility/ community leaders that have deployed significant green infrastructure programs. Day One will wrap-up with our much anticipated cocktail hour round table discussion including all of the day's speakers. Day Two will cover emergency operations and maintenance, phosphorus removal and the impact to POTW and the agricultural community, phosphorus recovery, and mercury variance oversight. Day Two will also include a concurrent track covering laboratory topics. So save some money in the training budget and be sure not to miss this great opportunity to learn from some nationally recognized leaders in the industry as well as some Ohio "home-grown" bests! We look forward to seeing you there!

If you are interested in putting a team together for Operations Challenge, becoming a member of the committee or assisting as a judge / volunteer for Operations Challenge, please contact Kim Riddell at 419-234-4507 or *kim.riddell@alloway.com* or Joe Tillison at *JTillison@bgohio.org* or 419-354-6274.

#### **TEST YOUR KNOWLEDGE - TAKE THE OPERATIONS QUIZ**

**1.** In general, what effect does temperature have on the wastewater treatment process?

a. Reaction rate stays constant over time until temperatures exceed 20°C (70°F)

b. Reaction rate increases exponentially for every 10°C (18°F) increase in temperature
c. Temperature has no effect on the reaction rates in wastewater treatment
d. Reaction rates double for every 10°C (18°F) increase in wastewater temperature

until high temperatures inhibit biological activity

2. Inactive valves should be exercised \_\_\_\_\_?

- a. Daily
- b. Weekly
- c. Monthly
- d. At least quarterly

**3.** When using a progressing cavity pump to pump sludge, what condition should be met at the pump intake in order to protect the pump?

- a. Dry
- b. Hot
- c. Primed

d. Submerged

**4.** If the specific gravity of hydrogen sulfide is approximately 1.19, at what location in a manhole would you most likely encounter this gas?

a. It would be equally mixed with the other gases that are present

- b. Near the top
- c. Near the bottom
- d. It would dissolve into the liquid and rarely be present as a gas

**5.** In the laboratory, MPN stands for what in relation to coliform testing?

- a. Most practical number
- b. Most probable number
- c. Molecular positive number
- d. Mass production number

Answers noted below. Questions, comments, or submit a suggested question? Email OWEA at info@ohiowea.org

Answers: 1–d; 2-d; 3-d; 4-c; 5-b

# INTEGRITY AQUATIC

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# DRIVEN BY WATER; FUELED BY PASSION

by James P. Cooper, Arcadis

Do it with passion or not at all. Do you agree passion is a luxury most cannot afford to take the time to find?

As professionals in the water sector we serve in some of the most rewarding roles one can

imagine. I admit it is easy to be washed downstream in the tyranny of the immediate, amongst the multiple tasks we are balancing, without recognizing that the needs of today will quickly be forgotten tomorrow. In other words, focus less on the what of your role and focus more on the why. If you haven't seen Simon Sinek's TEDx talk on this subject, search "how great leaders inspire action" in your favorite internet browser.

Focus on the why rather than the what. I've had the opportunity to wear a variety of hats in the water sector - operator, engineer, supervisor, researcher, and volunteer. For the purpose of illustration, I'll consider the operator role. When focusing on the what, one may describe his or her career in the following way - "I work for XYZ Company or Municipality. I adjust treatment processes so the plant continues to operate as intended for the purpose of achieving all regulatory requirements". When focusing on the why, the same career could be described in the following way - "Clean water and environment are essential for life and leisure. I optimize a process that converts wastewater into energy and clean water and I happen to work for XYZ Company or Municipality". If I am a prospective employer, I'd prefer the latter individual's career. If I am a general member of the public, I'd place a higher value on the latter individual's career. The latter career being the exact same role, but with passion.

Recently I was interviewing college students for internships, specifically civil engineering students. I

Do it with passion or not at all.

found myself asking why they chose civil engineering as their desired career path.

As one would imagine, I received varying answers, including a couple blank stares. It was clear who had passion for a clean environment as they enthusiastically shared it!

#### What is Passion?

Passion is a strong feeling of enthusiasm. Passion is excitement. Building upon that, passion in a career is motivation – the underlying drive regardless of the current situation or employer. The why rather than the what. Passion results in drive and is exhibited when your co-workers claim that you "eat, breath, and sleep clean water". This is not to be confused with a lack of work-life balance or work-life integration. You chose your profession because of your passion – that's how you change the world.

Criticizers may question why passion is important, or even suggest that passion is distracting for specific roles. In the water sector where resources are limited and professionals are juggling more tasks than manageable, passion may feel like a luxury you cannot afford. This is false on two accounts. First, passion is in the why not in the what! Second, challenges in our profession provide the perfect opportunity for passion to be expressed through our work.

About a year ago I had the opportunity to join water

#### **The People Place**

OWEA's leadership has opted to begin a new Buckeye Bulletin article series focusing on the people side of our industry, hence the title: The People Place. Traditionally, the Buckeye Bulletin comes loaded with mountains of technical pieces: plant profiles, industry trends, regulatory insight, project overviews, etc., which, without proper 'people-care', would not be possible! After all, your organization can only be as successful as the health,

wellness, and productivity of your people and culture. Focus areas planned for this series are topics such as leadership, management, health and wellness, succession planning, work/life balance, recruiting/retaining, change management, knowledge transfer, career laddering/branding, etc. We hope you enjoy this series as much as we are excited to bring it to you! If you are interested in submitting an article or specific focus area, please contact Jason Tincu. Thank you!

Jason Tincu, SW OWEA Delegate, jtincu@brwncald.com



leaders from across North America and identify four prominent issues facing the water sector. Those were (and still are): Customer Outreach, Aging Workforce, Financial Prudence, and Changing Regulations. Do any of these challenges provide an opportunity for passion to be expressed? All of them! Consider the impact that passion can have on just one of these - Customer Outreach. Employees with passion naturally share their enthusiasm with others around them. Imagine the impact on the value of water if a large majority of employees were willing to share their career passion with their friends and neighbors. Passion breeds passion and organic customer outreach. Your network will describe you by your passion, not by your job or employer. This is the key to building your personal brand - more on this shortly.

To be clear, passion is not everything. A highvalue employee exhibits passion in addition to other characteristics such as discipline and knowledge. I have the opportunity to work with some of the most passionate people I know and for an employer whose passion statement I firmly believe in. From this, I've observed that people with passion share these four traits:

**1. People with passion have an inextinguishable desire to continuously improve.** Especially in the water sector, complacency is not sustainable. With limited resources, progress is fueled by passion and a curiosity to identify means to improve.

**2. People with passion are optimistic.** In any role or task there are obstacles, set sights on the opportunities and solutions rather than the obstacles.

**3. People with passion are not average.** Someone with passion is driven to exceed expectations and perform extraordinary work by finding the opportunity to improve even a typical task. Simply going through the motions is not acceptable to them.

**4. People with passion share it.** Someone who is truly passionate about what they do will talk about it. Passion is contagious – it's called outreach.

#### **Build your Personal Brand**

Your brand is how the world remembers you. Branding is establishing a presence in the mind of a customer. It's the clever tag line or logo no one forgets. It's also more than that, it has depth and a person's actions reinforce the tag line. Why is establishing a brand important? Your personal brand can establish you as a leader or innovator and it can open doors you've never imagined. While your employer may have a brand, and you may be proud to be a member of their team, a personal brand can set you apart from your peers where you can be recognized by your passion rather than your job. As you grow your brand people will trust you as an individual more than the corporation. Jayson Demers, Founder and CEO of AudienceBloom, suggests five steps for building a personal brand.

**1.** Determine your area of expertise. (i.e. what is your passion?)

**2.** Start writing and publishing. This can be a blog or posts on social media such as LinkedIn.

**3.** Flush out your social media profiles. These platforms make it easy to share your passion with the world. I've seen professionals, undoubtedly passionate ones, with social media tagline "my blood type is H2Opositive".

**4.** Speak at events and develop case studies. Submit abstracts to technical conferences and talk about your passion. Conference organizers and attendees walk away excited and empowered when the speaker is passionate about a topic.

**5.** Network, Network, Network. It takes time and energy, but it's worth it! Be visible, build solid relationships and maintain those relationships. If you have the opportunity to go to a conference, focus a portion of your time on meeting people you don't know.

The operator who stated "Clean water and environment are essential for life and leisure. I optimize a process that converts wastewater into energy and clean water and I happen to work for XYZ Company or Municipality" clearly has passion and is branding themselves as a leader in their field. Perhaps the next meeting you attend is an opportunity to build your personal brand – it definitely provides a talking point to share while networking. Finding opportunities such as this are, after all, a trait of people with passion.

What is your passion? What do you want people to remember about you when you leave a meeting? Is it that you simply completed the task or that you served a critical role in providing clean water and inspired your peers to do the same? Do it with passion or not at all.

James P. Cooper Senior Engineer at Arcadis *jim.cooper@arcadis.com* 



James P. Cooper is a professional engineer and certified operator. He is a member of the NESOWEA executive committee and also serves as the water distribution systems management, planning and modeling discipline leader at Arcadis. He has a passion for providing clean water to all and sharing his experiences working with a broad range of water professionals.



# ROLL CALL



Gary Hickman, City of Columbus, was recently promoted to Assistant Administrator of the Division of Sewerage and Drainage.

After earning a bachelor's degree in Biology, from the University of Notre Dame, Gary started his career with Malcolm Pirnie, Inc. (Arcadis) performing SSES and I/I studies in the City of Columbus collection system. He also did a variety of field and laboratory

work for A.E. Stilson & Associates (DLZ) in Ohio and West Virginia before joining the City of Columbus im 1982 as a Wastewater Surveillance Technician 1 performing flow monitoring and industrial pre-treatment sampling. During his time with the City of Columbus, Gary also worked as a Wastewater Surveillance Technician 2, Chemist 1, and Chemist 2- Lab Manager at the Jackson Pike Wastewater Treatment Plant. These positions increased his knowledge of plant and collection system operations which lead to his promotion to Wastewater Plant Manager-JPWWTP prior to accepting his current position.



The Lake County Utility Department is pleased to announce the retirement of Executive Director, Rick Martin as of April 1, 2016. Rick has served as executive director for the last 14 years, and has held other key positions within the Utility Department for a combined 36 years of service.

Under Rick's direction, the department was able to develop a sustainable, forward-thinking plan that accounts

for necessary infrastructure improvements as the system ages. During his tenure, he has created a stronger and more loyal workforce by enhancing internal and public communications, improving employee benefits, and providing the right tools for employees to perform their jobs.

He has been a guiding force in helping the Lake County Department of Utility achieve success. By investing in employees and trusting their expertise, he has developed long-term organizational initiatives and values to inspire employees to take pride in customer service.

#### **Membership Services**

If you need assistance with membership details, event registration, or coursework reports, contact us at 614.488.5800 or: Amy Davis, Executive Administrator amydavis@ohiowea.org

OWEA members may complete the Roll Call form at http://www.ohiowea.org/memberships.php

Information regarding members who have passed away may be emailed to info@ohiowea.org

John Newsome, City of Columbus, was recently promoted to Administrator of the Division of Sewerage and Drainage.

After earning a bachelor's degree in Civil Engineering, as well as a bachelor's degree in Natural Resources Management and Policy, from Ohio State, John started his career with R.D. Zande (Stantec) prior to joining the City of Columbus in 2006 as



a Project Manager. During his time with the City of Columbus, John earned a MBA from Capital University and has taken on increased responsibility through his promotion to SSES Manager-DOSD and then to Assistant Administrator, Division of Power prior to accepting his current position.

Bringing a vast knowledge of water and regulatory issues, Deb Houdeshell has joined the ms consultants team. Deb has extensive experience working on wastewater, water, and stormwater projects throughout the state of Ohio, including the City of Akron Bio ACTIFLO Pilot Study, as well



as the removal of the Munroe Falls Dam.

Deb focuses on the importance of helping clients prioritize and create working capital improvement plans, along with educating clients and the public to make sure they have the resources to replace the failing infrastructure.

Outside of the office, Deb has played a large role in several organizations related to her field. She has served as the Ohio Water Environment Association (OWEA) president, first speaker of the House of Delegates, as well as the only chair of the House of Delegates for the Water Environment Federation (WEF), and held a seat on the WEF Board of Trustees. Deb is also part of the Engineering Advisory Board at Ohio Northern University College, allowing her to have a better understanding of future needs for both students and the industry as a whole.

Laura Adams Class IV operator moved employment from the Zanesville Wastewater Treatment Plant after 23 years of employment to work for the City of Twinsburg Wastewater Treatment Plant. She is extremely happy with the move. She loves that the Twinsburg Wastewater Plant is set in a wildlife reserve like environment and is looking forward to seeing the beavers, cranes and other wildlife in the spring. The plant is awesome and very nicely maintained. She will be very happy here for years to come.

## ROLL CALL



# ROLL CALL



Burgess & Niple (B&N), is pleased to announce the appointment of **Mark Hutson**, PE, to Great Lakes Division Director. In this position, Mark is responsible for operation of the firm's offices in Akron and Painesville, Ohio.

Mark joined B&N in 1998 and has served as the Great Lakes Utility Infrastructure Director since 2007. Prior to that, he was the Utility Infrastructure Section Director in

B&N's Painesville office.

Mark attended the University of Akron where he earned a Bachelor of Science in Civil Engineering. He is a registered Professional Engineer and an active member of the Northeast Section of OWEA serving as the Membership Committee Chair.

#### Water Infrastructure / Watershed Planner Position Announcement



The Toledo Metropolitan Area Council of Governments (TMACOG) is accepting applications for a full-time, watershed / water infrastructure planner. The position will coordinate the TMACOG Watershed Committee and assist with both the Wastewater and Public Water Supply Committees. Technical functions will be to organize water quality, resource and infrastructure data and conduct planning and watershed analyses for the Maumee, Portage, and Lake Erie Western Basin watersheds.

