Buckeye Bulletin

Ohio Water Environment Association | Volume 86:4 | Issue 4 2013

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Ohio Water Environment Association

Preserving & Enhancing Ohio's Water Environment

www.ohiowea.org

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Disclaimer
The *Buckeye Bulletin (BB)* is the official publication of the Ohio Water Environment Association, Inc., a not-for-profit corporation founded in 1926, dedicated to the improvement of water quality in Ohio and the continuing education of water professionals. It is one of the top five member associations of the Water Environment Federation.

The ideas, opinions, concepts, and procedures expressed in this publication are those of the individual authors and not necessarily those of the Ohio Water Environment Association, its officers, general membership, or staff.

For further information on submitting articles or advertising, please contact our organization at:

Ohio Water Environment Association
1890 Northwest Blvd, Suite 210
Columbus, OH 43212

T: 614.488.5800
F: 614.488.5801
C: 614.361.2080
E: info@ohiowea.org
www.ohiowea.org

Elizabeth Wick, Publications Chair

Judi Henrich, Executive Manager

Amy Davis, Executive Assistant

Tyler La Susa, Intern

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OWEA is a Member Association of the Water Environment Federation
601 Wythe Street
Alexandria, VA 22314-1994
T: 703.684.2400
F: 703.684.2492
www.wef.org

FEATURES

DEPARTMENTS

The Buckeye Bulletin is published 4 times per year by the Ohio Water Environment Association.
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OWEA Officials

2013-2014 Executive Committee

President Dan Sullivan
Sullivan Environmental Technologies, Inc.
dan@sullivanenvtec.com - 859.426.5178

President-Elect Mike Frommer
URS Corporation
mike.frommer@urs.com - 614.464.4500

Vice President Elizabeth Wick
Ohio Environmental Protection Agency
elizabeth.wick@epa.ohio.gov - 419.373.3002

Past President Tom Angelo
City of Warren
tangelo@warren.org - 330.841.2591

Secretary-Treasurer Jane Winkler
janewink1127@gmail.com - 513.910.3775

Senior WEF Delegate Mark Livengood
Montgomery County
livengoodm@mcohio.org - 937.781.2559

Junior WEF Delegate Dale Kocarek
Stantec
dale.kocarek@stantec.com - 614.486.4383

Junior WEF Delegate Doug Clark
City of Bowling Green
douglas.clark@bgohio.org - 419.354.6274

NE Delegate Ted Baker
Baker and Associates
kingsnu@aol.com - 440.461.4577

SW Delegate Jamie Gellner
Hazen and Sawyer
jgellner@hazenandsawyer.com - 513.469.2750

SE Delegate Tyler Linton
Great Lakes Environmental Center
tlinton@glec.com - 614.487.1040

NW Delegate Kim Riddell
Smith Environmental
kim@go-smith.com - 419.234.4507

2013-2014 Section Presidents

NW President Josh Wehring
jmwehring@fremontohio.org

NE President Mary Ann Driscoll
maryann.driscoll@burgessniple.com

SW President Bob Beyer
bbeyer@masonoh.org

SE President Matt Boone
matthew.boone@arcadis-us.com

2013-2014 Committee Chairs

Annual Conference John Newsome and Rob Herr
jgnewsome@columbus.gov, rcherr@columbus.com

Auditing Rick Varner
rvarner@marysvilleohio.org

Awards Doug Clark
douglas.clark@bgohio.org

Certification Kathy Cook
kathy.cook8@gmail.com

Collection Systems Bill Horst
horstwj@gmail.com

Contact Hours Marc Morgan
mmorgan@ci.mansfield.oh.us

Finance Steve Morrison
smorrison76@woh.rr.com

Governance Dan Sullivan
dan@sullivanenvtec.com

Government Affairs Dale Kocarek
dale.kocarek@stantec.com

Laboratory Analysts Denise Seman
dseman@cityofyoungstownoh.com

Membership Tom Angelo and Deb Houdeshell
tangelo@warren.org, dhoudeshell@hazenandsawyer.com

Plant Operations Jim Borton and Kim Riddell
james.borton@ch2m.com, kim@go-smith.com

Pretreatment and Industrial Sharon Vaughn
sharon.vaughn@cityofdayton.org

Public Education Nancy Taylor and Tyler Linton
ntaylor@ci.newark.oh.us, tlinton@glec.com

Publications Elizabeth Wick
elizabeth.wick@epa.ohio.gov

Publicity Cindy Jacobsen and Tom Merritt
cjacobsen@tandmassociates.com, tmerritt@hrgray.com

Residuals Jamie Gellner
jgellner@hazenandsawyer.com

Safety James Graham and Mike Welke
jgraham@bgohio.org, mwelke@warren.org

Small Systems Roberta Acosta
rjacosta@wsos.org

Sponsorship Ted Baker
kingsnu@aol.com

Strategic Planning Dan Sullivan
dan@sullivanenvtec.com

Utility Enhancement Scott Holmes
scott.holmes@daytonohio.gov

Water for People Doug Borkosky and Alicia Adams
doug@hlbaker.com, alicia.adams@stantec.com

Watershed Anil Tangirala
anil.tangirala@stantec.com

Webmaster Tom Fishbaugh
webmaster@ohiowea.org

Young Professionals Kris Ruggles and Nick Bucurel
kris.ruggles@strand.com, nbucurel@BrwnCald.com

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.

OWEA needs your skill, experience, and energy. Contact OWEA at ***info@ohiowea.org*** or the chair of a committee that interests you for more information.

OWEA ASSOCIATION NEWS

OWEA Fall Intern

Tyler La Susa is currently a junior at The Ohio State University in Columbus with a major in civil engineering and a minor in business entrepreneurship. Tyler is also a member of The Mount Leadership Society at Ohio State and Alpha Sigma Phi Fraternity where he is the chair of recruitment and member education. Upon graduating Tyler hopes to work in the water and wastewater quality and infrastructure industry.

Coursework or Contact Hour Information

If you need assistance finding or printing out your OWEA coursework report, please contact OWEA at 614.488.5800 or *admin@ohiowea.org*. You can also find instructions for downloading your report at: *http://www.ohiowea.org/memberships.php*.

Utility Partnership Program Members Grow

More utilities are taking advantage of the benefits of the WEF/OWEA Utility Partnership Program (UPP). Current Ohio UPP participants are:

Avon Lake Municipal Utilities
City of Columbus
City of Fairborn
City of Warren WWTP
Fairfield County
Northeast Ohio Regional Sewer District

Learn more about the Utility Partnership Program below.

November 2013
13 SWOWEA Plant Ops Meet & Greet
14 SWOWEA Plant Ops Seminar
14 NESOWEA Section Meeting
20-21 SWOWEA WW Plant Ops Workshop

December 2013
5 Biosolids Workshop

January 2014
8 OWEA Executive Committee Meeting

February 2014
13 SE Section Meeting
25 OWEA Legislative Event

March 2014
13 Government Affairs Workshop
19 OWEA Executive Committee Meeting

April 2014
7-9 WEF/NACWA Washingon DC Fly-In
10 SE Section Meeting

May 2014
1 Collection Systems Workshop
7 OWEA Executive Committee Meeting
15 SEOWEA Section Meeting
21-22 Plant Operations/Laboratory Analysis Workshop

June 2014
25 OWEA Executive Committee Meeting

August 2014
26-29 One Water - Ohio WEA/AWWA Joint Conference

Ohio Water Environment Association
Preserving & Enhancing Ohio's Water Environment

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 UPP 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 5 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.

Contact OWEA at 614.488.5800 or *info@ohiowea.org* and we'll help your utility with enrolllment!

President's Message

Earlier this week my daughter, the high school senior, was interpreting a poem for her English Literature class. It was William Blake's 1794 publication entitled "The Tyger." I had a flashback when she recited the first stanza:

Tiger, tiger burning bright

In the forest of the night

What immortal hand or eye

Could frame thy fearful symmetry?

Dan Sullivan
OWEA President

I, too, had to memorize that very opening to that same poem, 30 years ago; when I studied English lit my senior year in high school. Not gonna lie to you. It was my favorite class amid the calculus and physics I studied to prepare me for four (or five) years of engineering school. "So what?" you may be saying. Well, that was just one of the many stanza's I memorized and for some strange reason can still recall them all at cocktail parties just like my teacher said I would. Another one, by the tragic figure, Samuel Taylor Coleridge from the "Ryme of the Ancient Mariner" (also published in the late 18th century) went something like this:

Water, water everywhere

And all the boards did shrink

Water, water everywhere

Nor any drop to drink.

Those lines could set the theme for one of OWEA's goals this year. Water Everywhere or One Water! In case you haven't heard, we are joining forces with our Ohio AWWA brethren for a single, epic conference event in August 2014. Set your calendars and submit your budget requests to attend the One Water Conference the last week of August (26-29) in Columbus. The website *www.OneWaterOhio.org* is up and running. There you will find the call for abstracts which will be due around the end of January. You will see that we are looking for a wider variety of topics so there is sure to be something for everyone at the 2014 One Water Conference. See you there!

Recently I read an article in the Huffington Post concerning World Water Day. These types of articles have been attracting my attention a lot more lately as a result of our planning for One Water. This one in particular discussed how many gallons of water it takes to create specific things we use or consume every day. It was astonishing and I thought I would share a few of them with you. At the time of this reading, Halloween has come and gone. Did you know that it takes almost 2,800 gallons of water to produce one candy bar? For your upcoming Thanksgiving Day dinner, keep in mind that over 1,000 gallons, 19 gallons and 31 gallons of water are required to produce respectively, a turkey, a single apple for mom's pie and a single glass of wine. Most ironic of all, it takes over 1.5 gallons of water to produce a single plastic bottle to hold 16 ounces of water?! Go figure, indeed.

So as we sit around our tables with our loved ones this holiday season, let us not forget to stop and give thanks for all the graces that we have been given. Not the least of which, that "Nor any drop to drink" is slowly becoming a distant memory around the world thanks in large part to people like you who chose this profession to ensure the health and preservation of our most precious (and most taken for granted) commodity clean water. As well as organizations like WEF, AWWA and Water for People; which are helping to bring the reality of clean and sustainable drinking water and sanitation to every corner of the globe.

Dan Sullivan, OWEA President
dan@sullivanenvtec.com

WATER FOR JOBS
WATER PUTS AMERICA TO WORK
www.WaterForJobs.org

Are You a Veteran Interested in Helping Fellow Veterans Find Employment in the Water Quality Field?

OWEA is exploring forming an Ad Hoc committee to promote the wastewater industry as vocational possibilities for veterans. I am looking for the right person(s) to coordinate this effort. Possibilities include interacting with the Ohio Veterans Administration Office(s) and reaching out to veterans' groups to make them aware of potential job opportunities for returning veterans.

As our workforce ages and/or takes their early retirement from municipalities, there is a need for skilled, able and willing, and disciplined folks who can learn the trade. What better source than our armed services? We have talked about high school and trade school outreach. I think this could be a natural progression of WEF's Water for Jobs without the waiting on infrastructure investment.

If you would be interested in helping with this outreach effort, please contact me at *dan@sullivanenvtec.com*

Did you know OWEA has more than 25 committees?

Are you looking for a way to be more involved in Ohio's water quality community?

Visit the OWEA Committee page at *http://www.ohiowea.org/committees.php* and let us know what your interests are and we'll match you up with a committee. As always, call us at 614.488.5800 with any questions.

Ohio Water Environment Association

One Water

Ohio WEA-AWWA 2014 Technical Conference & Expo

www.onewaterohio.org

Ohio Section American Water Works Association

Hilton Columbus Downtown **Save the dates: August 26-29, 2014** Greater Columbus Convention Center

Call for Abstracts Is Open

Submit Abstracts Online by February 1, 2014 to *www.onewaterohio.org*

We are excited to develop a technical program for this first-ever joint Ohio WEA/AWWA conference. The water and wastewater industries both face similar challenges with new and current regulatory requirements as well as development of emerging technologies and industry practices. And efficient, cost-effective operation and maintenance of our aging infrastructure is at a premium for our water and wastewater providers.

We are looking to provide our members and conference attendees with a unique opportunity to gain professional development and educational opportunities for both industries at one time. We have selected the technical tracks (listed right) for our concurrent technical program to cover the educational goals of this joint conference.

We are only accepting on-line submissions of abstracts in order to streamline the submission process and gathering of your information. Visit *www.onewaterohio.org* to submit an abstract. Please remember to provide concise information and submit the required abstract (1-2 pages) and biography information. This information will be used to review and select presentations for the conference technical program.