Applicant must hold at least a Bachelor's Degree in an appropriate planning related field and must demonstrate some professional management experience in a related field. Position requires skills in applying statistical and graphic procedures relevant to analyzing and presenting data. Excellent written and oral communication skills are essential. Proficiency with ArcGIS is required. Knowledge of stormwater, sanitary sewerage, and public water supply systems is a plus. Previous experience in water quality planning and a graduate level degree are strongly preferred. Grant writing experience is considered a plus.

Detailed job information can be found at http://www.tmacog.org/info\_ employment.htm. Applicants must be legally able to work in the U.S., possess a valid current driver's license, have a good driving record, and proper insurance. Successful completion of a comprehensive background check and drug screening are required to complete the hiring process. Salary DOQ. Interested candidates should forward a letter of interest, resume, professional references, examples of writing including report preparation, and examples of GIS analytical work by May 27, 2016 to TMACOG, P. O. Box 9508, Toledo, OH 43697-9508 or *resume@tmacog.org*. No phone calls. EOE. **Courtney Boyle**, P.E., a stormwater and collection systems specialist coming back to Ohio from Washington, the Evergreen State, has joined the ms team as a Senior Environmental Project Manager. Courtney has spent the last 10 years as a project manager for a variety of different projects across the Pacific States.



Courtney's areas of expertise include stormwater planning and design, low impact development, collections systems and commissioning. She believes the biggest trend and need in her practice areas are new regulatory requirements. After gaining valuable experience in this particular area, Courtney is excited to bring the design experience and lessons learned from previous clients to new clients who are anticipating upcoming permit changes due to the prioritization of low impact development.

Courtney's most recent work includes the Delridge CSO Retrofits project in Seattle, Washington. Her responsibilities for this project ranged from options analysis to commissioning. She represented Seattle Public Utilities as the Project Manager and the Commissioning Authority. This project was designated as a long-term control plan that, if successful, will eliminate the need for a \$60 M storage project in the future. Currently, this project is in the monitoring stage to assure proper operation.



# FARM BUREAU UPDATE

by Jordan Hoewischer

With a vast array of Ohio's waters pressured by nutrient loading and subsequent toxic algal blooms, the agricultural community has stepped up to ensure the future of Ohio's food production and Ohio's water quality improvements are not mutually exclusive. In the fall of 2014, the Ohio Farm Bureau Federation (OFBF) launched its Water Quality Action Plan, committing \$1 million of member funds to financially back research projects, assist implementation and understanding of new legislation, increase farmer knowledge of nutrient management, and support on-farm



techniques geared towards improving water quality. OFBF is on pace to spend an additional

\$1 million than what was committed last year on water related projects spread throughout the state. OFBF has not progressed alone though, as partnerships with The Ohio State University, local soil and water conservancy districts, The Nature Conservancy, and many other governmental agencies have allowed robust projects that encompass a wide variety of agriculture around the state to go towards improving Ohio's water quality.

#### **Research Funding**

#### **Paired Edge of Field Monitoring**

OFBF, along with other organizations in the agricultural community have greatly supported the paired Edge of Field (EOF) monitoring U.S. Department of Agriculture's Agricultural Research Service is doing on many farms around the state. Each set of EOF monitoring stations measure changes in sediment and nutrient losses via surface runoff as well as farm field drainage tile nutrient losses. The pair of EOF monitoring sites go through a period of normal farming seasons (3 to 5 years) to gather a baseline of information on nutrient and sediment movement off the site. Once a baseline is established, different conservation practices are put into place on one of the 2 fields and subsequently monitored each season to determine the effectiveness of the practice implemented. EOF monitoring is a crucial component in determining, through credible data, the impact that current and future farming practices are having on land and water quality.

In the fall of 2015, Ohio Farm Bureau and the U.S. Department of Agriculture Natural Resources Conservation Services (NRCS) partnered on a 5-year, \$1 million project to establish a series of demonstration farms in the Blanchard River Watershed. The Blanchard River Watershed Demonstration Farms Network includes three farms in the watershed that will serve as a model for innovative technology to reduce nutrient and sediment loss from farmland. Along with new technology, the farms will be open to tours from a wide variety of

www.ohiowea.org

agriculturalists, land management agencies, government officials, and the general public. The tours will be essential for educating the farming and non-farming community, as well as legislators on how effective and economical certain techniques are for decreasing nutrient loss and improving water quality.

Farmer-Supported Legislation

Senate Bill 1 - In early 2015, the Ohio legislature passed Senate Bill 1,

which restricts Western Lake Erie Basin (WLEB) farmers from applying manure and fertilizer under certain environmental

conditions. OFBF supported this bill and worked together with lawmakers to increase

funding in the WLEB in order to assist farmers in being compliant with the new rule.

Farmers in the whole and partial 24 counties that make up the WLEB cannot spread manure or fertilizer under the following conditions:

• On frozen or snow-covered soil.

• When the two top inches of soil are saturated with precipitation or

• If the local weather forecast calls for a greater than 50 percent chance of precipitation exceeding one inch in a 12-hour period for fertilizer and one-half inch in a 24hour period for manure.

• If farmers do the following, they may apply on frozen, snow-covered, or saturated ground:

• Inject fertilizer or manure into the ground, or

• Incorporate fertilizer or manure within 24 hours of application, or

• Seek permission if they have an emergency from the Ohio Department of Agriculture Chief of the Division of Soil and Water Conservation to apply manure in accordance with the standards in USDA NRCS 590.

Senate Bill 150 - Also in 2015, Ohio lawmakers passed the OFBF-supported Senate Bill 150, which requires farmers who apply fertilizer on more than 50 acres for agriculture production to become certified by September 2017. With over 10,000 farmers already certified so far, the agricultural community is demonstrating its support of continuing education with improved water quality as the goal. The goal of the certification is for continued education every 3 years for farmers to learn about the latest technology and research being done to reduce nutrient loss and increase economic efficiency on their farms.

#### **Improving Technology and Increasing Knowledge - Nutrient Management Plans**

OFBF is encouraging farmers across Ohio to develop Nutrient Management Plans (NMPs) that can improve water quality, potentially reduce costs and increase crop yields. Ohio State University, with OFBF funding,

# FARM BUREAU UPDATE

has hired three NMP writers to develop plans at no charge for farmers in the 22-county Western Lake Erie Basin. Nutrient Management Plan writers, along with a certified crop advisor, use recent soil tests and other on-farm attributes to provide fertility recommendations and help identify ways to reduce nutrient and sediment loss. To learn more about the NMP program, visit go.osu.edu/nutrientplanners.

#### **ONMRK Smartphone/Tablet App**

With the aforementioned Senate Bill 1, which has weather restrictions on when farmers can apply nutrients in the WLEB and Senate Bill 150, which requires record keeping on nutrient applications all across the state, an app for smart phones and tablets was developed to make compliance much easier. The free app, Ohio Nutrient Management Record Keeper (ONMRK), was developed by Knox County Farm Bureau and Knox County Soil and Water Conservation District with additional funding from Ohio State University Extension, Muskingum Watershed Conservation District and OFBF. ONMRK displays a colored red or green screen to indicate if weather conditions are within the law to apply nutrients. Once the nutrient applications are recorded, the user can then log-in on a desktop computer and print out the year's records if needed. The app is available at www.onmrk.com, Google Play and the Apple App Store.

Ohio Nutrient Management Record Keeper (ONMRK) smartphone and tablet app provides farmers with accurate weather predictions and nutrient application record keeping.

#### Diverse Partnerships Healthy Water Ohio

An unprecedented partnership of Ohio water stakeholders developed a strategic plan for maintaining and strengthening Ohio's water resources in the fall of 2015. The Healthy Water Ohio (HwO) coalition made recommendations that aim to preserve water resources for all who use them for public, private, and recreational

use. The HwO report identifies specific policy, research, infrastructure, and educational needs in the area of water quality. The report also proposes the creation of a public-private water trust that would direct millions of dollars to go towards supporting HwO's recommendations with a portion of the funding coming from the sale of state bonds. The HwO report received input from more than 200 individuals with a diversified interest in Ohio's water quality and usage. The coalition's 16-member steering committee represented conservation, business, education, water suppliers, agriculture, human health, and others. Over a 21-month period, the coalition hosted dozens of events geared toward fact-finding, discussion, subject expertise, government leader input, and collection of public opinions from over 1,000 Ohio citizens. For more information about Healthy Water Ohio and subsequent reports, visit HealthyWaterOhio.org.

#### Water Quality Community Grants

ected Rainfall in 24

In 2015, OFBF provided nearly \$150,000 in direct funding to water quality projects identified by volunteers that is helping improve water quality in their communities. Grants money was contingent on local Farm Bureau county boards forming partnerships with outside organizations to provide matching funds and resources for each project. Local Soil and Conservation Water Districts, The Ohio State University, and many other private and public organizations provided more than \$700,000 of matching funds in order to make the grant project a success. With 2015's success, OFBF is providing another round of grant funding in 2016 that should bring in many more community partners. Below are some of the highlighted projects from the 2015 grant partnerships:

• Local organizations are partnering to install a rain garden near Indian Lake to help protect the lake from potential pollutants from entering the water from the impervious surfaces of the bike path and parking lots.

• A cover crop and grazing management project in Adams County, leveraged by federal funds, made it easier for farmers to install conservation practices and plant cover crops to improve soil health, reduce erosion and prevent nutrients from entering waterways.

• Hamilton County Farm Bureau helped purchase and plant fall cover crops in the Dry Fork/Howard Creek sub-watershed

of the Whitewater River. The cover crops are helping to reduce soil and nutrient movement after farmer's crops are harvested.

• Knox County Farm Bureau partnered with a variety of organizations to provide a free app for farmers to comply with new legislation to help improve water quality.

## FARM BUREAU UPDATE

• Local leaders and community influencers in Delaware County took part in a workshop series to present a broad range of water resource protection opportunities and challenges within the headwaters of the Scioto River Watershed.

• Lucas County Farm Bureau and local partners funded the Collaborative Look at Evaluating Available Nutrients (C.L.E.A.N) project, which implements advanced soil scan technologies to help farmers and the public understand the effects nutrients have throughout the soil profile.

• Choctaw Lake and Madison County Farm Bureau teamed up to not only do a wetlands feasibility study but also to purchase cover crop equipment for farmers to economically rent to plant cover crops in their watershed.

The immense amount of projects implemented over the last couple of years by Ohio Farm Bureau and like partners should serve as equal parts: how far water quality has progressed and how far water quality can improve. The private sector is engaged, the public is aware, and key participants are willing to team up to provide a realistic path forward to sustaining the water quality needed for agriculture and public use.

Terry McClure, a Paulding County Farmer, works with scientists on his farm to collect rainwater runoff to determine how much phosphorus it contains as part of the Edge of Field Monitoring program. Demonstration Farms





# MADISON WASTEWATER TREATMENT PLANT

courtesy of Burgess & Niple, Inc

#### **Design Parameters**

- Population to be served: 25,000
- Average Daily Influent Flow (ADF): 5.0 mgd
- Peak Daily Influent Flow (PDF): 11.25 mgd
- Peak Hourly Influent Flow (PHF): 15.0 mgd
- Total Suspended Solids (TSS): Influent 175 mg/l; Effluent 6.0 mg/l (30-day)
- CBOD: Influent 200 mg/l; Effluent 6.0 mg/l (30day)
- NH3-N: Influent 20 mg/l; Effluent 7.0 mg/l (30-day summer)
- Phosphorus: Influent 5 mg/l; Effluent 1.0 mg/l (30-day)



Aeration Tanks for Biological Nutrient Removal Process

#### HISTORY

Construction began on the current site of the wastewater treatment plant (WWTP) in 1972 as a replacement for the original Madison Township plant located nearby on Dock Road. The original Dock Road WWTP was a primary-only treatment facility of less than 1 million gallons per day (mgd) capacity. The plant included a 30-inch submerged outfall effluent pipe that extended into Lake Erie.

The 1972 facility was a 3 mgd activated sludge plant with tertiary treatment that was built on the current site to serve eastern portions of Lake County. Tertiary treatment was in the form of deep-bed, rapid-sand mixed media filters. These were among the first of their kind to be used in a municipal treatment plant in Ohio. The plant discharged to the Arcola Creek, but in 1985 a new 30-inch outfall sewer was constructed from the current plant to the site of the former Dock Road facility, and connected to the old outfall sewer into Lake Erie. This converted the plant from an Arcola Creek discharge, a protected stream and watershed, to a Lake Erie discharge facility.

In 2012, plans were developed to upgrade and expand the 3 mgd tertiary treatment facility to 5 mgd. The key features of the expansion are the complete rebuild of the process equipment, the addition of nitrification through the use of Biological Nutrient Removal (BNR), conversion from chlorination/de-chlorination disinfection to ultraviolet (UV), and the addition of an effluent pumping facility to discharge up to 15 mgd of effluent flow that receives complete tertiary treatment.

#### **Preliminary Treatment**

#### Influent Pump Station – 15 mgd capacity.

The influent pump station is the beginning of the plant treatment operations. A 36-inch trunk sewer enters the pump station wet well where the wastewater flows to a coarse bar screen. The water then flows to an automatic traveling belt fine screen (1/4inch punch plate) with a washer, compactor, and conveyor for the screenings. The dry well side of the pump station houses four raw wastewater pumps (5 mgd each) on the lower level with variable speed drives.

Grit Removal and Handling System – 20 mgd capacity. The grit removal facility includes two vortex-style grit chambers. There are two grit washer/classifiers and grit storage hoppers that are used to transport the washed grit offsite for disposal.

#### **Secondary Treatment**

Aeration Tanks for Biological Nutrient Removal Process (BNR) – 15 mgd capacity. The two aeration tanks are divided into mirror image parallel aeration tank trains. A single train is a series of consecutive tank segments, or zones that allow for the individual operation of the tankage, such as anaerobic (AN) zones, anoxic (AX) zones, and aeration or oxic (AE) zones. This enables the plant to be operated in a BNR mode.

Ferrous Chloride Feed System for Supplemental Phosphorus Removal. A chemical feed system supplements the Bio-P BNR design. Liquid ferrous chloride is stored in two fiberglass storage tanks and is pumped to one of two alternate feed points located inside the aeration tank junction chamber.

Final Settling Tanks/Solids Removal – 15 mgd capacity. Two final settling tanks were constructed with clarifier mechanisms that are variable area suction type with direct connection to dedicated return sludge pumps. Three horizontal screw centrifugal solids handling pumps are provided (2.5 mgd each). Surface floating scum is also removed.

## **P**LANT **P**ROFILE

# HOW TO GET THE JOB DONE RIGHT AND ON TIME!

by Michael "Scott" McGlothin, Madison Wastewater Treatment Plant

The construction of any wastewater treatment plant is a fairly complex series of tasks involving multiple entities; engineering firms, vendors and contractors. The complexity factor and the opportunities for conflict and poor results seem to be greater on major renovation projects like the Madison WWTP.

Every aspect of the existing Madison WWTP was renovated, upgraded or expanded in capacity. All of this work needed to be completed in a specific amount of time and for a specific amount of money; all while maintaining the plant in operation and meeting the NPDES permit limits.

This article reviews the plant personnel's experiences and lessons learned in participating in the successful bidding, construction and startup of the Madison WWTP Upgrade & Expansion Project. The cooperative total project team involvement from the beginning to the final acceptance brought increased value to the Lake County Department of Utilities and the rate payers.

The value came in the form of minimal net change orders (0.58 percent of total construction cost) and effective coordination of day-to-day operations during plant shutdowns and process changes, which resulted in no permit violations during the 30 month construction period. The procedures practiced and lessons learned at Madison can add value to any project to minimize on-job confusion, conflicts and unnecessary change orders.

To successfully complete an expansion of a wastewater treatment plant general contractors and engineers should have the owner's best interest at heart and all parties need to bend over backwards to complete the project. *Done right and on time.* 

**Tertiary Treatment** 

Tertiary Sand Filtration – 15 mgd capacity. The original deep bed sand tertiary filter facility underwent a major renovation to restore the original filtering capacity. This included the replacement of the filter media, surface wash equipment, and the filter drain bottoms. A fifth filter equal in size to the existing units was added. Two backwash water pumps (11.2 mgd each) provide a backwashing rate of 15 gpm/sf. So how do you complete a 17 million dollar project "Done right and on time"? Well, being under construction for three brutally cold winters on the shore of Lake Erie is not a good start. Here is how we did it:

Engineers, contractors and owners agreed on a common goal of building a high quality wastewater treatment plant and getting it *done right and on time*. We realized in preconstruction meetings that we can either be successful together or a failure together and failure was not an option. All parties agreed to maintain a positive working relationship during the project even in the face of adversity. This is easier said than done and communication is key.

As a representative of the owner I had to decide how I



From left to right: Mike Erkkila, Mark Yahner, Jim Adams, Doug Breach, Ed Monasky, Michael McGlothin, Mark Burchett, Jerry Ondo, Jack Yahner, Paul Kosar and Damian Sherwood.

#### **Post Treatment**

Ultraviolet (UV) Light System for Disinfection – 15 mgd capacity. Water from the tertiary filters flows to the post treatment tank in the filter effluent flume where UV lamps are submerged in the filter effluent allowing the UV rays to disinfect the wastewater effluent.

Effluent Pump Station – 15 mgd capacity. The 15 mgd PHF cannot be 100% discharged through the Lake Erie outfall sewer without the addition of effluent pumping. The hydraulic capacity of the outfall sewer is limited to approximately 11.25 mgd depending on the water levels at the Lake Erie submerged outfall. If Lake Erie water levels are high and/or the total plant effluent flow is between 10.8 mgd and 11.25 mgd, then the effluent must be pumped by the new effluent pump station. Three effluent screw centrifugal submersible pumps are provided, each rated at 7.5 mgd.

# **P**LANT **P**ROFILE

was going to approach this project and in particular how I was going to cultivate a relationship with the general contractor. I remembered the lessons my parents taught me like, "treat people how you would like to be treated" and "honesty is the best policy." The following paragraphs illustrate how I conducted myself during this two and a half year project.

Things to consider when communicating with contractors and engineers:

When dealing with sensitive issues you need to find the right time to talk. Don't interrupt the construction superintendent when he is out in the field working. Ask for a time to meet to discuss serious issues. Never start a serious conversation in public unless you feel safe. Respect his position and his responsibilities and he will respect yours.

Talk face to face. Avoid talking about serious matters in an e-mail, text or telephone calls. Talk in person so there are no miscommunications. This is a lost art today. Many people feel awkward talking face to face but this is very important on a construction site. There is no substitute for looking someone in the eye and communicating ideas and decisions.

Do not attack each other. Even when we mean well we can sometimes come across harsh because of our choice of words. Think before you speak. Choose your words wisely and always treat people with respect.

Be honest with each other, even if you disagree. We realized early in the project that if we are open and honest with each other, we will maintain a positive working relationship throughout the project. This is the key to the relationship. All parties agreed to be honest. I transferred to the Madison Plant just about the time the bid process was about to start. AP O'Horo was awarded the contract and we began construction. There were many times the construction superintendent (Nate Orr) came into my office and asked questions I couldn't answer. I never tried to buffalo him, I knew if I told him something and it wasn't true he would not respect or trust me.

Admit if you don't know something. Work together to

find out what you don't know. It's OK not to know. It doesn't mean you're not intelligent. If you don't know, try to find the answer. Research and ask questions to get the answer.

Check body language, smile and say hello. This is one of the easiest ways to keep positive energy going. Work on your social skills. A large part of getting along with contractors, engineers and people in general is being able to read body language. Make eye contact, sit up straight and let them know you're listening when they're talking. There is nothing worse than talking to someone who doesn't pay attention to you. They will stop wasting their time coming to you.

Understand the issues before speaking. With many trades involved, it's almost impossible to know exactly what people are talking about during construction meetings. Pay attention to the discussion, take notes and ask questions to stay involved.

Ask good questions to learn more about a specific topic. Don't just ask a question simply to ask a question. Make it count. It's not how much you say, it's what you say that matters.

Respect each other at all times. Not just the person; Respect the effort they put in day in and day out.

Be accountable for your responsibilities and actions. Don't point fingers at someone else. Admit if you're wrong and try not to let it happen again.

Use good judgment. Be firm on the issues and easy on the people. People want to do a good job, they really do. Everyone has a bad day so don't hold a grudge.

Praise good work and fix the unacceptable, then move on. Everyone makes mistakes. Don't beat a dead horse or kick someone when they're down. Own up to your mistakes and people will respect you for it.

Try to understand other points of view. Realize you're not the only person that needs to get things done. During construction, many times we need a trade to complete a certain part of the project before another trade can begin to do what they have to do. Fail to prepare, prepare to fail. Have patience and talk to each other to find solutions to



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problems.

Give sincere appreciation. If someone does something good, tell them! It doesn't cost anything and it makes you feel good to be appreciated.

Eliminate the negative. Negative criticism only leads to resentment. Bad things happen to good people all the time. It's how we deal with adversity that defines who we are. Too much negativity will surely ruin the relationship.

Above all maintain a sense of humor!

I'm not saying people didn't get upset during the construction project, but I always thought it was my responsibility to make sure arguments didn't get out of hand. Communicating when you're angry is difficult to do. My high school basketball coach would always tell us, "Don't use your emotions, use your intelligence." When you're a teenager, those words don't really mean much to you. But as you get older, they ring true in your ears. It is very difficult to put your personal feelings aside and do what is right for the project. Not many people can do this, but if you can master this, the project will be a success.

How do you communicate when you are angry? Here are a few techniques to consider.

Stop. If you get really angry, stop and take a deep breath, a break, or politely excuse yourself. Taking a break can keep the situation from getting worse and we all say things we don't really mean when we're angry.

Think. After you're no longer angry, think about the situation and why you became so angry. Chances are it wasn't worth it. There is nothing that can't be

repaired. Repairing your relationship is much harder than repairing a tank or wall.

Talk. Never assume anything! Talk to each other.

Realize you share the same goal. Everyone has a job to do so talk, prepare and plan.

Listen. To others on the team. After you talk, remember to stop and listen to what everyone else has to say. You have two ears and one mouth so you can listen twice as much as you speak!

The project was completed in 2014 and was a huge success. We have state of the art equipment that runs great. We have not violated our NPDES permit. We have reduced our sludge hauling and electrical costs by 50%. Here is the best part, I received a telephone call the first Thanksgiving after the expansion was completed. The call was from our general contractor's superintendent. He wanted to wish the staff at the Madison WWTP a Happy Thanksgiving and thanked us for all the work we had done. He did the same at Christmas. With all the great work that we did during the project, one of the best things to come out of the project was the excellent working and personal relationships we built with each other. We talk on the telephone often and we always ask each other about our families and plan to spend time together this summer. As for the engineer, Dennis Meek has told me in his forty plus years of experience, he has learned that an engineer's legacy is not a specific design

or process; it's the people and the knowledge you pass on to them. We talk via telephone weekly. He has helped us fine tune the operation here at the Madison WWTP. I not only consider him one of my mentors, but more importantly, a good friend!

Working together, that's what it's all about.

When many people work together towards the common

goal there is no better feeling then when that goal is achieved. Those who collaborate the best, perform the best!

Final slab construction photo

""" "By working together to establish positive relationships built on honesty, respect and trust, contractors, engineers & owners can achieve success!"



Effluent Pump Station with a 15 mgd capacity.

#### WEF UTILITY PARTNERSHIP PROGRAM MEMBER UTILITIES

The WEF Utility Partnership Program (UPP) is designed to allow Ohio utilities to join WEF and **OWEA** while creating a comprehensive membership package for designated employees. Utilities can consolidate all members within their organization onto one account and have the flexibility to tailor the appropriate value packages based on the designated employees' needs. Key Benefits Include:

UPP is fully customizable, based on the needs of each utility, and a WEF team member will be on-hand to walk each utility through the enrollment process.

ALL members at the utility will be enrolled, with synchronized begin and end dates, on ONE invoice, for an easy one-time per year payment.

All members, who were already WEF members, retain original membership number, credit for all years of membership, and remain a full-voting WEF member.

ALL employees at the UPP utility will be eligible for membership registration rates at WEFTEC, as well as the early-bird rate for Premium and Standard WEFTEC registration at any-time throughout the registration period. ALL employees at the UPP utility will also be eligible for member rates for the OWEA Technical Conference and Exposition, OWEA Workshops, and events. All employees at the utility will be eligible to register for a WEFTEC Exhibition-only pass at NO-Charge.

WEFTEC registrations can be included in the UPP Membership transaction, at the time of enrollment or can be grouped and submitted closer to WEFTEC.

UPP also includes a special, NO-Charge membership for Public Officials designated by the Utility, at their discretion.

Up to five new WEF/**OWEA** members can be added by the utility each year, at no charge for the first year of membership.

UPP utility will be eligible for distributor pricing on all WEF products and services – that's 40% off list pricing. In addition to traditional items this discount also extends to online learning in the new WEF Knowledge Center.

UPP members will be eligible for special discounted registration for other WEF Conferences and events.



**OWEA** currently has 20 municipalities signed up for the Utility Partnership Program. To learn about the benefits for your utility visit *http://www.wef.org/UtilityPartnership/* Or Contact Amy Davis, amydavis@ohiowea.org, 614.488.5800

Avon Lake Municipal Utilities City of Canton WRF City of Celina City of Columbus DPU City of Fairborn City of Harrison City of Mansfield City of Marietta WWTP City of Newark Wastewater Treatment Plant City of Oberlin City of Solon City of Toledo Water Reclamation City of Troy Ohio City of Twinsburg City of Warren WWTP Clermont County Sewer District Fairfield County MSD of Greater Cincinnati Northeast Ohio Regional Sewer District Sanitation District No 1
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The Bertram Inn & Conference Center

The 2016 Conference is a **BOOMING** time to obtain valuable education and network with others in the water quality field.

#### Hosted by the Northeast Section. For information contact:

Mary Ann Driscoll Conference Co-Chair 330.376.5778 MaryAnn.Driscoll@burgessniple.com Art Kimpton Conference Co-Chair 440.838.1221 akimpton@peltonenv.com Ted Baker Technical Program Chair 440.461.4677 kingsnu@aol.com Ohio Water Environment Association 614.488.5800 info@ohiowea.org

## **Dear WaterBOOMers,**

Join us in Northeast Ohio as OWEA makes their way back to The Bertram in Aurora for the OWEA Annual Conference and Exhibition. We invite you to end the month of June with your fellow wastewater professionals to talk to the exhibitors, be educated on existing and new topics, make new friends and get acquainted with old ones.

Incoming President Ted Baker has put together a fantastic technical program covering all aspects of our industry from treatment to lab, safety to green and gray, and construction to nutrients. There will be an additional opportunity to hear four of the presentations in the All-Star Performers session on Thursday morning! We will again have a regulatory track on Thursday morning to see and hear what is going on at the Ohio EPA.

Our social event on Monday is an opportunity to begin the time of sharing with your colleagues after golf or just before the entire conference begins. The Awards Breakfast is our chance to recognize those in the industry that are outstanding. The Tuesday Meet and Greet at ThornCreek Winery affords the opportunity to relax and make new friends or visit with old ones. Wednesday is our Annual Banquet when we honor our WEF Award winners and pass on the gavel.

We invite you to come and learn, relax and share with your old and new friends! We are looking forward to seeing you in Aurora!

Sincerely,

#### 2016 Conference Committee Co-Chairs

Mary Ann Driscoll, maryann.driscoll@burgessniple.com

Art Kimpton, akimpton@peltonenv.com

Deb Houdeshell dhoudeshell@msconsultants.com

## **OWEA Needs Your Help**

A Successful Conference is absolutely dependent on the contributions of time and effort from volunteers. From planning to executing, there are so many tasks to be completed. If interested in helping out, contact:

Amy Davis, *amydavis@ohiowea.org*, 614-488-5800. You can also sign up using the online form at *www.ohiowea.org*.