Presentation time slots will be 30 minutes long. Actual presentations should be 25 minutes in length with 5 minutes allowed for questions.

Once again, we are excited about this unique opportunity and look forward to an excellent technical program.

Technical Program Co-Chairs

Stacia Eckenwiler, City of Columbus, *skeckenwiler@columbus.gov*
Michael Frommer, URS Corporation, *mike.frommer@urs.com*

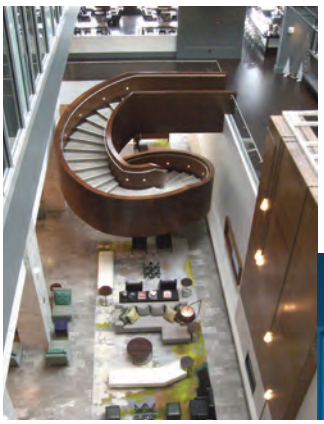
General Information: *info@onewaterohio.org*

TECHNICAL TRACKS

Drinking Sourcewater
Energy Sustainability
Green Technologies
Lab
Maintenance
Operations
Regulatory
Residuals/Recovery
Stormwater
Utility Management
Wastewater Collections
Wastewater Treatment
Water Distribution
Water Treatment
Workforce Development

Bringing more Ohio water professionals together than ever before

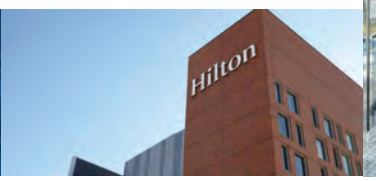
ONE TIME ONE PLACE ONE WATER OHIO



The two premier Ohio water associations are teaming up and working together to hold a joint water professionals conference in 2014.

The joint conference will be held August 26-29, 2014 at the new **Hilton Columbus Downtown** and **Greater Columbus Convention Center**, which are connected by a stunning glass skywalk.

Watch for more details at *www.onewaterohio.org*



EDUCATION ABOVE ALL THINGS

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

The Perils of Ignorance and Want

"Spirit! are they yours?" Scrooge could say no more." They are Man's," said the Spirit, looking down upon them."

"And they cling to me, appealing from their fathers. This boy is Ignorance. This girl is Want. Beware them both, and all of their degree, but most of all beware this boy, for on his brow I see that written which is Doom, unless the writing be erased . . ." (The Ghost of Christmas Present to Ebenezer Scrooge, A Christmas Carol, Charles Dickens, 1843)

Charles Dickens (1812-1870)
An Advocate of Public Education
In England in the 19th Century

At the time of the publication of **"***A Christmas Carol,"* in 1843, England was in the midst of the Industrial Revolution and the social condition was bleak. Many children were orphaned at a young age and many others died of disease. Charles Dickens was a young writer during the first half of the 19th Century and became a spokesman for compassionate social reform through his writings. Prior to 1870 when mandatory public education came into being in England, those without opportunity to acquire education had little chance of escaping the endless cycle of poverty. If one follows the dialogue of the story in **"***A Christmas Carol,"* one can spot the influence of English economist Sir Thomas Malthus (1766-1834) from his monograph, entitled *"An Essay on the Principle of Population,"* published in 1798. Malthus predicted that the population of England would grow to outstrip its resources, leading to economic and subsequent social collapse. Malthus' bleak contribution to the story line is summarized in these immortal words: "are there no poor houses; are there no prisons?" While Malthus' predictions were fortunately not realized, such beliefs lent pessimism to an already bleak age.

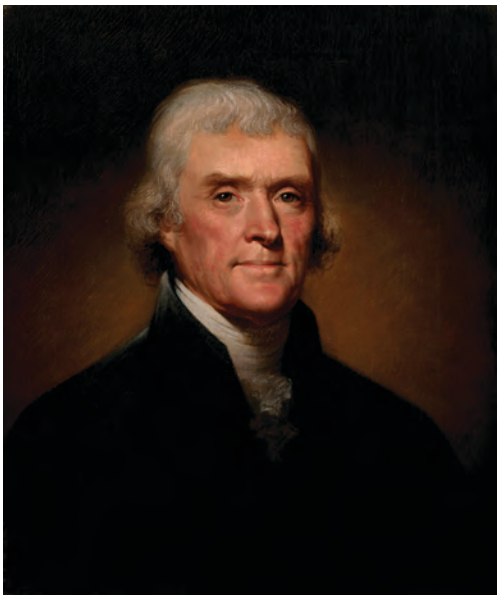
Education in America

The evolution of education in America was comparatively better off than in England. One of the beginnings of education in America is traced to the Education Act of 1647 for the Massachusetts Bay Colony. During the Colonial and Post-Colonial Era of America, one of the biggest proponents for free, compulsory public education was Thomas Jefferson. As an ambassador in France, Jefferson foresaw the imbalance of power and the French Revolution. The magnitude of bloodshed, and wild frenzy surrounding the French Revolution and reign of terror, had such a horrifying and profound impact on Jefferson that he vowed to never let that happen in America. Jefferson believed that this fate could be averted through education and creating a utopian society, which would would allow individuals to:

- Achieve self-reliance through economic gain
- Keep more wealth in their hands as opposed to those of government
- Empower people to elect good and wise leaders dedicated to the "common good"
- Provide other freedoms outlined in the Declaration of Independence and US Constitution

"If a nation expects to be ignorant and free, in a state of civilization, it expects what never was and never will be."

Thomas Jefferson, January 6, 1816



Thomas Jefferson
3rd President of the United States, 1801-1809
1800 Portrait by Rembrandt Peale

In Pursuit of Relevancy

When I was President of the Ohio Water Environment Association (OWEA) in 2010, I found myself concerned about being the leader of an organization not perceived by the larger community as known or relevant. Shortly before Thanksgiving 2010 I was approached by a colleague asking if we would participate with the Ohio Section of AWWA in the annual Congressional Fly In to Washington DC. This idea resonated with me as an essential first step in the journey of relevance.

Participating in the Democratic Process

I was interviewed by the Water Environment Federation after our most recent Fly In to ask about my experiences. During my interview I told WEF that I was always interested in history and public policy. Therefore, participating in the Fly In provided an outlet to channel these interests from as far back as I can remember. As everyone having done this knows the process of preparing for, traveling to, and interfacing with elected officials in our nation's capital can be intimidating. I find that the experience summarized well by a speech in the 1995 romantic comedy *The American President* with Michael Douglas and Annette Bening.

Michael Douglas as
President Andrew Shepherd
In The American President (1995)

Speech to the Press Corps – The American President

"America isn't easy. America is advanced citizenship. You've got to want it bad, 'cause it's going to put up a fight. It's going to say, 'You want free speech? Let's see you acknowledge a man whose words make your blood boil, who's standing center stage and advocating at the top of his lungs that which you would spend a lifetime opposing at the top of yours.' You want to claim this land as the land of the free? Then the symbol of your country cannot just be a flag. The symbol also has to be one of its citizens exercising his right to burn that flag in protest. Now show me that, defend that, and celebrate that in your classrooms. Then you can stand up and sing about the land of the free.

I've known Bob Rumson for years. And I've been operating under the assumption that the reason Bob devotes so much time and energy to shouting at the rain was that he simply didn't get it. Well, I was wrong. Bob's problem isn't that he doesn't get it. Bob's problem is that he can't sell it! We have serious problems to solve, and we need serious people to solve them!"

When All Is Said and Done, Can OWEA Lobby?

I have learned that we cannot be a fence sitter on issues to be perceived as relevant. We must be active and diligent to seek opportunities to engage in discussions, talk to elected officials and policy makers, and prepare letters and position statements on important issues.

Questions associated with lobbying have been discussed in our circles since at least 2001. The central questions in these discussions were (1) what constitute lobbying, and (2) can OWEA lobby?

Recently, I was prompted to establish a policy statement on lobbying, which is presently in draft form. Salient highlights from this draft are presented below.

1. OWEA has been advised from WEF and other experts that it has the ability to undertake a limited amount of direct lobbying as long as these activities do not constitute a substantial portion of activities conducted by the organization based on activities performed by the organization as a whole. It can be further stated that "education" is not lobbying.
2. Our primary function is to serve as an expert and repository of knowledge on issues, best practices, and technologies associated with wastewater collection, treatment, reuse, and water quality. OWEA takes the position that it will, first and foremost, promote education to any and all individuals, groups or organizations regardless of political affiliation or position or perceived gain.
3. When inviting a representative from one political party to present at a conference or workshop on an issue, OWEA shall try to solicit views from the other party as well.
4. We shall refrain from offering opinions on specific cases and permits that involve the Ohio EPA or USEPA, which are in active litigation, dispute, or appeal unless that opinion is solicited for informational, educational, or scientific clarification purposes and such request has been jointly made by both parties.
5. We shall not enter into Amicus Brief findings with any organization against the Ohio EPA or USEPA even though it is understood this is done by WEF on occasion.
6. From a financial standpoint, it has been determined that lobbying related expenditures should be generally below about 5% of the annual budget. To justify lobbying related expenditures, OWEA shall maintain financial records to document any activity potentially associated with lobbying.
7. OWEA takes the position that it is a volunteer driven organization with approximately 2,000 members who willingly donate their time through committee work in representing OWEA in a variety of ways. Therefore, OWEA will not pay consulting fees for attorneys or experts to represent them with Ohio EPA, USEPA or other regulatory bodies in meetings and workgroups to establish policy, procedure, or law.

We Are All Important and Needed to Make a Difference

Unfortunately, many of our 2,000 plus members are not very active in the organization. In moving forward, it is important that we not be intimidated by the process of being proactive in governance or our state or nation for the purpose of education. Our members – if taken together – represent an incredible amount of talent, knowledge, education, experience, and diversity, which if harnessed, could move mountains. WEF has recently established a Water Advocacy Initiative, which I will be joining as one of my duties as OWEA's WEF Delegate. The purpose of the Water Advocacy Initiative will be to empower members and provide them with tools to help educate elected officials concerning our core issues.

Dale E. Kocarek, PE, BCEE
Chair, Government Affairs Committee
WEF Delegate
Stantec Consulting Services, Inc.
dale.kocarek@stantec.com

WEF Delegates' Report

Mark Livengood

Dale Kocarek

Doug Clark

Serving as Ohio's "senior" delegate on the WEF House of Delegates (HOD), this is my first report I am charged to coordinate with the other two Ohio delegates: Dale Kocarek and Doug Clark. And YES - that's the first time anyone has been able to write about "the other two delegates," as Ohio reached the 2000-count WEF member plateau as of September 15! Ohio is one of five Member Associations that has three HOD members.

I would like to thank Kim Riddell for serving on the HOD these past three years. Kim has been active in HOD workgroup leadership and has served on the HOD Budget Committee, which reviews the entire WEF budget document prior to WEF Board of Trustee approval. Kim's leadership role will continue in Ohio as she begins her pathway to becoming OWEA's President in 2019! Kim is serving as Northwest Section Delegate on OWEA's Executive Committee.

At WEFTEC13 in Chicago, the House of Delegates met on October 5th to report on activities accomplished in the past year and prioritize activities for the 2013-14 year. Speaker Jenny Hartfelder completed her leadership role and Speaker-Elect Janet Hurley Cann will serve as the 2013-14 Speaker of the House. Speaker-Elect for 2013-14 is Duyen Tran. There were four workgroups that targeted key tasks this past year: Member Association (MA) Sustainability; Non-dispersibles; Operator Outreach; and Strategic Planning. An on-line survey of HOD members was completed as part of Strategic Planning workgroup, with the primary outcome of the survey indicating that better advance training/education of incoming HOD members is needed to improve HOD work.

The announced workgroups for 2013-14 are: MA Leadership Development; MA Sustainability; Strategic Planning; and Non-dispersibles. Each HOD member sits on at least one of the workgroups during the year. Mark Livengood will serve as the chair of the MA Sustainability workgroup, and Dale Kocarek will serve as vice-chair on the MA Leadership Development workgroup and lead the "Product Delivery" subgroup. Doug Clark will also sit on this important group.

The MA Sustainability workgroup will complete the past year's work of gathering and developing good example policies and procedures from well-run MAs to allow all MA's to "benchmark" their economic and administrative "health," and to improve the overall well-being of their MA. Ohio WEA's list of Policies and Procedures (all can be found on our web page) cover most if not all targeted areas that MA's need to administer. The goal is to have these "best-example" documents available at *wefcom* in 2014.

From the Non-dispersible workgroup, there will be a targeted seeking of information in the coming year from MA's and utilities on the cost of dealing with blockages and damages resulting from the flushing of non-dispersible cloth-like materials (eg. baby wipes, etc.). Recent media coverage of large sewer blockages has brought to the forefront the increasing cost placed on utilities to respond, remove, and repair equipment affected by these materials. WEF is partnering with NACWA and the non-woven materials industry to discuss ways to improve public education and possibly adjust manufacturing procedures.