Registration: Monday - Thursday Golf Volunteers: Monday Exhibit Tour Monitors: Tuesday Exhibit Hall Assistants: Tuesday Sign Wranglers: Tuesday - Thursday Ticket Takers: Tuesday and Wednesday Moderators: Tuesday - Thursday Monitors: Tuesday - Thursday

#### **Registration Options**

#### Early Registration - by May 31st:

Full Conference Member	\$275
Full Conference Nonmember	\$400
Retired Member Full Conference	\$150
Tuesday Only Member	\$145
Tuesday Only Nonmember	\$220
Wednesday Only Member	\$145
Wednesday Only Nonmember	\$220
Student	\$50
Spouse/Guest Program	\$160

#### Late Registration - June 1 and after:

Full Conference Member	\$325
Full Conference Nonmember	\$450
Retired Member Full Conference	\$200
Tuesday Only Member	\$170
Tuesday Only Nonmember	\$245
Wednesday Only Member	\$170
Wednesday Only Nonmember	\$245
Student	\$75
Spouse/Guest Program	\$210

\*This option for attendees who only want to attend Technical Sessions on Tues, Wed, or Thur, or walk the Exhibit Exposition on Tuesday. Except for lunch on Wed, which is included, Food/ beverages/networking events are not included in this price.

#### **Budget Options\***

Tues Tech Sessions & Exhibition	\$50
Wed Tech Sessions & Lunch	\$75
Thur Tech Sessions - 1/2 Day	\$50
Multiple Day Combo Available	

#### **Exhibitor Registration:**

Includes Full Conference Registration	
for Primary Exhibitor	
Member Exhibitor	\$700
Nonmember Exhibitor	\$875
Extra Booth Attendant (2 max)	\$50

#### Golf Registration:

Foursome	\$360
Individual Golfer	\$90
Hole Sponsorship Sign	\$250 each

#### OWEA 2016 Sponsorship Levels:

Titanium	\$7500
Platinum	\$6000
Gold	\$4500
Silver	\$3000
Bronze	\$1500
Copper	\$1000
Nickel	\$500
Golf	\$250
Cobalt	\$250

## Schedule | Monday, June 27 - Thursday, June 30

#### Monday, June 27

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9:00 a - 4:00 p Preconference Communication and Outreach Workshop	IIWO
(shotgun start at 9:30 am)	
5:00 p - 9:00 p Exhibitor Setup 7:30 p - 10:00 p Welcome Social - Attendees and Ops Challenge Teams	

#### Tuesday, June 28

Registration Hazen
Exhibitor Setup
Exhibitor Breakfast () Stantec
Exhibit Hall Open
Awards Breakfast
OWEA Annual Business Meeting
Spouse/Guest Program
Exhibit Hall Tour (earn one contact hour)
Lunch in Exhibit Hall
Ops Challenge Events Operation where to life
Technical Sessions – Young Professional Papers
Exhibit Hall Tour (earn one contact hour)
Portage County Water Resources Tour Streetsboro WWTP
Exhibitor Reception – Including Ops Challenge Awards
Exhibit Tear Down
Meet & Greet – ThornCreek Winery <b>( Consultants</b>
After Party in Hospitality Suites - Pool Area (All attendees welcome)

#### Wednesday, June 29

7:00 a - 5:00 p	Registration ARCADIS
7:00 a - 8:00 p	Crystal Crucible Breakfast (by invitation) 🌊 Alloway
7:00 a - 9:00 p	Breakfast () Stantec
8:00 a - 11:45 a	Technical Sessions (4 Concurrent Sessions)
9:15 a - 4:00 p	Spouse/Guest Program
11:45 a - 1:00 p	Lunch quasar
11:45 a - 1:00 p	President's Luncheon (by invitation)
1:00 p - 4:45 p	Technical Sessions (4 Concurrent Sessions)
6:00 p - 7:00 p	Reception – 5S Induction
7:00 p - 9:30 p	Annual Banquet & Awards Smith
9:30 p - 11:00 p	After Banquet - Drinks, Desserts, and Music
11:00 p	After Party in Hospitality Suites - Pool Area (All attendees welcome)

#### Thursday, June 30

7:00 a - 11:00 a	Registration Hazen
7:00 a - 9:00 a	Breakfast () Stantec
7:00 a - 8:00 a	5S Breakfast (by invitation) 🚹
8:00 a - 11:45 a	Technical Sessions (3 Concurrent Sessions)
12:00 p - 1:30 p	Conference Committee Lunch (by invitation)

## **NESOWEA PRECONFERENCE WORKSHOP** Monday, June 27<sup>th</sup>

#### What Do We Know and How Do We Share It?

This is a one-day workshop hosted by the OWEA Northeast Section open to anyone – conference registrants and one-day visitors. The Northeast Section is hosting this event and covering some of the costs to provide a service to the membership and offer training on a very important topic.

Communication and outreach is an often forgotten key element of our industry. The Northeast Section is excited to bring this important topic to the annual conference. This workshop is designed to provide attendees with some direction or advice on how best to communicate the importance of what we do to the public.

**Special Offer:** Invite your manager to come with you for FREE! If an operator or superintendent registers for this workshop, they may register one manager or governmental official (from the same municipality) for free. The free attendee must also pre-register.

The cost of the workshop is \$25 and includes a continental breakfast and lunch and attendees will obtain contact hours. This event requires separate registration from the conference. Non-members can attend for the same rate.

Monday, June 27		
*	PreConference Schedule	<b>*</b>
8:00	Registration and Continental Breakfast	
9:00-9:45	Effective Public Communications	Marie Keister Engage Public Affairs
9:45-10:30	Ohio Environmental Council - Winning Hearts & Minds	Jack Shaner Ohio Environmental Council
10:30-11:15	Ohio Consumers Council - Consumer Perspective on Utilities Outreach	Ray Foeller Ohio Consumers Council
11:15-12:00	Gorge Dam Public Outreach	Bill Zawiski Ohio EPA
12:00-1:00	Lunch	
1:00-1:45	Public Outreach and Case Studies - Simple & Successful Public Outreach Strategies for Green Infastructure Program Success	Kari Machenbach ms consultants
1:45-2:30	3 Reasons Your Utilities' Communications Fail	John Gonzalez NEORSD
2:30-3:00	Break and Networking	
3:00-4:00	Michigan's Watershed Academy	Maria Affhalter Tip of the Mitt Watershed Counc

## Monday Events

#### 2016 Golf Outing Monday, June 27, 9:30 am Shotgun Start

#### **Sponsored by**

Where: **Boulder Creek** 9700 Page Rd.

Streetsboro, OH 44241

Times: 8:00 am Registration 8:00 am Driving Range Open 9:30 am Shotgun Start





Spend the day with friends and colleagues playing a round of golf at the beautiful Boulder Creek Golf Club and Event Center. One of the premier golf courses in Northeast Ohio, Boulder Creek was voted the number 2 public golf course in 2011 in Golf Week. This 18-hole course contains over 100 feet in elevational change across the 200 acre course. Boulder Creek also has a pro-shop, driving range and full scale practice facility available to our members. Finish your day on the course with refreshments and dinner at the course event center. This event is limited to 144 people, so register early!

The \$360 per foursome includes: 18-holes of golf, cart, driving range & practice facility, light breakfast, lunch, dinner, beverages and prizes.

Golf Hole Sponsor Signs available for \$250 per hole.









#### Welcome Social Monday, June 27

Whether a busy day with colleagues on the golf course, at Operations Challenge or at the Preconference Workshop, or just getting to the conference Monday evening, join us Monday evening poolside at the hotel for a Welcome Social! Meet new people while enjoying beverages and appetizers from 7:30 pm -10:00 pm.

## **Tuesday Exhibition**

#### **Exhibition** Tuesday, June 28



#### Exhibitor spaces are limited so reserve your booth now!

The Exhibition will be held at The Bertram Hotel & Conference Center in Aurora, Ohio. The Exhibit Hall will be open Tuesday from 10:00 am - 5:00 pm, with an Exhibit Hall Tour for one contact hour each from 11:00 am - 12:00 pm and 1:30 pm - 2:30 pm. The exhibition will conclude with a reception from 4:00 pm - 5:00 pm in the Exhibit Hall.

Additional Booth Attendants: \$50 includes Exhibition access and Tuesday breakfast If you are interested in being a stop on one of the tours and giving a 15 minute presentation, please contact Ken Rogozinski at *krogozinski@bissnussinc.com*.

## Tuesday Events

#### **Conference Exhibitors** As of April 22, 2016

360water, Inc. Alloway **BissNuss**, Inc. **Boerger, LLC Buckeye Pumps Chaltron Systems Inc.** Covalen **CWM Environmental** DN Tanks, Inc. **Environmental Express Environmental Operating Solutions, Inc.** EnviroScience, Inc. E-Pump **FreshCreek Tecnologies IDEXX Laboratories, Inc. Integrity Aquatic** Ishigaki USA Ltd J.G.M. Valve Corp. K.E. McCartney & Associates Kemira

Layne Inliner, LLC LiquiForce **MASI Environmental Labs Milliken Infastructure Solutions** Odle, Inc. Coating & Painting **PA Motor Service** Pelton Environmental Products Inc. **Rockwell Automation** RootX **Schwing Bioset Inc Smith Environmental Source One Environmental** The Henry P. Thompson Company **Thermal Process Systems** Trumbull **USABlueBook USALCO** Vogelsang **Wessler Engineering** 

#### Exhibitor Reception Tuesday, June 28, 4:00 pm to 5:00 pm

Join your fellow professionals and exhibitors at the end of Tuesday for a time of networking. Enjoy some refreshments while we wrap up the first day of the conference in the Exhibit Hall. The Ops Challenge winners will be announced after an exciting two days of competition. Make sure you make contact with the exhibitors that you wish to get more information from on technologies, equipment and services. This provides a relaxed atmosphere to talk to one another and get any questions answered that you may have. You may even help another peer by sharing your experiences.



Tuesday, June 28 - Afternoon Technical Sessions				
	Young Professionals			
1:00-1:45	Holistic Sewer Rehabilitation for the Next Generation I/I Control	Muralikrishna Chelupati, PE ARCADIS		
2:00-2:45	Blueprint of Columbus Prioritization through Stakeholder Involvement and GIS	Megan Miranda, PE ARCADIS		
3:00-3:45	Design Considerations of the Lick Run Greenway for CSO Control	Jenn Delebreau Strand Associates		

### Portage County Water Resources | Tuesday, June 28, 2:15 pm to 3:45 pm Tour Streetsboro WWTP

The Portage County Department of Water Resources Streetsboro Wastewater Treatment Plant has a design average daily flow of 4.0 million gallons per day (mgd) and a peak hour flow of 17.4 mgd. Average daily flow to the plant is currently around 2.9 mgd, with its effluent discharging into Tinkers Creek.

The wastewater treatment process consists of the following: influent screw pumps; aerated grit removal; mechanical screening; aeration/contact stabilization; final clarification; nitrification towers; tertiary treatment; and UV disinfection. The solids treatment processconsists of aerobic digestion; centrifuge dewatering; and sludge dryer to dry the solids to over 90 percent solids. What is unique about the Streetsboro WWTP solids treatment? The County hauls sludge from ten different remote WWTP's to Streetsboro for processing.

The Streetsboro WWTP has undergone numerous improvement projects since it was first built. The two most recent projects were in 2009 and 2013. The 2009 project improved their sludge processing by adding a centrifuge for dewatering and sludge dryer. The sludge dryer has design capacity of 16 dry tons per day. The system includes a wet cake silo for feeding the dryer, a dry biosolids storage silo for the dried material, and a bio-filtration system for odor control. The 2013 improvement added UV disinfection.

Join the Portage County Water Resources staff for a tour of the plant. No additional charge for the tour. Please sign up when you register.



Aerial View of Portage County Water Resources Streetsboro WWTP.

## Tuesday Events

#### Awards Breakfast Tuesday, June 28, 8:30 am to 10:30 am

Kickoff the conference by getting together with your peers to honor the best in our industry. The Awards Breakfast will be held on Tuesday, June 28 at 8:30 a.m. in the Hayes Ballroom. This ballroom is in the adjacent building to the sleeping rooms. After a hot breakfast the OWEA awards will be presented to those individuals that have shown exemplary service and dedication to our industry. Be there not only to congratulate those award winners but also the Crystal Crucible and Golden Manhole winners. The 5S inductees will be announced with their induction to take place at the cocktail hour before the banquet. Paul Bowen, WEF President, will also be there to address us and let us know what is going on at the Water Environment Federation.



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#### **OWEA Annual Business Meeting** Tuesday, June 28, 10:30 am to 11:30 am

Do you know what happens during the year in OWEA? Do you know who represents your Section or who are committee chairs? This is the time to find out about YOUR Ohio Water Environment Association. The Annual Business Meeting gives the membership a chance to see and hear how and what the Association has been doing. Information shared includes financial reports, organizational news, committee news, ongoings of the Sections and a little from WEF. Join us after the Awards Breakfast before you engage with the exhibitors.



#### Exhibit Hall Tours Tuesday, June 28, 11:00 am to 12:00 pm and 1:30 pm to 2:30 pm

Earn 1 Contact Hour per tour

Each tour will include four 15 minute sessions in the exhibit hall, educating attendees about new technology, systems, and BMPs in various aspects of water reclamation and treatment.

OWEA's exhibitors typically include representatives from collections, treatment, stormwater, instrumentation/SCADA, laboratory services, and consulting engineers. Exhibit tours are a great way to get updates on trends and innovations nationwide as exhibitors include both local and national companies. Sign up for exhibit tours the day of the Exhibits!



#### Young Professional Papers | Tuesday, June 28, 1:00 pm

Remember when you were just starting out in the field? To encourage our young professionals we have young professionals presenting in the Amphitheater on Tuesday afternoon. Take a break from the exhibits and earn additional contact hours. Listen to presentations regarding the design considerations of a greenway for CSO control, holistic sewer rehabilitation for the next generation of I/I control and the prioritization of improvements for Columbus' Blueprint projects.