2014 WEFMAX (Member Association Exchanges) locations have been announced. They are NY/NJ (hosted in NJ); Montana (Whitefish); Michigan (Grand Rapids); and South Carolina (Charleston). Exact dates will be announced soon and will be posted at *www.wef.org*.

Speaker Janet Hurley Cann left the HOD members with these charges for the coming year, which I believe should be every WEF (and OWEA) member's charges as well. They were:

- Be active . . . not passive in gaining and sharing knowledge. Use WEF's educational tools to learn more and share more.
- Be engaged in WEF. Get your "fix." Be energized.
- Become an advocate for water. Wear a "Water's Worth It" pin. Be ready to tell everyone you meet what you do to improve our environment and quality of life.

Mark Livengood, Senior WEF Delegate, *livengoodm@mcohio.org*

Dale Kocarek, Junior WEF Delegate, *dale.kocarek@stantec.com*

Doug Clark, Junior WEF Delegate, *douglas.clark@bgohio.org*


weftec
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weftec
the water quality event
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OUR PASSION
OUR RESPECT
OUR HEALTH
OUR FUTURE
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Triton
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We couldn't do it without you and hope you will join us again for another great year in 2014!

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16	1 Page ad in Spring or Summer BB
1	Ticket to Water for People Fundraiser Wine Tasting

SWOWEA

Bob Beyer, President

I hope you were able to join us for our section meeting on September 19th that was hosted by OTP Industrial Solutions. Eighty-two attendees, including ten new members, enjoyed touring the OTP facility and interacting with six vendors. We had a wonderful lunch and enjoyed the networking opportunities and door prizes. The technical sessions were interesting and informative. I would like to thank Matt Brown and all the OTP staff for the plant tour and for hosting a successful SWOWEA Section Meeting.

The Fall Operator Education Day was held on October 25, at the Montgomery County Environmental Services facility. The Plant Operations Committee offers this one day class twice a year as a review prior to the Ohio EPA operator exams. I would like to take this opportunity to thank the Plant Operations Committee for continuing to do an excellent job on assisting operators to study for the exam.

Please join us for the SWOWEA's 12th Annual Plant Operation Seminar and Section Meeting on November 14, 2013. The seminar will be at a new location, the Manor House in Mason, Ohio. The day includes numerous exhibits, technical sessions with contact hours, and a delicious luncheon.

After the holidays we will return to the Sharonville Convention Center on January 23, 2014 for the 25th annual Industrial Waste Seminar and Section Meeting.

For more details about these and other upcoming events, please visit the SWOWEA website at *www.swowea.org* or view our latest Southwest WAVE.

Bob Beyer, *bbeyer@masonoh.gov*

John Swartzbaugh of Burgess & Niple

Matt Brown of OTP

SW OTP Section Meeting At Wingate Meridian Conference Center

SEOWEA

Matt Boone, President

With the hottest days of 2013 behind us and the second half of the college football season underway, the Southeast Section has already had a few events and planning is underway for our 2014 events.

The first event of our new officer year was a Young Professionals (YP) event at the Varsity Club in Columbus on August 14. The event was a big success with over forty people in attendance, including several seasoned professionals who were invited for a challenge at corn hole. However, the seasoned water environment experience didn't matter as the YPs proved to be more accurate with their tosses. Thanks to the Southeast Section Young Professionals Committee for planning the event.

For the first time in several years, we had the Southeast Section Friends and Family event. The event was held on Friday, August 23 at a Columbus Clippers game. We had over one hundred people in attendance. I want to thank all of you who provided positive responses about the event. Since we didn't receive any negative responses, I want to thank everyone for having fun or not telling us that you didn't have fun. The encouraging comments have us excited about planning next year's event. We want to thank all of the sponsors who helped make this event possible. The Friends and Family Night Sponsors are listed below:

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On September 17, the Southeast Section Lab Analyst Committee held a meeting in Lancaster at the new Upper Hocking Water Pollution Control Facility. We want to thank all those who attended, making it a successful meeting.

continued on page 15

SE Friends and Family Night Sponsors

SE Section on the Scoreboard at the Columbus Clippers game

SE Section members enjoy the game while networking

continued from page 14

Our most recent Section Meeting was on October 31 in Columbus. The meeting was held at the Fawcett Center on the Ohio State University Campus. The meeting included a tour of the on-going Olentangy River Stream Restoration project near the Ohio State University Campus.

I would like to thank all of you for supporting the SE Section events. As we look forward, I encourage you to invite someone new to an upcoming SE Section meeting. You can visit the OWEA website for updates on our section events.

Matt Boone, *matthew.boone@arcadis-us.com*

NEOWEA

Mary Ann Driscoll, President

The Northeast Section had a very busy summer and early fall. In July, the NE Section held the successful annual BioMass-ter's golf outing. The section was able to raise $2,084 for our scholarship fund and $1,849 for Water for People. The outing was attended by a record 132 golfers and a good time was had by all. The winners were the Benny Truman Team comprised of Benny Truman, Bill Bray, Bill Jawz, and John Brown. We hope more members and nonmembers can join in the fun next summer! During the awards portion of the golf outing, Past President Lance Willard presented James Hewitt with the 2013 Section Collections System Award. Jim was unable to accept his award at the Annual Business Meeting held in May. Congratulations Jim!

On September 14th, the NE Section held the annual Clam Bake at Grantwood Country Club in Solon. It was a perfect evening for food, fun, and fellowship. Congratulations to the winners of the annual corn hole tournament - Larry Shimerka and John Traffis.

The NE Section's Young Professional Committee held their first quarterly meeting on October 15th in Bedford. The group toured the Bedford WWTP and met for a social hour afterwards. Future Young Professional meetings will be held during the months of January, April, July, and October. The meetings include either a plant tour or a one hour technical session and then a networking event afterwards - this allows the events to be free and doesn't require getting approval to take off work. For additional information on Young Professional meetings, please contact Ashley Williston (*awilliston@ctconsultants.com*).

The Supervisory Seminar was held on October 22nd. Several members attended this free event offered by the NE Section to provide managers and supervisors with resources to develop management skills. Attendees learned the basics of asset management from Kevin Slaven. Vince Zampelli informed the group about the highly successful High School Internship Program in the City of Akron. They are taking high school students and developing them into skilled members of the workforce. The NE Section's own Past President, Ed Haller, provided basic supervisory training for wastewater managers. Many thanks to these members for sharing their experience and knowledge with the group!

Mary Ann Driscoll, *maryann.driscoll@burgessniple.com*

Dale Kocarek and Steve Williston playing corn hole at the Clam Bake

NE Section photos continued on page 16

continued from page 15

Lance Willard presents James Hewitt with Collections System Award

NE Clam Bake 2013

NWOWEA

Josh Wehring, President

The Northwest Section recently concluded all of the scheduled section meetings for 2013. I am pleased to announce that for the first time in the history of the Northwest Section we teamed up with our friends from the Northwest District of the Ohio AWWA for a joint meeting in Lima on October 17th. There was a great turnout for this event, which in the spirit of partnership, laid the foundation for the combined OWEA/AWWA annual conference next August in Columbus. Many thanks to past NW Section President Brad Lowery and current AWWA NW District Chair Richard Kroeger who put in the leg work to make this combined event possible. Great technical sessions were heard which centered around the upgrades to the City of Lima's Water and Wastewater Treatment Plants. Tours were also held at both of these facilities and I would like to thank the City of Lima's staff for making this an enjoyable day. Our Water for People Pancake Breakfast was also held during our fall meeting in Lima. This is an annual free-will fund raiser held at one of our section meetings whose purpose is to assist those who do not have access to what is generally taken for granted in our great country. Clean Water! Special thanks once again go out to Doug Borkosky and his team of cooks for making this event an annual success and also congratulations are in order for Mr. Borkosky as he was presented his shovel for being inducted into the Ohio 5S (Select Society of Sanitary Sludge Shovelers). Well done, Doug.

Thank you to Bridget Shiets for organizing our Lab Analysts Field Exercise held in Bellevue in August and Matt Witter for coordinating the Hands-On Collections Workshop, which was recently held at the Seneca County Fairgrounds. Both of these events were well attended and provided great training for those in attendance. Frank D'Ambrosia also organized another successful semi-annual Operator Education Day. These review sessions are led by grizzled veterans of wastewater treatment who teach the sessions and assist those taking certification exams. I encourage all of you to keep track of upcoming events by visiting *www.ohiowea.org*. Upcoming events and registration details are posted regularly. Information on past meeting and technical presentations will also be posted.

We have an exciting year planned for the Northwest Section and invite all of you to become involved with the section. Please feel free to contact me or a section officer as it truly is a rewarding experience to be involved with the section and it is the best way to network with the wastewater professionals in your section and state.

Josh Wehring, *jmwehring@fremontohio.org*

Mayor of Lima, David Berger, receives plaque from NW President Josh Wehring

Photos above & below of Joint NW AWWA/OWEA October 17 meeting in Lima.

WATER FOR PEOPLE REPORT

by Doug Borkosky, Co-Chair

One thing is for certain: there's always "something" going on - and that includes Water For People fundraising and awareness efforts here in Ohio. In a very succinct format, here are updates/previews/recaps:

- NE Section OWEA raised $1850 for Water For People at their BioMass-ters Open
- NWOWEA and NWAWWA held a joint section meeting including the Annual WFP Pancake Breakfast (raised $408).
- The Cincinnati Water Professionals held two events in September. The September 6th Sporting Clays Shoot had 124 shooters and raised an estimated $12,800. The September 30th Golf Outing had 120 golfers and raised approximately $16,000. Water professionals from across the Cincinnati, Dayton, and Northern Kentucky area participated in both of these highly successful events.
- Tom Angelo, Debbie Houdeshell, and Alicia Adams coordinated the first Northeast Ohio "Spirited Water Fest". On October 17, 2013, OWEA members and friends gathered at the Debonné Winery to enjoy wine, micro-brews, food, music, and an altogether enjoyable evening - and it benefited Water For People! The accounting dust hasn't settled for this event at press time but it should raise approximately $3000 for Water For People.

Looking ahead, 2014 will be another good year for Water For People locally. Look for a Columbus Wine to Water event in May, the One Water Conference (OAWWA/OWEA) in August, and Cincinnati Area and Cleveland Area events as well.

HOW TO HELP FOR 2014:

- Silent Auction Donations are greatly appreciated for the May wine event and the One Water Conference. (Donors will be recognized graciously at the event.)
- Volunteer to help last year's team plan and execute the 2014 Columbus Wine to Water event.
- Support your local section events

If you would like to volunteer, donate, or get more information, please contact:

Alicia Adams, *alicia.adams@stantec.com*
Doug Borkosky, *doug@hlbaker.com*

Northeast Ohio October Spirited Water Fest for Water For People - Guests enjoy the Four Kings and the Debonne Vineyard

water for people

"SPIRITED" WaterFest for Water For People

THANK YOU!

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RESIDUALS COMMITTEE

by Jamie Gellner, Chair

Recent news and our upcoming activities include the following:

Farm Science Review – The OWEA Residuals Committee organized and displayed a booth at the Ohio Farm Science Review, September 17-19, 2013. According to the Farm Science Review website, over 129,000 people attended the event this year. Committee members put a great deal of effort into updates and revisions to our informational display this year and we had a great turnout from the agricultural community. Just to give everyone an idea of the amount of visitors to the booth, here are some statistics on things we gave away during the event:

- 250 flower pot / seed / biosolids potting soil packets
- 200 walking sticks with OWEA and a message on biosolids recycling

Each person who was given a "giveaway" was required to spin the "Wheel of Trivia" and attempt to answer informational questions on biosolids. Pictures of this event and some of our participants are shown in the next column. A special thanks and acknowledgement goes out to Tom Dempsey, City of Dayton, for volunteering to coordinate this event for us. Tom donated a large amount of time to preparing booth materials and organizing the group that manned the booth. Thanks also to the others that participated and volunteered time in the update efforts.