## **Tuesday Events**

#### JUNE 27-30 The Bertram Inn and Conference Center

#### Meet and Greet Tuesday, June 28, 6:00 pm to 10:00 pm

Please come and join us for a fun and relaxing evening at ThornCreek Winery in Aurora. Established in 2007, the winery consists of 8 acres of beautifully landscaped grounds with numerous garden and terrace areas for socializing and networking. A catered meal with both heavy and light appetizers will be served at various food stations throughout the winery. Try one of the ten different wines created by ThornCreek. The tented waterfall garden will have live music performed by **The Lovetown Mavericks.** Additional Beverages will be provided.

*The Lovetown Mavericks* are an Ohio-based rock band. They play popular songs from the 60's to the present as well as their own original material.

If they look and sound familiar, they are! Band members, Jason, Danny, Chris, and Bonzie entertained the crowd at the 2014 One Water Conference. I guess they couldn't stay away as they will be traveling from Columbus to hang out once again.



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#### Reception & Annual Banquet | Wednesday, June 29, 6:30 pm to 9:30 pm

After a long day of technical sessions, unwind at the reception before the Annual Banquet. Watch and listen to the induction of this year's 5S class. Following that ceremony, join your fellow attendees at the annual banquet. Sit with those you already know, met during the conference or make new friends!

After a wonderful dinner, the WEF Awards will be presented to our prestigious award winners by WEF President, Paul Bowen. OWEA President, Elizabeth Wick, will have outgoing remarks before she hands over the gavel to incoming OWEA President, Ted Baker. Ted will enlighten us on what he has in store for OWEA in the next year. The conference couldn't be successful without our sponsors. All of our sponsors will be recognized for the support they give OWEA throughout the year.



Elizabeth Wick OWEA President

member association



Ted Baker

**OWEA President-Elect** 

Sponsored by



Paul Bowen WEF BOT Representative/ WEF President

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#### **2016 WEF BOT Representative** Paul Bowen

Paul Bowen is the 2015-2016 President of the Water Environment Federation (WEF), an international organization of water quality professionals headquartered in Alexandria, Va.

Paul is currently the Director, Environmental Sustainability for The Coca-Cola Company. In this role he leads a multidisciplinary program that reaches across the Coca-Cola System. He is responsible for delivering on Company commitments in water, energy, climate, and packaging recovery. His team helps embed environmental sustainability across all Coca-Cola System operations. He serves as a technical expert for developing water reuse with corporate quality standards and as a SME on water and wastewater treatment issues.

Prior to his position with The Coca-Cola Company, Paul was an Assistant Professor in the School of Civil Engineering & Environmental Science at the University of Oklahoma and Vice-President and Senior Staff Consultant for Metcalf & Eddy.

A WEF member since 1977, Paul has held multiple leadership and committee roles within WEF. He currently serves as the Vice-Chair of the Committee Leadership Council. He has served on the Program Committee as both chair and vice chair as well as served as a member and chair of the Residuals & Biosolids Technical Symposium, Industrial Wastes Technical Symposium and the Research Symposia. Paul was also chair of the Committee Leadership Council's Delivery Focus Group and a member of the Public Affairs & Communications and Industrial Wastes Committees. In addition, he has served as a literature review author for the Residuals & Biosolids and Industrial Wastes Committees.

Also an active member of the Georgia Association of Water Professionals (GAWP), Paul has served as a member and chair of GAWP's Program Committee and a member of Industrial Waste Committee. His other professional affiliations include: the American Water Works Association, American Society Of Civil Engineers, International Water Association, and International Society of Beverage Technologist. He has also served as a member of the Board of Directors for WEF's Charity of Choice, Water For People.

Paul received his B.S. in Natural Systems (Chemistry and Biology) from Mercer University (Macon, Ga.) in 1975, and his M.S. (1976) and Ph.D. (1982) in Environmental Systems Engineering from Clemson University (Clemson, S.C.).

#### Wednesday, June 29 - Morning Technical Sessions LABORATORY 8:00-8:45 The Lab Analyst and Process Monitoring - How to Increase Robert Smith **Treatment Efficiency Without Even Trying** Xylem – YSI 9:00-9:45 Updates to the New Method Detection Limit in 40CFR Part 136 **Carol Turner** NEORSD 10:00-10:45 **Implementation of a Field Sampling Audit Procedure** Erin Hammer Alloway 11:00-11:45 **Total and Dissolved Phosphorous Monitoring Study** Melodi Clark City of Columbus POTPOURRI **Protecting Operators from Falls: A Case Study** 8:00-8:45 Tracy Riepenhoff, PE, LJB Corey Timko, City of North Ridgeville 9:00-9:45 Cost Effective Reduction of the Hg in NEORSD's Incineration Scott Reed, PE, Black and Veatch **Exhaust Gases** Robin Rupe, PE, NEORSD 10:00-10:45 Akron's Main Outfall Sewer Alternate Design and Construction Louis Burnoski, PE, AECOM Travis Capper, PE, City of Akron The Miamisburg WRF Challenge: Innovative Planning and Steven Reese, PE, Hazen and Sawyer 11:00-11:45 **Design for Compliance and Wet Weather Improvements** David Reinker, City of Miamisburg NUTRIENTS 8:00-8:45 Is Your "New" Treatment Technology Really Disruptive? Art Umble, PE MWH Global 9:00-9:45 Application of a Hydrolysed Biosolid Product as a Carbon Jeanette Brown **Source in Biological Nutrient Removal** Manhattan College, Riverdale NY **Nutrient Reduction Through Use of Advanced Biological** 10:00-10:45 Rick Johnson **Nutrient Recovery** Clearas Water Recovery A Roadmap for Smarter Nutrient Management in a Carbon 11:00-11:45 Dr. Samuel Jeyanayagam and Energy Constrained World CH2M **CSO / COLLECTIONS** SSO 700 IWAP: Development of a Water Quality 8:00-8:45 Kathleen Bollmer, PE **Sampling Program** CH2M **Chevrolet Boulevard Basin: A Local/Regional** 9:00-9:45 Jay Mosley, PE **Stormwater Project** AECOM 10:00-10:45 **Bringing Together Treatment, Storage and Conveyance for** Timothy Ruggaber, PE System-Wide, Continuous Real Time Optimization EmNet 11:00-11:45 Lancaster Phase II LTCP Success : Part 1 Developing Laura McGinnis, PE, ARCADIS the Plan Denise Crews, City of Lancaster

Wednesday, June 29 - Afternoon Technical Sessions		
*	WET WEATHER	<b>*</b>
1:00-1:45	Green vs. Gray: Applying Sound Planning Principles to Optimize CSO Control Efforts	David White, PE Wade Trim
2:00-2:45	Does Green Infrastructure Meet Expectations at an Urban Zoo	Nancy Ellwood, CDM Smith Mark Fisher, Cincinnati Zoo and Botanical Garden
3:00-3:45	A CMOM Program? It Doesn't Need to be Scary: A Guide to Implementation and Documentation	Steve Donovan Brown and Caldwell
4:00-4:45	Development of a Stormwater Management Plan for a Phase II Small MS4s - Insight and Innovation	Anil Tangirala and Brenda VanCleave ms consultants
	Potpourri	🔶 📩
1:00-1:45	Recruiting the Next Generation of Operators and Engineers	Carolyn Watkins Ohio EPA
2:00-2:45	"We Don't Need NoIncineration" Columbus Transitions to 100% Beneficial Re-Use of Biosolids	Sierra McCreary, PE, Black and Veatch Brandon Fox, City of Columbus
3:00-3:45	Impacts of PPCP's on Our Waterways: A Brief Review	Bill Zawiski Ohio EPA
4:00-4:45	Five Years Since Ohio Construction Reform was Approved	Dennis Tinkler, PE Kokosing Industrial
*		<b>**</b>
1:00-1:45	Can Small Plants Meet Revised Ammonia and Nitrogen Criteria	Tyler Linton and Craig Varos Great Lakes Environmental Center
2:00-2:45	When Cost Matters	Robert Hrusovsky, PE MWH
3:00-3:45	Lake County Madison WWTP: Building on the Past and Looking to the Future	Robert Schreiner, PE, Burgess & Niple Dennis Meek, PE, DM Engineering
4:00-4:45	Optimization of Enhanced Biological Phosphorus Removal Process to Achieve Low Phosphorus Limits	Sara Arabi, PE Environmental Operating Solutions
	CSO / COLLECTIONS	<u> </u>
1:00-1:45	Lancaster Phase II LTCP Success: Part 2 Financing the Plan	Brian Bass, PE, ARCADIS Denise Crews, City of Lancaster
2:00-2:45	CSO Mitigation; The Results Are in for the City of Bowling Green, Ohio	Gibson Chen, PE, Avetin Engineering Douglas Clark, City of Bowling Green
3:00-3:45	Taking an Emerging Enhanced High-Rate Treatment Technology from Concept to 100-mgd Reality	Bob O'Bryan, PE Black & Veatch
4:00-4:45	The City of Defiance's Integrated Long Term Control Plan: Targeted Inflow Reduction for CSO Control	Tiffany Maag, PE, AECOM Mark Lehnert, City of Defiance

## Technical Program

Thursday, June 30 - <b>Morning</b> Technical Sessions		
*	ALL STAR PERFORMERS	*
8:00-8:45	Can Small Plants Meet Revised Ammonia and Nitrogen Criteria	Tyler Linton and Craig Varos Great Lakes Environmental Center
9:00-9:45	Five Years Since Ohio Construction Reform was Approved	Dennis Tinkler, PE Kokosing Industrial
10:00-10:45	Does Green Infrastructure Meet Expectations at an Urban Zoo	Nancy Ellwood, CDM Smith Mark Fisher, Cincinnati Zoo and Botanical Garden
11:00-11:45	Protecting Operators From Falls: A Case Study	Tracy Riepenhoff, PE, LJB Corey Timko, City of North Ridgeville
*	Asset Management	
8:00-8:45	Performance Contracting	Tim Murphy Schneider Electric
9:00-9:45	Asset Management for Wastewater Utilities	Richard Miller, PE and Allen Aspacher, PE FTCH
10:00-10:45	Equipping Operators with Meaningful Financial Data	Scott Maring, MCDGC Christy Cooper, Hilltop Consulting
11:00-11:45	What's in Your Maintenance Management Wallet?	Simon Watson Brown and Caldwell
*	REGULATORY UPDATE	<b>*</b>
8:00-8:45	Ohio EPA DEFA Program Updates & Case Histories	Jerry Rouch Ohio Epa
9:00-9:45	Upcoming Nutrient Rules: What You Should Expect	Guy Jamesson, PE, City of Columbus
10:00-10:45	Ohio EPA DSW Program Updates	Tiffani Kavalec Division Chief of DSW, Ohio EPA
11:00-11:45	Ohio EPA Agency Update	Craig Butler Director, Ohio EPA





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## **Operations Challenge**

2016 Operations Challenge Invitational Monday, June 27 and Tuesday, June 28

The Ohio Water Environment Association is proud to announce they will host an Operations Challenge Competition and National Invitational as part of the 2016 Technical Conference and Exhibition.



This event consists of a written test meant to evaluate an operator's knowledge of WWTP process control. The test consists of three main sections: short math, multiple choice, and process control scenarios. The point values for the questions in each section vary. The teams have to decide on how to divide up the sections among the four team members and choose which questions to answer. The test is designed to have enough questions that the teams will not complete the entire test within the 20 minute event. Teams will often consult the WEF MOP 11 manual and Ohio EPA "need to know criteria" for the operator certification exams, while preparing for this event.

New this year: Teams will also be using the Hydromantis simulation software as part of the event!



Most operators have been there ... it's Saturday and the lab people aren't there, but somebody has to read the BODs. This event is designed to simulate operators preparing and reading a set of BODs. Working as a team, the competitors will verify the sample to be tested is within parameters, prepare a set of 10 BOD dilution bottles, and then fill the bottles with differing amounts of dilution water, seed material, and sample. The dissolved oxygen content of each is bottle is determined after filling. A laboratory bench sheet must be completed accurately documenting the BOD dilutions. Teams are evaluated on completing the event in accordance with acceptable lab practices and in the least amount of time possible.

## **Operations Challenge**





SAFETY EVENT



Words that no one wants to hear ... a co-worker has become incapacitated while in a confined space. You need to get them out, and fast. But first things first ... you must complete a confined space permit, test the atmosphere to be sure it's safe for a rescue, and get your safety equipment ready. Assemble the gantry recovery crane, insert the fresh air blower, then pop the manhole cover and lower the rescuer. Place a harness on the unconscious co-worker and lift him out. Then retrieve the rescuer. The key is to be fast, but also be safe. Teams are judged on time to complete the event and on penalties assessed for safety violations. Remember it does not do any good to try to rescue someone and injure yourself in the process. **New this year:** We will be using the Xtirpa davit system and there will be a simulated valve repair for the entrant/s.

## ★ 🔺 🛧 Collections Systems Event 🛧 🔶 🔶

How long do you think it would take you to cut through an 8" SDR-35 pipe with a hand saw? No battery powered Sawzall<sup>®</sup> here. 30 seconds ... how about 45 seconds? Unless you can be around 20, don't even try. The object of the Collections Event is to cut out a 1' – 2' section of broken sewer line from a six foot long pipe, replace it with another unbroken section using two Ferncos<sup>®</sup>, and install a new saddle connection on the fresh pipe. You have four team members: who cuts what, and when? Choreographed chaos is the best way to describe the event. Complete the whole thing in less than two minutes and you might just be fast enough to be the winners.

# ★ 🛧 MAINTENANCE EVENT ★ ★

Weather in Ohio is always changing, wait an hour it will go from winter to summer. Imagine a summer thunderstorm. A lightning strike has knocked out the power and fried the control panel at a remote lift station. It is time to mobilize your trailer mounted engine and pump set. Before you can take the trailer out, you have to be sure it will work. Your team must perform maintenance on the trailer, engine, and pump. Check the tires, change the filters, vacuum test the pump – just a sample of the tasks to be completed. Wheel the trailer over to the model wet well, then attach the suction and discharge hoses, program the engine and pump control unit, and away it goes. Remember move quickly... the Mayor's house is the first lateral up from the lift station!