Biosolids Workshop – The OWEA Biosolids Workshop will be held on December 5, 2013 at the Northpointe Conference Center. Our agenda this year has a wide range of topics, all relevant to current issues and trends in the biosolids industry. Topics will include the following:

- Land application considerations for the small utility
- Biosolids conveyors – operation and maintenance
- Anaerobic digester operation / optimization
- Anaerobic digester gas handling and safety
- High solids digestion and beneficial gas reuse
- Solids pretreatment to enhance anaerobic digestion

For the remainder of 2013, the Residuals Committee will continue to work on the following initiatives:

- **Continue Our Working Relationship with Neighbor Associations in Indiana and Michigan** – During the past year, Rob Smith and Steven Reese have led our efforts in reaching out to Residuals Committees in Indiana and Michigan. We have had several conference calls and have exchanged a large amount of information. We'll continue this throughout 2013 and beyond.
- **Alternate locations for our Residuals Committee Meetings** – Our first meeting this year was held at the Olentangy Environmental Control Center on January 15, 2013. Our second was held at the *quasar energy group* facility on April 9, 2013. Please visit the OWEA website for information on our next meeting. If you have any ideas for possible venues for future meetings or would like to help coordinate these locations, please let me know.
- **Review / discussion of P management requirements under revised land application regulations** – As a committee, we are exploring ways to constructively evaluate and review the requirements for management of phosphorus in land applied biosolids. The revised regulations are now in affect and will reduce the amount of land application possible in some areas. As a committee, we will strive to objectively review and discuss and continue to inform you, the OWEA membership, on the latest issues.
- **Verify member list / update contacts** – If you haven't received any correspondence from me and you would like to receive the correspondence related to committee activities, please send me an email (see contact information below). Please also drop me an email if your contact information has recently changed so that we can include you in upcoming activities.

We would love to have you as part of our committee. The Residuals Management Committee is focused on serving the OWEA membership through education, promotion of effective biosolids management, technical information on biosolids, and interface with OEPA on regulatory issues. We always welcome new membership and we invite you to attend our next meeting. If you are interested in getting involved or if you have any questions about the committee, please contact me.

Jamie Gellner
513.317.0337, *jgellner@hazenandsawyer.com*

Future Farmers of America visit OWEA Biosolids Booth at Farm Science Review

The Biosolids "Wheel of Trivia"

Earn up to 6 Contact Hours

Register online at ***www.ohiowea.org***

7:45-8:15	**Registration** **Light Continental Breakfast** **Visit with Exhibitors**
8:15-8:30	Welcome and Opening Remarks *- Jamie Gellner, Hazen and Sawyer Residuals Committee Chair*
8:30-9:15	Land Application Considerations for Small Utilities *- Eric Driesbach, WD Farms, Inc.*
9:15-10:00	High Solids Digestion and Beneficial Gas Reuse *- Clemens Halene, quasar*
10:00-10:15	**Break in Exhibit Area**
10:15-11:00	Anaerobic Digestion and Co-Digestion Optimization *- Todd Williams, CH2M HILL*
11:00-11:45	Anaerobic Digestion - Gas Handling Equipment / Safety *- Regina Hanson, Varec*
11:45-12:45	**Lunch Buffet** **NorthPointe Conference Dining Room** **Visit with Exhibitors**
12:45-1:30	Biosolids Conveyors - Operation and Maintenance *- Dave Myers, JMS Conveyors*
1:30-2:15	Sludge Pretreatment for Beneficial Uses *- Matt van Horne, Hazen and Sawyer*
2:15-2:30	**Break in Exhibit Area**
2:30-3:15	Energy Reduction In Sludge Holding / Process Tanks Via Large Bubble Vertical Mixing *- Larry Bell, Pulsed Hydraulics, Inc.*
3:15-4:00	Renewable Energy Projects: Appropriate Financial Evaluations and Financing Alternatives *- Nancy Andrews, Brown and Caldwell*
4:00	**Closing Remarks** *- Jamie Gellner, Hazen and Sawyer Residuals Committee Chair*

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☐ OWEA/WEF Member *(or with new membership added)*	$125	
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LABORATORY ANALYSTS COMMITTEE

by Denise Seman, Chair

Hi Everyone!

The joint Plant Operations and Laboratory Analysis Workshop was held September 25th & 26th at the Grand Oaks Event & Business Center at 1801 Gateway Circle, Grove City, OH 43123. We had several excellent speakers and a great turn out. If you have any ideas of topics that you would like to hear or would like to be a speaker at next year's workshop, please send us an email.

Exams

Check the website for the 2014, coming soon

Renewal of Certificates for 2014

New this year!
Certification renewal applications
will be processed online.

To renew your certificate, go to *http://www.ohiowea.org/lab_analysts.php*.

The current certificates are valid until December 31, 2013. Renewals are on a two year cycle. Renewal notices were mailed out October 22nd. If you did not receive a renewal notice, you may not have notified us about a possible move, retirement, or other situation. Online renewal is available on the website. Please email any changes of information or questions to *certifications@ohiowea.org*. The cost for renewal is $25. Renewal applications will be accepted beginning October 23, 2013.

NOTE: If you are unable to renew online, please contact the OWEA office at 614.488.5800 or *admin@ohiowea.org*. Do not use any old renewal applications. Please keep in mind that your application and/or payment must be entered or postmarked prior to January 31, 2014 to avoid paying the $95.00 reinstatement fee!

SW LAC – Jim Davis and Karen Tenore

The Southwest Laboratory Analysis Committee held its summer meeting on July 18, 2013 at YSI in Yellow Springs. Attendance was very good with about 60 people listening to talks on "The Future of WW Operations," "Colorimeters - Principles, Practices, & Applications," "WW Monitoring Techniques," and "Advantages of ODO." There was also a tour of YSI.

Future meeting for the SW LAC are in the planning stages. Please keep a look out for the next meeting in late January on the OWEA website.

To inquire about being added to our email list or receive information about attending, hosting, sponsoring, or presenting at a future LAC meeting please contact:

Karen Tenore, City of Dayton
Karen.Tenore@daytonohio.gov, (937) 333-1501

Jim Davis, Montgomery County Water Services
DavisJi@mcohio.org, (937) 496-7051

Committee Members:
Lynette Hodnicki, City of Fairfield
Lori Kyle, Greene County
Linda Moubray, City of Fairfield
Ron Paulick, TestAmerica
Teresa Shinkle, Greene County
Violet Fanning, TestAmerica

NE LAC – Bev Hoffman

The NELAC recently held a meeting on October 25th. A training session was offered on the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). This system will be replacing the MSD Sheets we currently use. We will be trained on how to read GHS-formatted safety data sheets and labels. The GHS-formatted documents are already making their way into U.S. workplaces and can be very different from what we are used to seeing. OSHA has adopted the GHS into the Hazard Communication Standard and is mandating training by December 1, 2013. All were welcome to attend this training.

Please email me any suggestions on topics and venues for our meetings.

Committee Members:
Beverly Hoffman *nesowealac@gmail.com*
Marie Simon *marie@northcoastlabs.com*
Lisa Feigle *lisaf@gcdwr.org*
Amy Starkey *ajstarkey@co.stark.oh.us*

SE LAC – Melodi Clark

I can't believe we are almost at the end of 2013! The Southeast LAC has been going strong. We have kept up with a quarterly meeting and we are averaging about 10-15 people a meeting, which is really good seeing as we are so spread out in the Southeast. Our third quarter meeting was hosted by City of Lancaster WPC.

I would like to thank Brian McFarland for allowing us to come and tour a very impressive membrane filtration system at the Upper Hocking WPC. I would also like to thank Marcy Bolek for taking time to come and go over Quality Control for Labs with a very fun game. We have one more meeting for the fourth quarter. The place and date have not been set yet so if anyone in the Southeast would like to host or has an idea please contact me. I am always looking for new places and topics for our meetings.

Melodi Clark, *MLClark@columbus.gov*

NW LAC – Bridget Shiets

A NWOWEA LAC Field Exercise was held at City of Bellevue WPC on August 29th with a presentation on "Guidelines for CBOD" presented by Bridget Shiets. We had a few good discussions on some of the guidelines. Bridget gave a presentation on the current wasting rate method used for Bellevue. We then split into two groups to collect samples from aeration tanks and secondary clarifiers, performed the centrifuge test on those samples, recorded data, and calculated the wasting rate. Keith presented "Centrifuge Use at a Small Package Plant" along with a hand out for Separation & Conversion Flow Charts over lunch. This was a fun hands-on event that everyone really appreciated! Attendees enjoyed a catered lunch from Jimmy G's BBQ.

We are currently planning a meeting in January 2014.

Bridget Shiets, *wwtplab@cityofbellevue.com.*

Committee contact information on page 21

COLLECTIONS COMMITTEE UPDATE

by Bill Horst, Chair

The Collection Systems Committee kicked off their annual Operator Hands-On Workshop series in the Northwest Section on September 12th in Tiffin at the Seneca County Fairgrounds. Over forty people attended the Workshop, ranging from Collection Systems Operators to City Service Directors. The main objective of the annual Colllection Hands-On Workshops, which are held in each of the four sections, is to bring people in the collection system industry together to learn about common issues experienced in the field. This year's topics included the following:

- **Flow Monitoring** - Discuss the various technologies available for performing flow monitoring in gravity sanitary sewers and the obstacles experienced in the field with each of the technologies.
- **Air Release/Vacuum Valve Basic Training** - Overview of the various valves available, how they each work and the correct applications for each of the valve types. Common problems experienced with the valves were discussed along with corrective actions available to remedy the problems.
- **Acoustic Technology in Sewer Inspections** - The application of acoustical technology to rapidly determine if there are blockages in a sewer segment.
- **Current Sewer Cleaning Technologies** - A thorough discussion on the various issues encountered during the cleaning of sewer lines. Selecting the right tool for the right cleaning application will help save your municipality valuable time and money.

Matt Witter, NW Event Coordinator, *mwitter@kemccartney.com*

The SE Collections Hands-On Workshop was held in Zanesville. 45 attendees heard presentations from various experts including, Dr. John Barton, P.E., Scott Belz, Costas Kontos, Dan Coley, and Ed Fitzgerald on Flow Monitoring, Manhole Inspection, Mapping, Acoustical Technology in Sewer Inspections, and available technology for removing pipeline obstructions. Attendees received 4.0 contact hours. Lunch was provided by Jack Doheny Companies and the event was sponsored by Burgess & Niple. Many thanks Steve Shirley, and all the folks at the City of Zanesville WWTP for hosting the event.

Gary Hickman, SE Event Coordinator, *glhickman@columbus.gov*

2013 Collections Hands-On Workshops sponsored by

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Two Photos above - SE Collections Hands-On Workshop

Two Photos above - NW Collections Hands-On Workshop

Lab Analysts Committee Contact Information

State Chair
Denise Seman, 330.742.8820, *dseman@cityofyoungstownoh.com*

Northeast Chair
Beverly Hoffman, 440.446.4228, *nesowealac@gmail.com*

Southeast Chair
Melodi Clark, 614.645.1239, *mlclark@columbus.gov*

Northwest Chair
Kevin Hughes, 419.488.5440, *watertreatment@tiffinohio.gov*
Bridgit Shiets, 419.483,7514, *wwtplab@cityofbellevue.com*

Southwest Chairs
Karen Tenore, 937.333.1501, *karen.tenore@cityofdayton.org*
Jim Davis, 937.496.7051, *davisji@mcohio.org*

GOVERNMENT AFFAIRS COMMITTEE UPDATE

by Dale Kocarek, P.E., Chair

Ohio EPA Nutrient Advisory Committee

During the last few months, we have been focused on working with the Ohio EPA to identify groups and specific individuals for their Technical Advisory Group (TAG) for developing nutrient water quality standards. In coordination with Association of Ohio Metropolitan Wastewater Agencies (AOMWA), we submitted a joint letter to the Ohio EPA on October 1, 2013.

Our letter identified individuals from large and small POTWs, along with process sanitary engineering technical expertise. In this way, representatives from both the owner/operator groups along with the consulting engineering community are given a voice.

OWEA's position in this discussion is to be an advocate of a sound, technically based and balanced approach to protect Ohio's streams, which recognizes contributions from point and non-point source dischargers from urban and agricultural uses. The benefits of this approach would be to ascertain the source of impairment, true water quality impacts from nutrients, best control practices to attain water quality standards, and costs associated with implementing nutrient control technology.

Meeting with the Ohio EPA to Discuss the SRF and WIFIA

On September 5, 2013, I met with representatives from the Ohio EPA, Divisions of Environmental and Financial Assistance and Drinking and Ground Waters to discuss the State Revolving Fund (SRF) program in Ohio and the proposed WIFIA (Water Infrastructure Finance and Innovation Act) legislation, which is now contained as Title 10 of the Water Resources Development Act (WRDA) Bill in the US Senate and moving its way through the House of Representatives. Throughout this article, I am referring to "WIFIA" which is now Title 10 of the WRDA Bill and presented as a Pilot Program. They wanted to meet with OWEA to clear up what they feel are misconceptions about the SRF program and WIFIA.

In summary, the Ohio EPA believes that the SRF program in Ohio is successful, well managed, and responsive to the needs of communities. At the present time, the SRF program in Ohio for water and wastewater has the ability to leverage in excess of $1 billion of funds for projects.

One question raised in discussion was the type of project covered under WIFIA. Two specific questions posed to me were "what are the core needs not being met at the present time by SRF, and what is the problem our industry is trying to solve?"

The Ohio EPA is also concerned about how a WIFIA style program would be technically managed and administered. They are also concerned that possibly introducing another companion funding program with the reputation of being more potentially streamlined could undermine the SRF over time.

One of the driving forces behind WIFIA appear to be states - unlike Ohio - which do not leverage their funds to meet critical needs of communities. There is also a concern that over time, the appropriation for SRF will decrease.

In moving forward, I am going to work with OWEA to develop position statements to communicate our core beliefs and principals. This is similar to what is done by WEF in their Government Affairs Committee, of which I am a member. One of the first position statements will be "clean water funding," where we can talk about the SRF in a positive way, asking that it be maintained and strengthened. A second message is consistent that communities across the United States be provided with plentiful low cost financing to meet future needs of infrastructure. More information will be provided to our members as the story evolves.

Dale Kocarek, P.E., BCEE
dale.kocarek@stantec.com, 614.486.4383

PUBLICATIONS COMMITTEE UPDATE

by Elizabeth Wick, P.E., Chair

As always, the Publications Committee is soliciting technical articles. If you recently presented at a section meeting, workshop, or workplace training event, please consider developing your presentation into an article for the Buckeye Bulletin.

Past presidents of sections or the state are welcome to write for Buckeye Bulletin on any related topic. (Leadership, technical, visionary, historical, etc.) Past President of NW Section (1960), Galen Gault, recently stated: "As past presidents you all have earned the responsibility to encourage and mentor one or more of the many bright young people who have chosen a career in this important, original "Green" industry. Your pursuit of this opportunity will benefit our industry, the young people, and our communities." What better way to share your knowledge and experience than to reach hundreds of readers through the Buckeye Bulletin.

Social media is ramping up. We now have a group of volunteers who will be rotating duties with social media outreach. Anyone interested is welcome to join the social media group. We have developed a database of topics/ideas for tweeting/posting. Each person will take a set period of time to be responsible for pulling the post from the database and sending information.

As part of our social media campaign, we are looking for projects to highlight as well as people that have done interesting/innovative/positive things for the water environment. Let Elizabeth Wick know if you know of a project or person that should be highlighted or if you are interested in joining the group.

If you have any questions, please contact:

Elizabeth Wick, P.E., Publications Chair
elizabeth.wick@epa.ohio.gov

SAFETY COMMITTEE REPORT

by James Graham, Co-Chair

Put the Spark Back in Electrical Safety

Electrocutions occurring between 1982 and 1994 were studied by the National Institute of Occupational Safety & Health (NIOSH) in 1998. The NIOSH researchers analyzed 224 electrocutions which resulted in 244 workplace fatalities. These fatalities accounted for approximately 7% of all workplace deaths. The information they learned provides valuable lessons for everyone that works with or around electricity.

- Younger males die most often. Victims ranged in age from 17- 70 years, 99% of them were men, 64% died prior to age 35, and 99% of the incidents involved alternating current (AC).
- New hires need to take the most care. 41% of all victims were on the job for under 1 year.
- Construction workers had the highest percentage of electrocutions at 40%. Other predominate industries included: transportation/communication/public utilities (16%); manufacturing (12%); and agriculture/forestry/ fishing (11%).

Utility line workers (linemen) typically receive extensive training in electrical safety, yet they had the highest number of fatal injuries. 55% of linemen fatalities were caused by failure to use required Personal Protective Equipment (PPE) such as gloves, sleeves, mats, or blankets. Laborers, who generally receive little or no electrical training had the next highest fatality rate.

NIOSH identified five case scenarios describing the 244 fatalities:

1. Direct worker contact with an energized power line (28%)
2. Direct worker contact with energized equipment (21%)
3. Boomed vehicle contact with an energized power line (18%)
4. Improperly installed or damaged equipment (17%)
5. Conductive equipment contact with an energized power line (16%)

Here is a partial checklist of basic safe electrical practices to help prevent occupational electrocution. Customize this checklist with your company's own safety procedures.

1. Are employees given and required to use the proper protective equipment and tools when working around electrical hazards?
2. Is there an effective lockout/tag out procedure for work on electrical circuits and equipment?
3. Have employees been advised of the location of hazards and proper protective measures to avoid contact with an energized circuit?
4. Are safe work practices (de-energizing live parts, discharging capacitors, lockout, etc.) used to prevent electrical shock and other injuries?
5. Are portable electrical tools and equipment grounded or double insulated?
6. Do electrical boxes and fittings have approved covers?
7. Are defective, damaged, or frayed electrical cords replaced promptly?
8. Are ground fault circuit interrupters and/or an assured equipment grounding program used on construction sites?
9. Are electrical installations in hazardous locations approved for those locations?
10. Is your electrical system regularly checked by someone trained in the National Electric code!

Remember . . . At Work Or Play Let Safety Lead The Way!!

OWEA's Safety Recognition Program

In order to increase the level of safety in the wastewater industry, the Safety Committee of the OWEA conducts a safety recognition program to reward systems with good safety programs. There are three (3) possible levels of recognition: OWEA Safety Certificate, OWEA Safety Award, and the WEF Burke Award.

Award will be selected from the following categories:

1. 1 - 9 Person Collections
2. 1 - 9 Person Wastewater Treatment Facility
3. 10 - 20 Persons Collections
4. 10 - 20 Person Wastewater Treatment Facility
5. Over 20 Person Collections
6. Over 20 Person Wastewater Treatment Facility

In documenting your award package, do not try to dazzle the Safety Committee with quantity. Do not include countless pages of SOP's, written programs, and other materials that can be derived from countless sources and consultants. Instead, provide proof that your program is actually complied with. Course sign-in sheets, tests, certificates, inspection sheets, and receipts are examples of solid documentation. In addition, a member of the OWEA Safety Committee will visit potential winners so that submitted information can be clarified and verified.

Applications and supporting documents must be submitted to your section Safety Committee representative by February 14, 2014. Application available at *www.ohiowea.org* under the Committee tab -Safety

James Graham, Safety Co-Chair
jgraham@bgohio.org

Ohio Water Environment Association
2013 Safety Award

Application filing deadline is ***February 14, 2014***
Application available at www.ohiowea.org on the Safety Committee page.

PLANT OPERATIONS COMMITTEE

by Jim Borton and Kim Riddell, Plant Operations Committee Co-Chairs

The Plant Operations Committee, along with the Laboratory Analyst and Safety Committees, hosted the Plant Operations, Lab, and Energy Workshop on September 25th and 26th. Over 120 Ohio wastewater professionals attended the two day event and earned up to 13 contact hours. Presentations from Ohio's own experts as well as nationally known experts received high praises from attendees and generated significant interest in the 2014 version.

If you missed the workshop, you missed 13 of the most interesting technical sessions offered in Ohio during 2013. In addition to laboratory and/or safety presentations, attendees heard topics on plant operations, regulatory considerations, management/leadership concepts, and new this year was an entire track of presentations covering energy efficiency as part of USEPA's energy initiative. Each presentation had something for both the beginner as well as the most seasoned operator to take home and think about or try. The workshop organizers extend a sincere thank you to those that took the time to attend and share their knowledge with Ohio's operators, consultants, and regulators.

Plan on attending the 2014 Plant Operations and Laboratory Analysis Workshop, to be held **Wednesday, May 21 and Thursday, May 22** (note date change is due to the Ohio One Water Conference being held in late August). It will again be held at the NorthPointe Hotel and Conference Center near the US 23/Polaris Rd. intersection north of Columbus. Workshop topics are being developed and will be published in the next Buckeye Bulletin, so put some money in the training budget and save it for next year's workshop.

For those of you that have been asleep for the past few years or are new to OWEA, Operations Challenge is an event in which team members compete in one of two Divisions (I for previous winners and II for new teams or non-winning returning teams). The 4 member teams compete in events designed to demonstrate the skills an operator uses in day-to-day work. Winning teams in Ohio represent OWEA at WEFTEC.

This year the two winning Ohio teams both hailed from the NW section and represented Ohio well in Chicago. The Volatile Solids (City of Bowling Green/NWDO OEPA) took 7th overall in Division II in a very tight contest, falling out of the top 3 by 13 points and from the top spot by 30 points. This

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David Hackworth (Speaker), Sidney Innerebner (Speaker), Kim Riddell (Workshop Chair), and Elizabeth Wick (Speaker)

Speakers Jason Tincu and John Gonzalez

Speaker Steve Schulze

*OWEA 2013 Operations Challenge Teams: **The Reclamators** (Industrial Fluid Management/Blue Shirts) and **The Volatile Solids** (Bowling Green/OEPA-NWDO/Black Shirts)*

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margin is essentially the impact of a penalty on one event in these tight standings. Along the way the Volatile Solids also picked up 2nd place in the Process Control Event. Also competing were the IFM Reclamators who were competing for their first time at WEFTEC and posted a respectable top 25, especially when considering the tight contest. The Reclamators were voted by the other teams to win a YSI D.O. meter as a prize, so they earned the respect of other competitors during the events. Finally, the teams from Ohio were recognized by the event organizers as showing excellent sportsmanship, so all in all OWEA should be proud of their representatives at WEFTEC 2013.

Due to the Ohio One Water event, the 2014 Operations Challenge will return to the annual conference for the first time in 5 years. Thus, there will not be the "Hands on Education Day" normally held in conjunction with the Operations Challenge. However, new this year, Ohio will host the first Midwest Regional Operations Challenge. This means that Ohio will not only hold the competition for in-state teams, but out-of-state (and maybe country?) teams will participate, with up to 12 total teams participating.

All team members are eligible to earn up to 12 contact hours and the winning Ohio teams earn the opportunity to represent OWEA at WEFTEC '14 in New Orleans! OWEA and its sponsors support this event and cover the team's expenses for representing Ohio at WEFTEC, so managers, don't worry about how much it costs to send a team to New Orleans. Encourage them to sign up!

If you have interest in putting a group together, please contact Kim Riddell at (419) 234-4507 or Jim Borton at (330) 263-5293. There are people out there willing to help you get started and Kim or Jim can put you in touch.

The Plant Operations Committee is looking forward to seeing you in May 2014 at the Plant Operations/Lab Analyst Workshop!

Jim Borton, Co-Chair
james.borton@ch2m.com

Kim Riddell, Co-Chair
kim@go-smith.com

AUGUST 27, 2014
OWEA OPERATIONS CHALLENGE INVITATIONAL

OWEA Operations Challenge Competition

The Ohio Water Environment Association is proud to announce they will be hosting an Operations Challenge Competition and National Invitational as part of the One Water Conference in August 2014. 12 teams total with 6 spots held for invitational teams. Contact Kim Riddell, kim@go-smith.com or Jim Borton james.borton@ch2m.com for more info.

PUBLIC EDUCATION COMMITTEE

Nancy Taylor, Co-Chair

Just like Dr. Seuss' character *"the Lorax"*, clean water professionals are uniquely positioned to speak on behalf of those organisms in the environment that cannot speak for themselves.

Have you used your knowledge and expertise to inform the public how the wastewater plant protects the receiving stream? How about the importance of a riparian buffer zone separating a farm field from a creek? Have you done a presentation at a school or a community event like a Water Festival? OWEA members do great things in our respective communities, and I am creating a library of ideas that people have used for public education and outreach.

If you have a program that you have delivered (like the Enviroscape, taking kids creeking for crawdads, etc), write down the details and I will post them on the OWEA website along with your contact information. Better yet, if you have created a video in a You Tube compatible format (.MOV, .MPEG4, .AVI, .WMV, .MPEGPS, .FLV, 3GPP, WebM) of your event, send a copy to me and I will post it on the OWEA Public Ed channel on You Tube *(ohioweapubliced@gmail.com)*. That's right, we have a You Tube channel . . . bookmark it and subscribe! You can see OWEA members "in action," educating the general public on how to protect the Earth's natural resources.

If you haven't created a public education program/event of some type, maybe reading the ideas that other OWEA members have used will get your creative juices flowing. If your employer feels that funding a public outreach program in your community is an issue, you may want to research Ohio EPA's Environmental Education Fund for grants. In 2014, the OEEF General Grant Program expects to provide approximately $700,000 for education projects costing from $500 up to $50,000. Grant projects may target one or more of the following audiences: the regulated community, the general public, and K-12 through university students and teachers. You don't have to be a teacher or watershed coordinator to receive this grant money. In fact, YOU are probably more of an expert on water issues than some of the people who are applying for this grant money!