#### JUNE 27-30 The Bertram Inn and Conference Center

## Lodging & Spouse Program

#### **Bertram Inn and Conference Center**

Join OWEA members and colleagues for a stay at the Bertram Inn and Conference Center in Aurora, Ohio for the OWEA 2016 Technical Conference and Expo. The Bertram Inn and Conference Center is conveniently located less than an hour from Cleveland, Akron, Canton and Youngstown. The approximately 180,000 square feet of meeting space is complimented by two business centers, heated outdoor pool, game room, two fitness centers and two restaurants on site.

- Standard room rate is \$119 per night for up to four persons.
- The guest rooms include standard amenities such as flat screen television, desk & chair, coffee maker, iron & ironing board, hair dryer and more.
- Complimentary Wi-Fi and high speed Internet is also included in the rooms, public areas, and meeting rooms.
- Free parking

OWEA room rates available Sunday June 26 - Thursday June 30, 2016. Make your reservations via the link at *www.ohiowea.org* or call The Bertram: **(330) 995-0200 Please ask for Ohio Water Environment Association 2016 Conference Cutoff date for special rate is Tuesday, May 31, 2016** 



#### 2016 Spouse/Guest Program | Tuesday, June 28 and Wednesday, June 29





#### **Tuesday**

Ever wanted to try your hand at creating fancy cakes but never had the opportunity? Following the Awards Breakfast, spouses will gather for a trip to The White Flower Cake Shoppe. Yes, this is the shop whose staff was on Food Network's Cake Challenge! As part of the demonstration, you will get to try your hand at decorating cupcakes. Following this sweet treat, you will travel to the rustic Burntwood Tavern in neighboring Solon for a late lunch, returning in plenty of time to attend the Meet and Greet.

#### Wednesday

Following breakfast at the hotel, the adventure begins with a trip on Lolly the Trolley to the nationally known Lakeview Cemetery in Cleveland. The guided tour will provide spouses and guests the opportunity to see the historic Wade Memorial Chapel, along with the Garfield and Rockefeller Monuments. Explore the final resting place of a president of the United States, John D. Rockefeller, Eliot Ness, Carl B. Stokes, and many other locally famous people. You will be taken back in time following this fabulous tour by lunch and shopping in Cleveland's Little Italy. The renaissance is alive and well with the cafes, shops and galleries in this neighborhood brimming with strong traditions, a rich cultural heritage, and a spirit of artistry.

Program includes tickets to the Awards Breakfast, Meet & Greet, Reception & Annual Banquet, breakfast Wednesday and Thursday, and these special spouse/ guest activities. The cost is \$160 per guest if registered by May 31st or \$210 per guest June 1st or later.

## **Exhibitor Registration**

#### Register Online at ohiowea.org

First Name (for name badge)	Last Name	
Company Name		Title
Address		
City	State	Zip
Email:	Tel #:	
<b>OWEA/WEF #</b> (req for member rate)	Spouse/Guest Name (if attending)	

Conference Registration	Registration Type	by May 31	June 1 and after	Row Total
	Full Conference Member	\$275 🗌	\$325 🗆	
<b>Full Conference includes:</b> All Technical Sessions, Exhibition, Awards Breakfast,	Full Conference Nonmember	\$400 🗌	\$450 🗌	
Meet & Greet, Wed Lunch, Annual Banquet	Full Conference Retired (not working)	\$150 🗌	\$200 🗌	
	Full Conference Student (ID Req'd)	\$50 🗌	\$75 🗌	
Tue Only includes: Exhibition, Awards	Tuesday Only Member	\$145 🗌	\$170 🗆	
Breakfast, Meet & Greet	Tuesday Only Nonmember	\$220 🗌	\$245 🗌	
Wed Only includes: Technical Sessions,	Wed Only Member	\$145 🗌	\$170 🗌	
Box Lunch, Annual Banquet	Wed Only Nonmember	\$220 🗌	\$245 🗌	
Includes: Awards Breakfast, Meet & Greet, Annual Banquet, Spouse Event	Spouse/Guest Program	\$160 🗌	\$210 🗌	
Streetshoro Plant Tour  \$0	Extra Awards Breakfast Ticket(s)	x \$35 each		
Tues, June 28, 2:15 - 3:45 pm	Extra Meet & Greet Ticket(s)	x \$60 each		
Avail to Full/Tues Registration Options	Extra Annual Banquet Ticket(s)	x \$75 each		
OWEA G	olf Outing Monday, June 22 at Boulder	Creek		
Includes: Golf Cart, Range, Lunch,	# Team(s) of four golfers	x \$360 each		
8:30 am Registration, 9:30 am Shotgun	# Individual Golfers	x \$90 each		
Start, 4 person Scramble. Proximity Prizes and Course Winners.	Hole Sponsorship Sign	x \$250 each		
Boulder Creek Golf Course www.bouldercreekohio.com	Print names of golfers:			
	TOTAL AMOUNT DUE			

#### For Reduced Rate Technical Session/Exhibition Registration Only Options - Visit www.ohiowea.org

<b>Tickets will be taken for the events below.</b> Please check which events you plan to attend.		
Included in Full and Tues Registration	Included in Full and Wed Registration	
🗆 Awards Breakfast	🗌 Wednesday Lunch	
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Signature	Date:		

(by signing you agree to the Exhibitor Terms & Conditions posted at www.ohiowea.org)

Exhibitor Registration Registration Type Cost		Row Total		
Includes One Full Conference Registration: All Technical Sessions, Exhibition Awards Broakfast Most &	Exhibit Booth Member	\$700 🗆		
Greet, Wed Lunch, Annual Banquet for primary exhibitor.	Exhibit Booth Nonmember	\$875 🗌		
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Additional Booth Attendant includes:	Booth Attendant (max 2)		x \$50 each	
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Includes: Awards Breakfast, Meet & Greet, Annual Banquet, Spouse Program	Spouse/Guest Program	\$160 🗌 Early Bird Rate	\$210 🗌 After May 31	
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	Extra Meet & Greet Ticket(s)	x \$60 each		
	Extra Annual Banquet Ticket(s)	x \$75 each		
OWEA Golf C	Duting Monday, June 27 at Boulder Cre	ek Course		
Includes: Golf Cart, Range, Lunch,	# Team(s) of four golfers	x \$360 each		
8:30 am Registration, 9:30 am Shotgun	# Individual Golfers	x \$90 each		
Start, 4 person Scramble. Proximity Prizes and Course Winners.	Hole Sponsorship Sign		x \$250 each	
Boulder Creek Golf Course www.bouldercreekohio.com	Print names of golfers:			
	TOTAL AMOUNT DUE			

<b>Tickets will be taken for the events below.</b> Please check which events you plan to attend.		
Included in Full and Tues Registration	Included in Full and Wed Registration	
🗆 Awards Breakfast	Wednesday Lunch	
Meet & Greet	🗌 Annual Banquet	

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## THE EFFECTS OF CAFFEINE-LADEN Wastewater Effluent on Linked Stream and Riparian Food Webs

by Melanie M. Marshall, Bowling Green State University

I drink so much coffee that I sometimes wonder if my body can survive on caffeine alone and apparently, I'm not the only one. The consumption of caffeine in the United States is estimated to be more than 200mg/ person/day (nearly 63,000kg/day). Coffee may be the go to source of caffeine for most of us, but there are also countless varieties of sodas and energy drinks. Caffeine is a well-known component of chocolate but, maybe a little more surprising, it's also found as an ingredient in several prescription and over-the-counter drugs, Excedrin and Midol for example. Our bodies cannot process the massive amounts of caffeine that we are consuming on a daily basis, so caffeine enters the liquid waste stream. We also contribute quite a bit just by emptying our coffee pots down the drain. Thus, caffeine ends up in the influent of wastewater treatment plants at relatively high concentrations.

Caffeine is a member of a group of trace contaminants that is labeled Pharmaceuticals and Personal Care Products (PPCP). This group is comprised of materials with health and cosmetic applications. For instance, Triclosan is a common ingredient in many antibacterial products, including hand soaps, with the ability to facilitate development of antibiotic resistance in bacteria. Another PPCP, Bisphenol A (BPA) is found in many plastics and, as an endocrine disruptor, is known to make people more prone to obesity, possibly leading to an increased risk of diabetes and heart attack. Atrazine, also an endocrine disruptor, has been shown to convert male frogs to fully reproductive females. Judging from these effects, it's somewhat obvious that some PPCP's are capable of having negative impacts on humans and potentially wildlife and entire ecosystems.

Despite the many inputs of PPCPs to the wastewater stream, there are no current government regulations regarding these trace contaminants and most municipal facilities are not capable of treating them. So, wastewater effluent still contains PPCPs and is transporting them into receiving streams. A USGS study collected water samples from 85 separate rivers across the U.S. in order to report the existing concentrations of PPCPs. Which of these contaminants turned out to be one of the most commonly encountered? That's right, caffeine.

The effects of caffeine on humans, although somewhat variable, are well established. But much less is known about effects on wildlife and ecosystems. For my PhD research at Bowling Green State University, I'm investigating potential consequences of caffeine for organisms inhabiting streams that receive wastewater effluent. Digging through the scientific literature, I've discovered that the subject has not been extensively addressed and the answer to my question is largely unknown. While there has not been an overwhelming number of studies regarding caffeine and aquatic organisms, there are a few available. River biofilm, the community of microscopic organisms that makes up the mats covering various substrates in streambeds, generally consists of a mixture of photosynthetic, bacterial, and fungal organisms. Each of these components has the potential to be altered by caffeine exposure. Photosynthetic members of the biofilm community may be harmed by caffeine, due to negative effects on enzymes involved in photosynthesis. Bacterial components have displayed positive reactions with an increase in abundance and some fungal species may also benefit because of their ability to use the nitrogen available in caffeine. Very little information is available about responses of aquatic insects to caffeine, but there has been some work on invertebrates in general. Honeybees and fruit flies have reactions to caffeine that are similar to those of humans, including increased activity levels and disrupted sleep patterns. Some species of mollusks



Fig 1. Caffeine has the potential to impact aquatic larval insects in more than one manner. Indirect effects through alterations of a major food source are designated with yellow arrows and direct effects with blue. Either path has implications for rates of emergence as well as population densities of riparian insectivores.

#### TECHNICAL ARTICLE

and nematodes emit signals of distress when exposed, while daphnia experience elevated rates of mortality.

I plan to fill in some of the gaps in caffeine research to better identify the reactions of exposed aquatic organisms. The biofilm, at the base of the food web, could potentially experience changes in community composition and nutritional value. If this is indeed the case, the feeding habits of consumers may be altered and the entire aquatic food web may be susceptible to change. But, aquatic food webs are highly connected to riparian (streamside) food webs. For instance, many insects that live in streams and lakes have a terrestrial adult stage that emerges from these waterbodies where they may be eaten by a variety of other animals (e.g. spiders, birds, bats). Thus, aquatic insect larvae can be an important indicator of disturbance in an aquatic setting and the adults have great potential to impact population densities of riparian insectivores.

A few previous studies have shown that aquatic contaminants can alter streamside food webs. For instance, PCB's introduced into a stream habitat can be found both in emergent insects and in terrestrial insectivores. The insects act as a vector to transfer this particular aquatic pollutant into the riparian zone. Another example demonstrated that with increasing metal contamination comes diminished populations of emergent insects as well as riparian predators. But, effects of caffeine are unknown. If caffeine alters the amount or the nutritional quality of stream biofilms for aquatic invertebrates, it could alter populations of larval emergent insects. Caffeine may also have direct effects



Fig 2. A kick-net was used to capture any larval insects that may be suspended in the water column by disturbing the river substrate.

on emergent insects by lowering emergence rates or raising mortality rates. So caffeine could alter aquatic and streamside food webs through multiple pathways (Fig 1).

I'm currently in the process of identifying, quantifying, and analyzing samples collected from sites upstream and downstream of twelve wastewater treatment plants in northwest Ohio. I was lucky enough to make contact with highly supportive and understanding superintendents at facilities contributing to the Portage, Maumee, and Sandusky River watersheds. Visiting each



Fig 3. After collection, the insect larvae were removed from the net, preserved, and transported to the laboratory for identification.

plant, a small amount of effluent was collected, as well as small amounts of river water upstream and downstream from the outfall to be tested for caffeine. I also bagged several rocks covered with biofilm which I will analyze using genetic techniques and nutritional analysis. I simultaneously collected benthic invertebrates using kick nets (Fig. 2 and 3). Finally, I used sticky traps (Fig. 4) to quantify emergent insects found at each site. So far, our results have confirmed that the highest caffeine concentrations are found in the effluent itself, followed by the downstream samples, and then the upstream.

I'm complementing my field sampling with a laboratory experiment to expose various organisms to a constant concentration and flow of caffeinated water. Subjecting biofilm and aquatic insects to contamination in the lab will enable isolation of the effects of caffeine. These results will then be compared to those of the field study. I also intend to observe the implications of caffeine exposure on other assorted invertebrate species in the laboratory setting. There is currently a small family of snails living in an aquarium in my office, with no idea the fate that awaits them.

I'm confident that the research I've outlined here will accomplish the ultimate goal of providing relevant and necessary knowledge of caffeine's impacts as an aquatic contaminant. Linked aquatic and terrestrial food webs provide several ecosystem services, including fisheries, birdwatching, and many others. Emergent insects are not only an important food source for riparian predators, but the larval stages also support aquatic predators. Chemical contamination resulting in changes to populations of larval insects has the potential to impact the population distribution and abundances of game fish species. Birdwatching enthusiasts anticipate the passing of various migratory species each year. The frequency of stopover for some of these species has been shown to be correlated with changing abundances of emergent insects.

Yet another environmental service provided by aquatic ecosystems lies in providing a source of drinking water for municipalities. The exponential growth of human populations makes it all the more important to preserve our freshwater ecosystems. Although pharmaceuticals, including caffeine, are constantly released, little is known regarding the consequences. With great variance in methods and availability of sewage treatment, research exploring the influences of caffeine will provide important information for municipal authorities evaluating their current facilities as well as for the public, who may be concerned about the relative impacts of possible treatment efforts. A better understanding of pharmaceuticals, including caffeine, is an essential direction for science and necessary for guiding environmental decision-making. It is my hope that this research will help persuade others that the collaboration of wastewater professionals and scientific researchers is crucial for advancement in our shared mission of conserving precious freshwater resources.