There is also buzz that OWEA may be allocating a pool of funds for our members to use for environmental education and community outreach . . . more info will be available when the finishing touches have been put on the program. Apply for these, or any other grants you can find, to cover supplies you may need to create a public outreach program.

Don't forget to email me details about any of the outreach programs you have tried.

Nancy Taylor, Public Education Co-Chair
ntaylor@newarkohio.net or *ohioweapubliced@gmail.com*

YOUNG PROFESSIONSALS

by Nick Bucurel, YP Co-Chair

Young Professionals Award

Due to the tremendous success of the program at the 2013 OWEA Annual Conference, and thanks to the overwhelming support from each section Executive Committee and the Conference Planning Committee, the Young Professionals (YP) Committee is pleased to announce an opportunity for selected YPs to receive free admission to the OWEA Annual Conference in August. This **Young Professionals Award** includes at least one night free stay at the conference.

To enter this competition, submit a 1-3 page abstract about an interesting project you worked on. An example might be how you optimized a piece of equipment or process, or it may be a model or challenging and innovative design you worked on. Four winners, one from each section, will be selected. In order to be considered for the award, the applicant must meet the following criteria and/or guidelines:

- Applicant must be a young professional WEF/OWEA member (under age 35, or less than 5 years in the industry);
- Applicant must prepare and submit a brief (1-3 page) presentation abstract for a topic related to the water environment to your section.

Contact your Section YP Committee Chair (Chairs listed below) for additional information.

2014 One Water Joint Conference

The YP Committee is working with the Ohio AWWA YPs to plan events for the joint annual conference in 2014 and volunteers are needed! Please contact Alicia Adams, *Alicia.Adams@stantec.com*, if you're interested in assisting with this event.

Student Chapter Developments

The YP Committee is committed to building relationships with other professional organizations for the common cause of clean water, and continues to look for opportunities to provide value for the OWEA. Recently the OWEA YPs joined the Ohio AWWA YPs to start a new joint student chapter at Cleveland State University. A kickoff event to highlight the various water careers linked to both organizations and advertise the benefits of membership is planned for November. Students were invited to attend the Northeast Section YP Committee planned event in October as a glimpse into the organization and to provide networking opportunities. Plans are in the works to start a similar chapter at Case Western Reserve University as well.

Many local entities are starting to feel the pinch of the departure of long-term employees. Identifying, securing, and retaining qualified employees are major concerns for our industry. To help fill the void, we have developed a new program in partnership with Cleveland State University to create a pipeline for the next generation of water related, career-minded leaders. Led by **Paul Solanics** and **Nick Bucurel**, OWEA is working with Cleveland State University administrators to develop a Water Workforce Internship Program that includes the following components:

- Matching students with an interest in the water industry to the public and private agencies with this need
- Providing mentorship to provide insight related to career advancement and holistic view of the industry
- Experience and education in project management skills to develop the next generation of leaders

If you're interested in learning more, please contact Paul, *PSolanics@solonohio.org*, or Nick, *nbucurel@BrwnCald.com.*

Notable Happenings

- The Southeast YP Committee kicked-off the new association year with a committee meeting and an exciting Happy Hour Mixer that included a cornhole competition at the Varsity Club in Columbus. Approximately 42 people were in attendance and the event lasted until 11pm. Notable attendees included OWEA leadership from both the State and Section level and Ohio EPA Director Scott Nally. OWEA Leadership and Chairs joined forces to create "Team Wisdom" which competed against the YPs as "Team Enthusiasm." The YPs demonstrated that on this day, "Enthusiasm" was able to overcome "Wisdom" and have earned bragging rights for the year. Thanks to Southeast YP Section Chair **Alicia Adams** for organizing an amazing event!
- The Northeast YP Committee is holding quarterly meetings on the 3rd Tuesday of the months of January, April, July, and October. These events will typically include a plant tour or other technical event and then a social meeting afterwards. The most recent event in October was a tremendous success!

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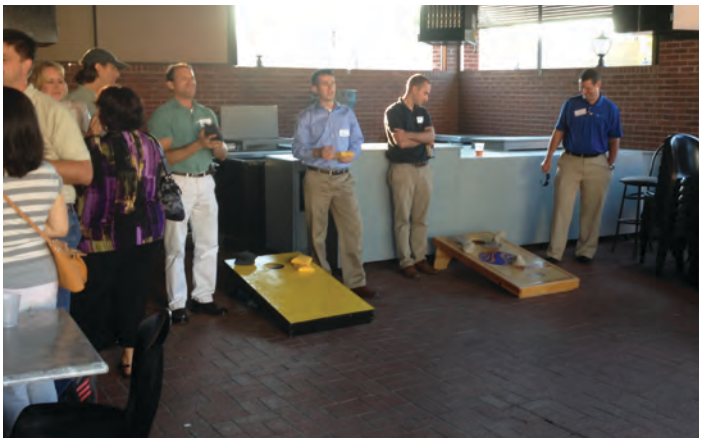

"Team Enthusiasm" takes on "Team Wisdom" at the August 2013 SE YP

And the Corn Hole Champsions are "Team Enthusiasm" Nathan Dickman (URS) and Nick Domenick (City of Columbus SSES)

2013 BOY SCOUT JAMBOREE

by Vicki Smith and Keith Radick

Among the over 40,000 youth, staff, and volunteers attending the 2013 National Boy Scout Jamboree were four enthusiastic OWEA volunteers. Leon Smith of Archbold, Brad and Jane Borer of Tiffin, and Keith Radick of CT Consultants' Columbus office helped christen the new Summit Bechtel Reserve and educate Scouts and visitors about the water environment.

The Jamboree, held every four years, ran July 15-24, at Summit Bechtel Reserve, near Beckley, West Virginia. The abundance of steep and long hills was not lost on our Ohio flatlanders, who got a workout each day. The mammoth event launched Summit Bechtel Reserve as the permanent site of future National Jamborees to provide once-in-a-lifetime experiences for Scouts from all 50 states and many other countries. The Reserve encompasses 10,600 acres, but only about 1,000 are currently developed. The Jamboree features souvenir tents, a performance stage, archery and rifle ranges, zip-lines, rappelling, motocross bike trails, and the second largest outdoor skateboard facility in the world. A new component of the Jamboree this year was the largest service project in the country in which the Scouts devoted 300,000 hours to community service in nine area counties. About 1,000 girls in co-ed Venturer Scout units participated in the Jamboree, which was a historical first. Other attendees included the King and Queen of Sweden, and Mike Rowe of "Dirty Jobs" TV show (who is an Eagle Scout.)

"It was really neat to be at the very first event at this site," said Brad. "It reminded me of my Jamboree in 1969, how kids are still kids and love Scouting, and the opportunity it offers."

The conservation/environment area included WEF, other private groups, and government agencies. The exhibit developed by WEF's Public Education Committee included a map to place a pin in the watershed in which Scouts lived as they learned what a watershed is. After learning about the importance of wastewater infrastructure, current conditions of the U.S. water/wastewater infrastructure, and impact on entire watersheds, Scouts were invited to crawl through a (clean) 36" sewer pipe to the treatment plant area.

This station utilized a display from the Alexandria County, Virginia facility and demonstrated schematic treatment plant processes and showed a model plant depicting the activated sludge process. The treatment plant descriptions were followed by an explanation of the microbiology of activated sludge, and the Scouts were invited to view actual mixed liquor under the microscopes. Career opportunities related to the wastewater field were also highlighted. Between the three interactive stations, staffed primarily by the OWEA representatives the first three days, WEF volunteers spread their message in about 10-20 minutes.

"When the boys (usually, but some young ladies) would come through, it was awesome to see the light bulb go off and understand what we're talking about," noted Jane. "For example, for them to understand that many, many, many people use your water before you and many, many will afterward. Most had no clue!"

Standing l-r: Keith Radick and Leon Smith
Seated: Brad and Jane Borer

Leon was the old-timer of the group, having volunteered at the 2001, 2005, and 2010 Jamborees. He set the bar for Brad, Jane, and Keith. Don Corwin, recently retired from Logan County WPCD, also had volunteered at three Jamborees and was sorely missed this year.

"It was a great experience with really good people to work with and so cool that many of the WEF volunteers were involved in Scouting," Jane said.

"It was a rewarding experience to help educate youth about the water environment and a fun opportunity to meet and work with other WEF professionals from around the country," Leon commented. "I enjoyed renewing acquaintances with WEF professionals from Virginia, Nebraska, and other states who've also repeatedly stepped up to build awareness of water's importance. I'm looking forward to volunteering at the 2017 Jamboree."

These sentiments were echoed by the other OWEA volunteers, all of whom have been very active in Scouting at some point. "We met many new friends and colleagues," Keith said. "I never had the chance to attend a Jamboree as a Scout, and I marvel at the tremendous opportunities for adventure afforded to today's Scouts."

All four of the OWEA volunteers encourage members to be part of the next Jamboree experience in 2017 for a couple days or more. Just contact one of them to find out how. Or contact Steve Harrison at WEF, who also heads the Operations Challenge at WEFTEC.

Submitted by Vicki Smith and Keith Radick

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It included a tour of the City of Bedford WWTP, led by head mechanic and YP Committee's own **Rick Soltis**, where attendees earned one contact hour for the technical event. After the tour, the group met at Mr. Gee's Bar for continued networking. A large number of students from the newly formed CSU student chapter were in attendance for the free event and great networking opportunity. A special thanks goes out to Rick Soltis and the City of Bedford for their hospitality.

The next event is planned for January 2014 - please contact Ashley Williston (information below) for details.

Contact your Section YP representative to become more involved in the Young Professionals Committee:

Northwest Section: Walter Ariss
walter.ariss@epa.state.oh.us

Northeast Section: Ashley Williston
awilliston@ctconsultants.com

Southwest Section: Kelly Kuhbander
kelly.kuhbander@strand.com

Southeast Section: Alicia Adams
alicia.adams@stantec.com

Special thanks to all the committee volunteers who make the YP committee vibrant! As always, if you have any suggestions or questions, please contact Nick Bucurel at: 216.606.1323, *nbucurel@BrwnCald.com*.

REPORTING OVERFLOWS, BYPASSES AND OTHER NONCOMPLIANCE TO OHIO EPA

by Elizabeth Wick, P.E., Ohio EPA, NWDO

Background

Anyone who owns a facility covered by a National Pollutant Discharge Elimination System (NPDES) permit is required to submit a noncompliance notification to Ohio EPA within 24 hours for certain events. There are two ways to submit a 24-hour noncompliance notification. One way is by email using the noncompliance notification form and the other is by telephone to the appropriate Ohio EPA district office. Noncompliance events that pose a potential threat to public health, safety or the environment constitute an emergency and must be reported to Ohio EPA's emergency hotline (800-282-9378) within 30 minutes of discovery.

This article clarifies reporting requirements, methods and what events should be reported as emergencies.

The requirements for noncompliance notification can be found at:

- Title 40 of the Code of Federal Regulations, Part 122.41(l)(6)
- Chapter 6111 of the Ohio Revised Code
- Chapter 3745-33.08(5) of the Ohio Administrative Code
- Part III, Item 12 of the NPDES permit

Non-emergency Noncompliance Events

There are two types of NPDES permit noncompliance that must be reported to Ohio EPA's Division of Surface Water within 24 hours of discovery:

1. Any noncompliance that is the result of a violation **of a daily maximum discharge limit** for any of the pollutants listed in the NPDES permit. Many NPDES permits contain daily maximum discharge limits for pollutants that may be discharged by the permit holder to waters of the state.
2. Any **unanticipated bypass or any upset** resulting in an exceedance of any effluent limit in the NPDES permit. Wastewater treatment facilities may experience an occasional unanticipated bypass or upset of some or all of the treatment units.

As long as these events do not present a threat to public health, safety, or the environment, they can be reported to the district office by telephone or email using the contact information found in Part III of the NPDES permit or by calling or emailing the Ohio EPA facility contact directly. When the telephone option is used for noncompliance notification, it must be followed by a written report within five days of the event.

The follow-up report for daily maximum discharge limit violations should be sent to the district office contact and must contain the following information:

a. The name of the permittee, and a contact name and telephone number;
b. The limit(s) that has been exceeded;
c. The extent of the exceedance(s);
d. The cause of the exceedance(s);
e. The period of the exceedance(s) including exact dates and times;
f. If uncorrected, the anticipated time the exceedance(s) is expected to continue; and,
g. Steps taken to reduce, eliminate or prevent occurrence of the exceedance(s).

For bypass or upset notification reports, the following information must be included in the follow-up report:

a. The name of the permittee, and a contact name and telephone number;
b. The time(s) at which the discharge occurred, and was discovered;
c. The approximate amount and the characteristics of the discharge;
d. The stream(s) affected by the discharge;
e. The circumstances that created the discharge;
f. The name and telephone number of the person(s) who have knowledge of these circumstances;
g. What remedial steps are being/were taken; and,
h. The name and telephone number of the person(s) responsible for such remedial steps.

Ohio EPA prefers that noncompliance notification is made by email. Email notifications using Ohio EPA's forms eliminate the need for a five-day follow-up report. Generic district office

Sanitary sewer manhole overflow

Manhole overflow

email addresses are included in Part III, item 12 of the NPDES permit. Notifications can also be sent directly to the district office contact. Depending on the nature of the noncompliance, there is a form that must be attached to the email notification. The forms can be accessed at: *http://epa.ohio.gov/dsw/permits/individuals.aspx#noncompliance*. Click on the 'Monitoring and Reporting' tab in the box on the page to access links to the specific noncompliance forms. One form is used for reporting exceedances of daily maximum discharge limits and the other is used to report bypasses and upsets. When submitting a noncompliance notification form using email, follow the procedure below:

1. Save a copy of the form to your computer;
2. Answer all questions and fill in all required information;
3. Rename the completed form using the NPDES permitted facility name, date, county where the facility is located, and the DSW inspector's name (if available). Example: ACME_WWTP_110413_County_InspectorName.doc; and,
4. Attach the form to an email sent to the appropriate DSW inspector or district office. The Subject line of the email should be the same as item 3 above. Example: ACME_WWTP_110413_County_InspectorName.doc

Emergency Noncompliance Events

Some noncompliance events may constitute an emergency. Regardless of the cause, if an event presents an immediate or potential threat to public health, safety, or the environment, it must be reported to Ohio EPA's emergency hotline (800-282-9378) as soon as reasonably possible but definitely within 30 minutes of discovery. An emergency is determined on a case-by-case basis, depending on potential risks to the public or impacts to a receiving stream. Examples of situations that constitute an emergency include, but are not limited to:

- fish kills or obvious signs of stress;
- raw sewage discharge to a receiving stream from a failed pump/sewer line/bypass;
- discharges that result in suspended solids or other substances that settle and form deposits on the stream bottom;
- discharges that contain floating debris, oil, scum or other floating materials in amounts sufficient to be unsightly or cause degradation;
- discharges that produce color in the receiving stream.

When you call the emergency hotline, a dispatcher will answer the phone and take all relevant information. Please be as detailed as possible in your description of the incident. Based on the information provided, the dispatcher will determine if the situation warrants an on-scene response from Ohio EPA's emergency response staff. If the emergency response staff respond to a spill, they will provide oversight and assistance and the responsible party will be billed for their time spent on the spill response. After you call the emergency hotline, you must still contact the district office representative by phone or email within 24 hours of discovery of the event. Again, if telephone notification is used, a five-day follow up report must be submitted to the district office representative.

Final effluent from a major WWTP discharging to the receiving stream

Emergency Sanitary Sewer Overflows

A sanitary sewer overflow (SSO) is an overflow, spill, release, or diversion of wastewater from a sanitary sewer system. SSOs do not include wet weather discharges from combined sewer overflow (CSO) stations specifically listed in Part II of the NPDES permit (if any). All SSOs are prohibited and specific reporting requirements may be found in the NPDES permit.

On rare occasions, an SSO may constitute an emergency. An emergency SSO must be determined on a case-by-case basis. Ohio EPA typically considers the following to be SSO emergencies:

- A dry weather SSO;
- A major line break;
- An SSO event that causes a fish kill or obvious signs of stress;
- An SSO event that exposes the general public to contact with raw sewage;
- An SSO event that occurs in sensitive waters and high exposure areas such as protection areas for public drinking water intakes and water where primary contact recreation occurs.

If it is determined that an SSO is an emergency that imminently and substantially endangers human health and/or the environment,

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What if the non-compliance is an emergency?

Report environmental emergencies to Ohio EPA 24 hours a day, 365 days a year

800-282-9378

Call the Ohio EPA emergency number above as soon as reasonably possible if you determine an emergency exists.

An emergency exists when there is an imminent or substantial threat to public health, safety, or the environment.

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you must notify Ohio EPA immediately by calling the emergency hotline. (800-282-9378). The appropriate local board of health (city or county) must also be notified. When calling the Ohio EPA emergency hotline, be prepared to provide critical information about the emergency SSO including, but not limited to:

a. location;
b. overflow volume;
c. receiving stream; and
d. actions taken (evacuation, containment, etc.).

This information will be used to coordinate an emergency response, if necessary. This phone call report must be followed within five days by a written report sent to the facility's district contact. The SSO five-day follow up report can be accessed at: *http://www.epa.ohio.gov/dsw/permits/technical_assistance.aspx*.

Non-emergency Sanitary Sewer Overflows

If it is determined that the SSO is not an emergency, report the SSO as required in the NPDES permit. Typically, NPDES permits require non-emergency SSOs to be reported under Station 300 (if available) and included in an annual SSO report, but refer to your individual NPDES permit for specific reporting requirements.

Other Noncompliance

There are three other report requirements in Part III, item 12 of the NPDES permit:

- Any inability to meet a required activity in the schedule of compliance in the NPDES permit must be reported. The report must be written and submitted to the appropriate district office within 14 days of becoming aware of the situation. Instructions regarding the required content of the report can also be found in Part III of your NPDES permit.
- All other instances of NPDES permit noncompliance not reported as part of a 24-hour noncompliance notification must be reported on the monthly Discharge Monitoring Report.
- Failure to submit an application or submittal of incorrect information in an application or in any report to the director of Ohio EPA must be corrected as soon as it is evident. The correct information with an explanation needs to be promptly submitted.

If a facility is under Director's Final Findings and Orders or a Consent Order, there may be special reporting requirements contained in that order. Be sure to follow those requirements to avoid escalated enforcement action and/or stipulated penalties. If those orders require calling the emergency hotline for every overflow, bypass, or effluent violation, be sure to tell the dispatcher that the incident is being reported in accordance with such an order. This will prevent the dispatcher from requesting the use of the 24-hour report form instead of the emergency hotline.

Duty to mitigate

Part III of the NPDES permit contains a Duty to Mitigate requirement. Every permittee must take all reasonable steps to minimize or prevent any discharge in violation of the NPDES permit which has a reasonable likelihood of adversely affecting human health or the environment. This means NPDES permit holders are required to take all reasonable actions to mitigate impacts from an unauthorized discharge.

Ohio EPA Response to Noncompliance Events

Depending on the potential threat to public health, safety, or the environment and the actions taken to mitigate a noncompliance event, Ohio EPA's emergency response staff may determine that an immediate, on-scene response is warranted. Non-emergency violations of daily maximum discharge limits will result in the generation of a preliminary compliance report (PCR) letter. This PCR letter may be followed by a notice of violation from the district office. If an unanticipated bypass or upset is reported, the district office may follow up with a phone call or a site visit to confirm that the activities taking place are adequately addressing the situation. If the agency believes that the actions taken by the responsible party are adequate or have stopped the discharge, a field visit may not be made until the next working day.

While compliance is everyone's goal, effluent limits are exceeded on occasion and unavoidable spills occur. Following the applicable noncompliance notification procedures allows Ohio EPA to respond appropriately to the situation and helps avoid unnecessary expenses to the facility.

Do You Work with College Interns, Employ College Students, or Know a Student Interested in a Water Quality Career?

Eligible Students can join OWEA/WEF Free for One Year!

Designed for the specific needs of students - offering a solid foundation on which to build careers and gain credibility with water quality leaders.

The Ohio Water Environment Association is offering a year long OWEA/WEF membership to students with an interest in the water quality/wastewater field. This is a dual membership with OWEA (as the state member association) and WEF.

Students must be enrolled in a minimum of 6 credit hours in an accredited college or university.

Encourage students to apply for a free year long OWEA/WEF membership at: *http://www.ohiowea.org/memberships.php*

As of October, OWEA has 40 student members, who represent the future professionals in the water quality field.

INTRODUCING STUDENTS TO ENVIRONMENTAL SCIENCE AND ENGINEERING PROFESSIONS

by Carolyn Watkins, Chief, Ohio EPA Office of Environmental Education

Where will the next generation of environmental scientists and engineers come from? Could you play a role in inspiring this career choice among today's students? Consider these converging trends:

- Employers looking to hire professionals in environmental science and engineering are reporting a shortage of qualified applicants.
- Most high school students, and even teachers and career counselors, have little understanding of the wide variety of things environmental professionals do, or the training and skills required.
- Ohio is emphasizing Science, Technology, Engineering and Mathematics (STEM) fields to prepare students for jobs in the state's emerging high-tech economy.
- The Ohio Department of Education's learning standards and model curriculum also emphasize student learning about real-world careers.
- Schools and career centers are looking for professionals in the public and private sectors to provide role models and diverse work-place experiences for their students. They are having trouble finding us.

Ohio EPA has been working with the Environmental Education Council of Ohio (EECO) to recruit environmental career ambassadors who are willing to participate in local school career days or make an occasional classroom presentation to students about their career paths. Would your company or agency consider hosting a school field trip? Do you have internships for high school or college students? Could you provide a shadowing opportunity for students to see what professionals do? Could you help recruit other career ambassadors?

The Ohio State University (OSU) recently created the Environmental Professionals Network (EPN), an online community connecting Ohio professionals in:

- Air quality;
- Environmental health and policy;
- Energy, materials, and sustainability;
- Land use and conservation;
- Water resources and water quality; and
- Wildlife and ecosystems.

We encourage you to join EPN. Members share information, announce events and training opportunities, post/seek jobs, internships and volunteer opportunities, and find collaborators for projects. The network is not limited to OSU faculty and alumni.

Now EPN members can also volunteer to be a career ambassador to introduce Ohio high school students to careers in environmental science and engineering. Simply check Career Ambassador in your EPN member profile and select the activities you might want to be involved in. Teachers and career counselors in your area will be able to contact you through the EPN to invite you to speak to students in local schools, schedule a field trip, or whatever activities you selected based on your level of interest and availability. Short on time? Not sure you would be good at speaking to young people? You only sign up for what you're comfortable doing, and you can decline any request from a school.

More than 70 large companies and local, state, and federal agencies have signed on as supporters of this initiative. OSU, Ohio EPA, and EECO are trying to recruit at least 500 environmental career ambassadors, with some available in every Ohio county. Watch for more information at *http://epn.osu.edu* and *www.eeco-online* or contact *carolyn.watkins@epa.ohio.gov*.

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ROLL CALL

Jim Borton has been appointed as Vice-Chair of the WEF Operations Challenge Committee for the 2013-2014 year. Operations Challenge showcases the skills of wastewater collection and treatment personnel, featured at WEFTEC each year. The forty team, two division competition combines five equally weighted skills tests in the Collections, Laboratory, Maintenance, Process Control, and Safety events. Borton is a Senior Operations Specialist for CH2M Hill and the Co-Chair of OWEA's Plant Operations and Maintenance Committee.

George Elmaraghy, PE, recently joined Stantec Consulting in its Columbus, Ohio office, after an impressive 39 year career with the Ohio Environmental Protection Agency. Throughout his career with the agency, George was intimately involved in policy development, monitoring and assessment of programs, and negotiation, issuance, and enforcement of NPDES permits for wastewater dischargers. Serving as Division Chief of the Division of Surface Water, George has developed an intimate understanding of the state and federal rules and regulations relating to the Clean Water Act. George will provide advisory services for Stantec on issues pertaining to regulatory compliance, PTIs, and 401/404 permit negotiations.

David McCallops, PE, has joined Stantec's Cleveland, Ohio office as a senior project manager. He will oversee the engineering design and construction of water, wastewater, and stormwater projects in the Cleveland Metro Area and Northeast Ohio.

McCallops draws on more than 25 years of experience delivering infrastructure design for communities in his capacity as both a consulting engineer and in service as town/city engineer for several Ohio towns and villages including Hudson, Mayfield Heights, and Madison.

OWEA members may submit brief announcements with photo for publication in the Buckeye Bulletin. Complete the Roll Call form at ***http://www.ohiowea.org/memberships.php*** *or email* ***info@ohiowea.org****. Please include your OWEA/WEF member number. All requests subject to editorial review.*

Steve Morrison has joined Barge Waggoner Sumner and Cannon as Client Services Manager. Morrison will provide client management, business development, and market support in the Ohio region for Barge Waggoner's Water Services business unit.