Fig 4. Sticky traps, consisting of plastic petri dishes painted with adhesive and attached to a pole, were inserted into the river banks and captured emergent insects over the course of seven days.



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## SCIOTO GREENWAYS: REMOVING DAMS & RESTORING RIVERS

by Bryon Ringley, PE

Powerful forces in our communities for hundreds of years, lowhead dams have been used by mankind for a variety of purposes. For applications ranging from hydroelectric power generation and drinking water supply, to river navigability and recreation, lowhead dams have served an integral function in the development of our current society. Today, however, many lowhead dams are nearing the end of their designed service life and are in need of major repair or removal.

#### **Benefits of Dam Removal**

The benefits that were provided by lowhead dams did not come without a cost. The ecology of impacted rivers and streams often suffered negative changes to flow characteristics and migration barriers. Lowhead dams have also been responsible for a number of drowning deaths due to their sometimes powerful recirculation current.

Today, the removal of lowhead dams has become a widespread practice across the country and the rewards are flowing, literally. One of the largest benefits of removal is improvement in the quality of in-stream habitat. Without the impediment of an aging dam, engineers and environmental scientists are often able to restore the stream's natural flow condition, increasing habitat for native fish and mussel species, as well as invertebrates and macroinvertibrates.

The Ohio Environmental Protection Agency (OEPA) measures use attainment of streams by the Qualitative Habitat Evaluation Index (QHEI), providing a quantitative assessment of the stream's physical characteristics. Changes to a stream's morphology following lowhead dam removal typically leads to improvements in the various QHEI metrics, which often leads to a dramatic improvement in QHEI score.

Once a lowhead dam is removed, waterway restoration can begin. The specific techniques are selected depending on the site's characteristics and project goals. In some areas, the appropriate restoration approach is to allow Mother Nature the freedom to reestablish proper stream form and function over time. In other areas, man-made constraints, such as utilities, bridges, and levees, force a more active approach to restoration.

#### The Scioto Greenways Project

In 2010, as part of its Downtown Strategic Plan, the City of Columbus, Ohio reached out to the public seeking input on desired improvements to the downtown area over the next 10 years. Among numerous options, including housing, new bike lanes, increased parking, and downtown redevelopment, was the Scioto Greenways project.

The Scioto Greenways project was a plan to remove the

Main Street Lowhead Dam, restore a downtown segment of the Scioto River and add approximately 33 acres of new, public recreational green space along the river corridor. The project would build upon previous City investments along the Scioto River including the creation of North Bank Park and the Scioto Mile, which includes a street level promenade, Bicentennial Park, fountains, and an amphitheater.

The community was asked to weigh in on their preferred public improvement project from among several proposed plans. During the planning process, over 500 people attended four public meetings and more than 1,100 comments were received from the community. Online, the plan received a great deal of attention, with more than 20,000 views to the website. This robust public process created a feeling of inclusion and excitement surrounding all of the conceptual plans, but one stood out from the rest. At the end of the public input process, the Scioto Greenways project was selected as the most desired downtown area initiative.

As with the earlier Scioto Mile, public sentiment was the driving force behind this decision. Many residents had come to see the river as a resource and amenity, not something to turn their backs on. In this, they accurately reflected a 20+ year cultural shift, as cities across the US seek to reclaim their waterfronts as a recreational resource.

The City of Columbus turned to the non-profit Columbus Downtown Development Corporation (CDDC) to further study the Scioto Greenways project plan, and in 2011 CDDC hired the project team of Stantec and MKSK to perform a Feasibility Study. This study looked at environmental, social, and economic benefits, as well as the impact of the dam removal on the floodplain and floodwall system. The study found that the removal of the Main Street Dam and restoration to a more natural river channel was feasible and doing so would create 33 acres of new parkland, meet floodplain requirements, and restore the Scioto River habitat.



The dam is breached in November 2013.

#### WATERSHED ARTICLE

CDDC and the project team worked to identify and develop a \$35.5M public/private partnership with multiple interested parties. The City of Columbus, owner of the land along the riverfront, was a key partner, funding 50 percent of the project. Other partners providing funding were the OEPA, U.S. Environmental Protection Agency (USEPA), Ohio Department of Transportation (ODOT), Mid-Ohio Regional Planning Commission (MORPC), Ohio Department of Natural Resources (ODNR), CDDC, Battelle Memorial Institute, Franklin County Board of Commissioners, MetroParks, The Columbus Foundation, and the Columbus Department of Public Utilities.

In July 2012, CDDC and the City selected Stantec and MKSK as the project team to move the project through the preliminary and final design, permitting, construction, and closeout phases. The City indicated a desire to have the project built and opened to the public in 2015, which was a very aggressive schedule for a complex project of this size. To help meet this aggressive schedule, CDDC chose to use the Construction Manager at Risk (CMr) project delivery method, and in January 2013, Messer Construction joined the project team as the CMr.

#### **Permitting and Design**

Due to the number of agencies involved, the permitting process was lengthy and complex. The process involved:

• Obtaining the federal Section 404 Nationwide Permit 27 for restoration from the U.S. Army Corps of Engineers.

• Ushering the project through the National Environmental Policy Act (NEPA) process.

• Consulting with the Ohio Department of Natural Resources, the U.S. Fish and Wildlife Service, and the Ohio Historic Preservation office as part of the NEPA process.

• Obtaining city floodplain permits, and coordinating with the Corps of Engineers to maintain the existing level of flood protection inside the floodwall system.

• Coordinating with two railroad companies that had bridges crossing the Scioto River in the project area.

To effectively manage and expedite the multiple permits and processes, the project team engaged each regulatory agency during the feasibility study phase, a tactic which proved crucial to maintaining the project schedule.

In order for permitting to be completed, project designs were required. The Scioto Greenways project started with and centered on restoring the health of the Scioto River segment through Downtown Columbus. The dam was a major contributor to the impairment of this river segment. OEPA classified the 2.5 mile river stretch impounded by the dam as Modified Warm Water Habitat (MWH), which was a reflection of poor water quality, degraded habitat, and impaired aquatic communities. By removing the dam and restoring the river, this river segment could better meet OEPA's use designation of Warm Water Habitat (WWH) and provide a home for the native aquatic species that should be living in this segment of the Scioto River. The ability to provide 33 acres of green space with trails and other amenities was a result of this ecological improvement.

Stantec conducted an extensive environmental and biological assessment of the project area to meet permit requirements and to understand the design parameters of the river portion of the project. At the project location, the Scioto River has a drainage area of approximately 1,614 square miles. The river behind the dam was approximately 600 feet wide, shallow and located 25 feet below the street level contained within a series of concrete and earthen floodwalls. The design was to return the river to about 300 feet wide, with the appropriate form and function, and maintain the same level of flood protection within the floodwall system.

Removal of the dam allowed for active ecosystem and river restoration utilizing natural channel design techniques. Use of these techniques to narrow the river to its appropriate bankfull width, to recreate stream bed and bank diversity, and to re-establish an active geomorphic floodplain has led to greatly improved habitat diversity and complexity.

Dam breach protocol for the removal of the dam was established to provide safe working conditions during demolition, to minimize the mobilization and transport of large volumes of sediment, and to support an upstream freshwater mussel rescue and relocation effort. Approximately 4,500 common, live freshwater mussels were rescued along the newly exposed banks

## Scioto Greenways



# <u>m</u>b

#### Did you know? There is 250,000 cubic yards of imported dirt at the Scioto River Greenways. Assuming a dump truck is 8 cubic yards, there would be 31,250 dump trucks. If the dump trucks were bumper-to-bumper, they would stretch 148 miles.

WATERSHED ARTICLE

and relocated during the drawdown once the dam was breached. Teams of biologists from Stantec, along with volunteers from various agencies such as ODNR,

OEPA and ODOT, the Ohio State University (OSU), and local watershed groups made the rescue successful in a very tight timeframe at the end of November and the beginning of December 2013.

The design also included:

• Extending storm sewer outfalls and CSOs. Rescueing mussels on the banks after the dam breach.

• Placing trails above the 10-year floodplain to reduce impacts from high water and flooding.

• Helping to keep the banks in place with a detailed landscaping plan that maintains a river corridor with native deep rooted woody vegetation.

A cheine mussels on the banks after the util to its restore • Creating a green space that features a park-like setting, including large, mature trees, and biking and walking trails.

The Scioto River, like so many city waterways, has played an important role in history of development in Columbus. Since the City of Columbus grew out from the river, the project area contained many structures and corridors that are eligible for the National Register. In fact, the entire Civic Core is considered eligible, so design elements were introduced to mimic existing structures and sight lines. To keep the public informed and engaged, the project team worked with CDDC and the Ohio History Connection State Historic Preservation Office (SHPO) to develop a new website that features the history of the riverfront through text and photographs.

http://www.sciotogreenways.com/history/

#### Construction

In addition to the design of the river and riverbanks, planning for construction of a river project this size through downtown Columbus required careful coordination. How would construction crews gain access to the site? How would 31,250 dump trucks deliver more than 250,000 cubic yards of fill material through downtown among the traffic, festivals, and other activities? Continued coordination with various city departments was necessary to develop the logistics of routing traffic and maintaining normal downtown traffic flow.

The project was not, however, obstacle free. At the outset of the construction process, contaminated materials were found in a small area of the project that was previously underwater and were addressed by working with OEPA on a remedial action for the area. Another construction phase discovery was historic building foundations of

the Columbus Electric Light Company and the Pioneer Buggy Company that had been under water for more than 80 years. The project team worked closely with

the Ohio History Connection to investigate and document the findings.

> The Scioto Greenways project was opened to the public on November 10, 2015, with a ribbon cutting ceremony and fireworks. The Ohio State University Crew Club was on the river along with people on paddle boards, canoes and kayaks to add to the festivities.

The Scioto Greenways Columbus Recreation and Y Parks Department. The river of itself has an environment it from disturbance and any change to the waterway. If any roadway or utility is built near or over the river, the covenant requires that the river be returned

to its restored condition.

The restoration project is also a source of research and discovery for a team of OSU graduate students who have monitored the river pre-project and throughout construction. The students will continue to do research on the river and monitor conditions post-construction, including the profile of the river and wildlife population and diversity.

This stunning 33-acre greenway will allow Downtown Columbus to thrive and ensure maximum economic, ecological, and social benefits. The additional green space created through the Scioto Greenways project better connects Downtown to the Scioto Peninsula and East Franklinton, builds on recent park investments, creates links to the existing regional trail system, and will serve as a catalyst for further private investment in Downtown.



Constructing the lower river walk.

#### WATERSHED ARTICLE

#### **Lessons Learned**

As with any project of this scope and complexity, several vital steps led to the success of the Scioto Greenways project.

Stantec discovered early on that the public involvement process at the project outset was critical to understanding what the community wanted. Another critical step was the feasibility study phase. A study of this nature provides crucial insights into what is possible, project parameters, available funding sources, project budget, and issues that may arise.

Early communication with regulatory agencies was also key. Initiating conversations with these partners in the beginning of the design process helped to ensure a smooth and timely completion of the project with no significant unanticipated obstacles along the way. Every stakeholder has different goals and different tasks; trying to meet each varying expectation can be difficult, but it is essential.

Through the design process, the project team stayed connected to key stakeholders by creating a team of representatives from public utilities, public service, and the Department of Recreation and Parks which met biweekly to review the design process and provide input and feedback.

Finally, Stantec viewed the construction phase as equally important as the design phase. The Scioto Greenways project was delivered under the CMr model, so the construction manager was brought on board during the last part of the design phase to provide input on constructability, value engineering, and cost savings before construction ever started. The project team stayed engaged throughout the construction process to answer questions and address new issues.

**Restoration and Rejuvenation** 

Watching the design for the Scioto Greenways come to life, and witnessing the ways in which restoration is already benefitting the community, has been especially rewarding. Although just complete, the dam removal and

Soil lifts used to construct new riverbanks.

"The project is expected to generate a significant economic benefit for downtown Columbus."

restoration program has already provided significant ecological benefits for the river and its aquatic life. The natural flow of the river has been restored, and the native species found in the river are enjoying a healthier habitat.

The restored river also provides improved stormwater management capabilities through the creation of an active floodplain. Better water dispersion during a flood event will decrease stresses on the banks and more efficiently transport sediment and filter stormwater.

The project is expected to generate a significant economic benefit for downtown Columbus, encouraging businesses to locate and grow in the area. In addition, residents now have a new recreation resource, allowing them to connect with the river and their natural surroundings, just as they desired in 2010 during the planning of the project.

Across the country, dam removal and river restoration projects are improving ecological systems and habitats. In Columbus, residents recognized this type of resource management can foster vibrant communities through environmental enhancements and improved connectivity. The community of downtown Columbus wanted a place to gather, to play, to walk, to relax, to picnic, to fish, and most importantly, to connect with nature and their local waterways. Once turning its back on the Scioto River, the City of Columbus has turned another corner, and now stands ready to embrace the waterway that has connected the city for so many years.

Bryon Ringley, PE is a senior principal and water practice discipline leader for Stantec in Columbus, Ohio. He served as project manager for the design team on the Scioto River Greenways and Main Street Lowhead Dam Removal project.

This article is adapted from an earlier version published in Land and Water magazine, with permission.



**CITY OF COLUMBUS** 

## IT'S TIME TO PUP IN COLUMBUS

by City of Columbus



Presenting a serious – and slightly smelly – message to residents of the City of Columbus required a memorable, humorfilled campaign. It had to stress the importance of the law, as well as the implication of harmful bacteria in local waterways.

The City of Columbus recruited the help of MurphyEpson, a Columbus-based marketing and public relations agency, and PUP

was launched. PUP – an abbreviation for Pick Up Poop – encourages residents to "doo" their part by picking up after their pets to eliminate the direct contribution of bacteria to local waterways.

The campaign let people know that when dog poo is left lying around and it rains, the nasty bacteria in poo – like E. coli – washes into puddles and storm drains, which flow into nearby streams and rivers. Since none of this water is treated, once polluted it can cause diseases for people and problems for fish and animals.

The PUP campaign utilized multiple media sources and partners to spread the word about the important issue. Former Mayor Michael B. Coleman served as the face of the campaign alongside his dog, Mr. Milo Tibbs.

The City of Columbus also distributed 20,000 PUP pledge tip cards asking residents to pledge to pick up

after their pets through over one hundred local vets, pet stores and related businesses. A brightly painted PUP Wagon was taken around to community events with a street team who urged residents to take the PUP Pledge and sign up on the City's "Green Spot" webpage in exchange for biodegradable pet waste bags. More than 4,000 took the pledge from April through August in 2014 and 2015. The City's multi-pronged efforts also included a new microsite and social media campaign.

To take the PUP Pledge and help keep our water clean, visit Columbus.gov/PUP

We are grateful to our friends at the Northeast Ohio Regional Sewer District, Cleveland, OH for their permission to use the PUP name.



PUP Wagon featuring Mr. Milo Tibbs

Test Your	KNOWLEDGE	
<b>1.</b> How many dogs are in Franklin County?		
a. 101,000		
b. 193,000		PUP A
c. 221,000		DIID
d. 277,000		FUF
	4. True or False?	Pick Up Poop
<b>2.</b> True or False?	Dog waste can act as fertilizer in some instances.	
Dogs under 12 pounds do not		
need to be cleaned up after.	<b>5.</b> What are eco-friendly options to PUP?	
	a. In-ground pe	et waste composters
<b>3.</b> Which harmful bacteria can be found in dog waste?	b. Distribute waste into ditches	
a. E. coli	c. Underground pet waste digester	
b. Salmonella	d. None of the above	
c. Giardia	e. Both A and C	

Answers: 1-d; 2-False; 3-d; 4-False; 5-e

d. All of the above

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# INSIGHT TO REFINERY SECONDARY CLARIFIER OPERATION

#### The relationship between sludge settling and sludge volume index

by By Everett L. Gill and T. Houston Flippin, WEF Industrial Wastewater Committee Members



Operators of refinery wastewater treatment facilities routinely measure sludge volume index (SVI), allowing them to detect deteriorating sludge settling quality. This test, however, does not allow the operator to accurately analyze secondary clarifier performance, including clarifier capacity and the required return activated sludge (RAS) flow. A settling flux analysis is required to predict clarifier operation, yet the constants required to generate the settling flux curve are difficult to develop.

For state-point analyses, settling flux curves must be representative of the biomass in the system or use a previously developed relationship between SVI and empirical sludge settling parameters (such as those developed by Daigger and Roper [1985], Daigger [1995], and Wahlberg and Keinath [1988/1995]). These relationships were developed using municipal facilities with varied industrial contributions. Due to the inherent differences in the biomass at both facilities, revised parameters were created for use in the previously developed correlations between SVI and settling parameters for refinery biomass.



#### Figure 1. Typical column test apparatus

#### Methedology

Zone settling velocities (ZSV) were obtained from settling column tests and used to generate empirical sludge settling constants Vo and K (Vesilind, 1974) at four separate refineries. The facilities that contain two sets of data were analyzed during periods with different biomass settling characteristics (SVI values). The columns were large (4- to 5-feet deep and at least 3 inches in diameter), mechanically stirred, and water-jacketed using a submersible pump located in the effluent lauder to maintain a steady effluent temperature during the tests. An example of a settling apparatus is presented in Figure 1.

The initial solids concentration, Xi, was varied by dilution with secondary effluent or concentrated by the addition of return activated sludge (RAS) or settling. Settling tests were performed at different mixed liquor concentrations (Xi) to develop the empirical parameters Vo and K of the Vesilind (1974) equation.

$$Vs = Vo \cdot e - K \cdot Xi$$
 (1)

Where:

Vs = zone settling velocity (m/hr), Xi = initial solids concentration (g/L), and Vo (m/hr) and K (L/g) = sludge specific parameters.

The settling flux, Gs, is defined as the product of the settling velocity and solids concentration.

$$Gs = Vo \cdot Xi \cdot e - KXi$$
 (2)

Where:

Gs = settling flux (kg/m2·hr), Xi = initial solids concentration (g/L), and Vo (m/hr) and K (L/g) = sludge specific parameters.

The SVI for each test condition was obtained using a 1-L unstirred settling apparatus. All SVI values fell within the range used by Wahlberg and Keinath ( $47.9 \le SVI \le 235$ ) for an SVI performed in a 1-L graduated cylinder not stirred (SVIGN). Table 1 summarizes the data.

The empirical model for predicting setting flux that was developed by Wahlberg and Keinath for the 1-L SVIGN is demonstrated in Equation 3.

$$Gs = Xi \cdot \Upsilon \cdot e^{[-\delta \cdot SVI - (\alpha + \beta \cdot SVI) \cdot Xi]}$$
(3)

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Where:

Average model parameters  $\alpha,\,\beta,\,\delta,\,and$   $\Box$  generated for the SVIGN and their standard deviation was reported as follows:

α	= 0.351 ± 0.071 L/g
β	= 0.00058 ± 0.00053 L/mI
δ	$= 0.00602 \pm 0.00115 \text{ g/mL}$
Υ	$= 18.2 \pm 3.2 \text{ m/h}$

Substituting these model parameters into Equation 3 yields the following:

$$Gs = Xi \cdot 18.2 \cdot e^{-0.00602 \cdot SVI - (0.351 + 0.00058 \cdot SVI) \cdot Xi]}$$
(4)

Using Equation 2, a settling flux curve was generated for each data set in Table 2 by plotting Gs as a function of Xi, Vo, and K. A second flux curve was generated using Equation 3. The model parameters  $\alpha$ ,  $\beta$ ,  $\delta$ , and  $\Upsilon$  were generated for each of the seven settling runs by adjusting the four parameters to obtain a minimum of squared differences between the two models using the Wahlberg and Keinath parameters as the starting parameters.

Substituting the revised model parameters in Equation 3 yields the following equation presented by Wahlberg and Keinath:

	Vo	к	SVI	SVI type
	(m/hr)	(L/g)	(L/g)	
A-1	10.0	0.50	110	1-L unstirred graduated cylinder
B-1	9.3	0.40	112	1-L unstirred graduated cylinder
B-2	9.8	0.37	112	1-L unstirred graduated cylinder
C-1	11.9	0.36	89	1-L unstirred graduated cylinder
C-2	12.5	0.33	59	1-L unstirred graduated cylinder
D-1	9.5	0.26	113	1-L unstirred graduated beaker
D-2	15.5	0.35	128	1-L unstirred graduated beaker

Table 1. Summary of refinery Vesilind and SVI data

Gs = Xi ·

 $11.2 \cdot e^{-0.000009 \cdot SVI-(0.306 + 0.00057 \cdot SVI) \cdot Xi}$  (5)

Daigger developed a best-fit relationship for a combined data set using the following equation suggested by Wahlberg (1988).

$$\ln Vs = \ln Vo - (k1 + k2 \cdot SVI) \cdot Xi$$
(6)

This equation can also be represented as a settling flux, Gs, by the multiplying the setting velocity and solids concentration.

$$Gs = Xi \cdot Vo \cdot e^{[-(k1 + k2 \cdot SVI) \cdot Xi]}$$
(7)

Average model parameters ln Vo, k1, and k2 generated for the SVI and their standard deviation were reported by Daigger:

Substituting these model parameters into Equation 6 yields the following:

$$\ln Vs = 1.871 - (0.1646 + 0.001586 \cdot SVI) \cdot Xi$$
 (8)

Equation 2 was used to generate a settling flux curve for each data set by plotting Gs as a function of Xi, Vo, and K. A second flux curve was generated using Equation 7. The model parameters Vo, k1, and k2 were generated for the seven refinery runs by adjusting the three parameters to obtain a minimum of squared differences between the two models using Daigger's original parameters as the starting parameters. Table 3 demonstrates the calculated model parameters for each of the settling test.

	α	В	δ	Ŷ
	(L/g)	(L/mL)	(g/mL)	(m/h)
A-1	0.428	0.00062	0.00000	10.0
B-1	0.333	0.00057	0.00000	9.26
B-2	0.299	0.00060	0.00000	9.79
C-1	0.310	0.00057	0.00002	11.9
C-2	0.292	0.00057	0.00000	12.5
D-1	0.283	0.00056	0.00000	15.5
D-2	0.198	0.00052	0.00004	9.50
Average	0.306	0.00057	0.000009*	11.2*
Standard deviation	0.068	0.00003	0.000015	2.3

\*Outside of mean <u>+</u> standard deviation of original Wahlberg parameters.

*Table 2. Wahlberg and Keinath refinery model parameter estimates* 

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Refinery-run	Vo	ln Vo	k <sub>1</sub>	k <sub>2</sub>
	(m/h)	(m/h)	(L/g)	(L/g)
A-1	9.97	2.30	0.2383	0.002339
B-1	9.26	2.23	0.1915	0.002339
B-2	9.79	2.28	0.1767	0.001681
C-1	11.86	2.47	0.1951	0.001862
C-2	12.51	2.53	0.2106	0.001946
D-1	15.53	2.74	0.1633	0.001491
D-2	9.46	2.25	0.1262	0.001153
Average	11.196	2.40*	0.18598*	0.001830
Standard deviation	2.283	0.19	0.03567	0.000434
	I	1	- I	

\* Outside mean + standard deviation of original Daigger parameters.

Table 3. Daigger refinery model parameter estimates



*Figure 2. Settling flux curves using original and revised Wahlberg and Keinath model parameters* 



Figure 3. Settling flux curves using original and revised Daigger model parameters

Substituting the revised model parameters in Equation 7 yields the following:

 $\ln Vs = 2.40 - (0.1860 + 0.00183 \cdot SVI) \cdot Xi$  (9)

A settling flux curve was generated using the original model parameters and the revised model parameters generated with the refinery biomass. Figures 2 and 3 illustrate the flux curve generated for an SVI of 100 mL/g for the original and revised Wahlberg and Keinath and Daigger parameters, respectively.

Both curves indicate the refinery biomass has greater settling properties compared to the settling properties the previous models indicated.

Figure 4 presents the individual derived Wahlberg and Keinath model parameters plotted at an SVI of 100 mL/g (Table 2) as well as the combined revised Wahlberg and Keinath parameters for the same SVI (Equation 5).

As demonstrated, there is a significant variation in the settling flux curves generated for each refinery compared to the combined parameters.

#### **Summary and Conclusions**

Seven separate model runs using biomass from refinery wastewater treatment facilities were used to evaluate the existing relationships for generating settling flux curves from SVI data. This comparison developed revised model parameters for refinery biomass, as expressed in Equation 5:

This revised correlation can be used for better insight on clarifier capacity and operation at a refinery activated sludge treatment facility than could be discerned with prior published correlations. However, the variation in refinery model predicted settling flux data and actual data is significant and warrants careful consideration when using a correlation.



*Figure 4. Settling flux curves using refinery-specific derived Wahlberg model parameters and revised combined model parameters* 

## WEF HEADQUARTERS



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# **Collection Systems** Workshop

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Biosolids Workshop Wednesday May 18th, 2016

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Wednesday & Thursday, October 26-27, 2016

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# YOUR EFFORT

We all consume water and create waste. In fact, the average American uses 176 gallons of water and contributes between 66 and 192 gallons of waterwater to the system each day. Every drop that enters our homes and businesses is treated and discharged back into the water cycle to be reused and recycled. Water conservation and stewardship starts with you! You can conserve water in small ways that make a big difference to preserve, protect, and prevent water waste.

#### Did you know?

- Nearly 95% of your water footprint is hidden in the food you eat, energy you use, products you buy, and the services upon which you rely.
- The water it takes to produce the average American diet alone—approximately 1,000 gallons per person per day—is more than the global average water footprint of 900 gallons per person per day for diet, household use, transportation, energy and the consumption of material goods.<sup>1</sup>
- What's the worst water consumer in your household? The toilet! As much as 19.5 gallons of water per day per person is used just flushing the toilet alone.<sup>2</sup>
- An American taking a 5-minute shower uses more water than the average person in a developing country uses for an entire day.<sup>3</sup>
- If all U.S. households installed water-saving features, water use would decrease by 30%. This would save an estimated 5.4 billion gallons of water per day.<sup>4</sup>
- The average American household uses only 10% of the treated water that comes out of the faucet for drinking and cooking. The rest is flushed down the toilet or drain. The growing use of recycled wastewater for irrigation, landscaping, industry and toilet flushing, is a good way to conserve our fresh water resources.<sup>5</sup>

- Recycled water can be used to replenish sensitive ecosystems, recharge groundwater aquifers, and in some cases, is further treated to drinking water standards.<sup>5</sup>
- The term "toilet to tap" is misleading because recycled water that ends up in drinking water undergoes extensive and thorough purification. In addition, it is usually added to groundwater or surface water for further cleansing before being sent to a drinking water supply where it is again treated.<sup>6</sup>
- A few countries like Singapore, Australia and Namibia, and states such as California, Virginia and New Mexico already are drinking recycled water, demonstrating that purified wastewater can be safe and clean, and help ease water shortages.<sup>5</sup>

# Small actions can make a BIG difference.

- Make a lake every day! If everyone in the United States flushed the toilet just one less time per day, we could save enough water every single day to create a lake that is a mile long, a mile wide and four feet deep.<sup>2</sup>
- If everyone in the United States used just one less gallon of water per shower every day, we could save 85 billion gallons per year.<sup>2</sup>
- The average shower is 8 minutes. Try reducing to 5-minute showers, 5 days a week. Use a timer to set a limit and stick to it!

- Installing a low-flow showerhead takes only minutes. Low-flow means it uses 2.5 gallons per minute. You'll never notice a difference in water pressure, but you'll cut your water use and your water heating bills.
- Turn off the tap! You can save as much as 3,000 gallons of water per year water if you just turn off the tap while brushing your teeth and washing your hands.<sup>2</sup>
- Nip the drip! Fixing leaky plumbing can save up to 10 gallons of water per day!<sup>2</sup>
- Read and understand your water and wastewater bill.

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