Morrison has more than 37 years of professional experience in the public works and utilities management communities in Ohio. Prior to joining Barge Waggoner, he served as Director of the Utilities Division for CCI Engineering Services, Project Director for Woolpert, Inc., and top utility management roles for the City of Miamisburg, Ohio and the Montgomery County, Ohio Environmental Services Department. Steve is a Past President of OWEA, former WEF Delegate, and currently serves as OWEA's Finance Chair.

Chad Roby has received his Professional Engineer license from the State of Ohio. Chad has worked at HDR, an architecture, engineering and consulting firm, for 6 years and serves as a project engineer for both water/wastewater related projects. Chad received his Master's in Environmental Engineering from the University of Tennessee Knoxville and his Bachelor's in Engineering Technology from Murray State University.

Cal Rozario has joined HDR, an architecture, engineering and consulting firm. Cal has more than 27 years of experience, the last twenty of it in Northeast Ohio, where he has served in professional leadership positions with progressively greater responsibilities. The majority of Cal's experience has been gained while working on water and wastewater infrastructure projects for municipal, federal, and private clients in the U.S. Rozario is a certified Project Management Professional by the Project Management Institute (PMI) and is certified by the International Society of Automation (ISA). He is an expert in design-build delivery. Cal is a graduate of Kerala State University (India) with a bachelor's degree in electrical engineering.

Kyle Schwieterman, PE, has joined HDR, an architecture, engineering and consulting firm as the Water Business Group's newest Project Manager. Kyle is based in the firm's Columbus, Ohio office. His role will involve managing and designing water and wastewater planning and design projects in Ohio and surrounding states. Prior to joining HDR, Kyle was employed by a central Ohio municipal consulting firm for 11 years. Kyle received his Bachelor of Science degree in Civil Engineering from The Ohio State University and is currently registered as a Professional Engineer in Ohio. Kyle is active in the Ohio Water Environment Association.

Have You Updated Your Membership Information Lately?

Visit *http://www.ohiowea.org/memberships.php* to update your information if you have a new position, email address, telephone number, etc. We will transmit your updates to WEF so your WEF member record will be up-to-date also. If you need assistance, please call 614.488.5800 or email us at *info@ohiowea.org*.

WELCOME NEW MEMBERS

who joined OWEA from July to September 2013

Brian Adams	Travis Cooper	Ian Hessel	Timothy Nicholson	Shawn Sutter
Devon Alexander	Joseph Crea	Earl Hill	Alyabou Ouermi	Philip Teague
Shawn Arden	Randy Denlinger	Brad Hitts	Jim Pelton	William Tompkins
Adam Barhorst	Jon Van Dommelen	Alison Hudson	John Perry	Joseph Tomsik
Shawn Beres	Alexandra Fanning	Brett Hulbert	Brian Porter	Jason Verderber
Raymond Blevins	Chad Frank	Jason Hunold	Peter Reimers	Jim Widrick
Maria Borchers	Donald Freisthler	Terry Korzan	Carrie Anne Rosemark	Jie Xu
Christopher Borer	Michael Garrison	Tyler La Susa	Lijuan Sang	Da Yu
Joel Borer	Michael Gaudiani	Trey MacDonald	Rick Shilling	Li Zhang
Michael Bowling	John Grosse	Bobbi Marion	De'Anna Sigler	Darrell Zielinski
Elizabeth Buening	Sarah Hippensteel Hall	Ben Martin	Bryan Smith	
Jesse Caldwell	Kenneth Hardesty	Kevin McMunn	Harry Stark	
Isaac Carpenter	Stephanie Hawkins	Charles McNew	Richard Stuebi	

Thank you for joining the Ohio Water Environment Association.
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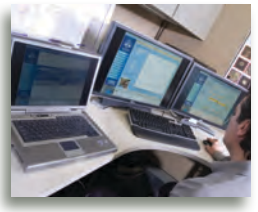

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FACILITATING THE IMPLEMENTATION OF INTEGRATED WATER RESOURCES MANAGEMENT

by Fernando Pasquel, ARCADIS U.S., Inc.

Abstract

Most utilities and local governments are facing budget reductions and downsizing their operations. In addition, existing and potential new regulatory requirements at the state and federal level will require an innovative and creative approach to regulatory compliance at the local level. This approach integrates multiple regulatory requirements and leverages data and limited funding from different programs in order to achieve total water resources management.

Successful integration has been driven in some cases by a specific requirement, such as stormwater management permits or source water protection needs. However, as programs evolve, other regulatory and local requirements, such as Total Maximum Daily Loads (TMDLs) or protection of great water bodies (e.g., Chesapeake Bay, Great Lakes), can be integrated into established programs facilitating implementation, data sharing, and stakeholder buy-in. A simple framework that identifies common goals, provides targeted outreach, and presents practical solutions typically results in implementable water resources management plans.

Keywords

Watershed management, stormwater, integrated water resources management, source water protection, combined sewer overflows (CSOs), TMDLs, water quality, green infrastructure, flood risk management

Introduction

Water resources management is evolving, and its focus is changing. From the 1950s through the 1970s, the focus of water resources management was on flood (quantity) control and point source pollution. During the late 70s and early 80s, erosion and sediment control programs were introduced, and the first Best Management Practices (BMPs) were implemented to improve water quality. In the 80s and 90s, stream channel protection and watershed management efforts were initiated; these included efforts to protect the Chesapeake Bay Watershed, the Great Lakes, and the Bay Delta in California. During the last 10 years, the focus has shifted to habitat protection, sustainable design, and, more recently, green infrastructure.

Throughout these years, the laws and programs (e.g., Clean Water Act, Safe Drinking Water Act, National Flood Insurance Program), regulations, and technical guidance have also evolved. In response to the regulatory requirements, state and local governments have established wastewater and drinking water utilities and developed stormwater management programs, floodplain management programs, and erosion and sediment control programs.

The most progressive states and local governments have integrated some of these programs under watershed management or watershed protection programs. For example, Prince William County, Virginia, a suburb of Washington, DC, integrated several regulatory requirements (e.g., stormwater, floodplain, Chesapeake Bay Protection, erosion and sediment control, and development plan review) under the county's Watershed Management Program. The county also established a stormwater utility to fund its Watershed Management Program activities. A strong outreach and education campaign directed at the public and local decision makers allowed the passage of the stormwater utility ordinance (NRDC, 1999). In addition, to gain homeowner associations' support for the stormwater utility, the county took over the maintenance of all residential stormwater management facilities and established a process to take over the maintenance of selected nonresidential facilities.

Local needs drive implementation and can create powerful incentives to identify funding for integrated water resources management. For example, the Rouge River National Wet Weather Demonstration Project in Michigan demonstrated that a "bottoms up" approach that puts area-based needs in the forefront and uses local initiatives results in a viable alternative to a "command-and-control" regulatory approach to water quality improvement. The initial emphasis of the Rouge project was to control CSOs in the Rouge River Watershed. As the project evolved, the goals were expanded to embrace a watershed approach to wet-weather management that included stormwater management, public education, flow management, and the construction of wetlands and other structural BMPs (Johnson, Kaunelis, Cave, 2000).

However, in many instances, local programs and water and wastewater utilities work and manage local water resources independently of each other. This "silo" approach is proving to be insufficient to meet existing and future needs, conditions, and regulatory requirements. In addition, as most state and local governments face budget restrictions and downsizing, there is an increased need to integrate regulatory requirements and leverage data and funding to achieve the successful management of water resources.

Methodology

Approach - To facilitate the integration of water resources management, local governments or water/wastewater utilities are taking the following steps:

- Understand and integrate multiple regulatory requirements
- Leverage and integrate funding from different programs
- Leverage and integrate data from different programs

This approach stresses the importance of breaking organizational and programmatic silos and using regulations as tools to implement integrated water resources management plans while leveraging funding and data from other programs. Such an approach is also needed to comprehensively address our nation's aging infrastructure and runoff problems and leads to activities such as reducing pollutant loads discharged to receiving waters and managing flood risk throughout a watershed instead of focusing on stream valleys only.

The following sections describe the approach in more detail and present examples to illustrate different components of integration.

Regulatory Requirements - Water resources regulations at the local, state, and federal levels aim to protect water bodies and adjacent infrastructure from damage caused by or associated with stormwater runoff. Local ordinances arise from local interests and embody the implementation of state and federal laws, acts, and regulations. These ordinances address drainage, stormwater, erosion and sediment control, zoning, and site and subdivision requirements. They also regulate impacts from new development and redevelopment in local watersheds.

Laws and Regulatory Agencies	Relevant Legislation and Regulations	Stormwater Requirements
Virginia Erosion and Sediment Control Law and Regulations	Code of VA 10.1-561; 21 – 89.1 4 VAC 50-30	Quantity (Sediments)
Chesapeake Bay Preservation Act and Regulations	Code of VA 10.1 – 2103 and 2107 9 VAC 10 – 20	Quality
Virginia Stormwater Management Law and Regulations	Code of VA 10.1 – 603.1 – 15 4 VAC 50 – 60	Quantity Quality
Section 402 of the Clean Water Act – NPDES and VPDES Requirements	40 CFR Parts 122, 123, 124, 403, and 503 Code of VA 62.1-44.15 9 VAC 25 – 31	Quantity Quality
Section 303 (d) Clean Water Act - TMDLs	40 CFR Part 130	Quantity Quality
Section 404 Clean Water Act	33 CFR Parts 320 – 330	Quality
Section 401 Clean Water Act - Virginia Water Protection Permits	Code of VA 62.1-44.15(10) and 62.1-44.15:5 9 VAC 25-210	Quality
Virginia Wetlands Law and Regulations	Code of VA 12 – 13.5	Quality
Section 1453 Safe Drinking Water Act (1996 Amendments)	42 USC 300 et seq. 40 CFR 141 - 149	Quantity Quality
National Flood Insurance Program	44 CFR Parts 59 – 77	Quantity

Table 1. State and Federal Regulations that Impact Virginia Surface Waters

Table 1 presents an example of state and federal regulations that impact surface waters in Virginia (NVRC, 2007). This type of table was used by the Northern Virginia Regional Commission during the development of its Low Impact Development Manual to illustrate the need to integrate quantity and quality requirements and other regulatory considerations with the use of green infrastructure.

The successful integration of water resources management has been driven, in some cases, by a specific regulatory requirement, such as stormwater management permits or source water protection requirements. However, as programs evolve, other regulatory and local requirements, such as TMDLs or protections of great water bodies (e.g., Chesapeake Bay, Great Lakes), can be integrated into established programs. This integration facilitates implementation, data sharing, and stakeholder buy-in.

The preparation of the Source Water Protection Program (SWPP) for the Goose Creek Watershed in Virginia provides an example of integrating Safe Drinking Water Act (SDWA) requirements and stormwater requirements. The Virginia Department of Health (VDH) developed a Source Water Assessment Program (SWAP) and then completed a source water assessment for the Goose Creek public water system in Fall 2002. That assessment was the first step in the development of a program to protect the Goose Creek drinking water supply.

In 2004, Loudoun Water and the City of Fairfax, Virginia, identified the need to build on the information provided by VDH in the source water assessment and funded the development of the Goose Creek SWPP, as part of their commitment to protect drinking water quality. Loudoun County also committed to protecting water resources through implementing regulatory programs and the adoption of the Loudoun County Revised General Plan, which includes a policy to develop an effectively designed and administered watershed management program that will ensure an adequate supply of drinking water. Loudoun Water (distributes and uses the water) and the City of Fairfax (owns the treatment plant) benefited from the development of the Goose Creek SWPP. These benefits facilitated the integration of funding sources.

The Goose Creek SWPP is not a land-use management plan, but a compendium of tools (i.e., guidelines based on regulatory requirements, practices, and partnership actions) to protect the drinking water supply. The SWPP and the tools were developed using data from Loudoun County (e.g., GIS layers, monitoring data) and Loudoun Water (e.g., source water data, stream assessments) illustrating the benefits of leveraging data to meet a common goal. These tools also integrate source water requirements and stormwater regulatory requirements to facilitate compliance and provide better protection for the watershed.

Since the Goose Creek SWPP goals were based on a multiple-barrier approach to source water protection, the selected tools are also related to each of the barriers and illustrate the integration of requirements, as described below:

- Tools for the Risk Prevention Barrier – Protection of Drinking Water Sources
  - Implement pre-development BMPs, post-development BMPs, and agricultural BMPs
  - Support source water protection practices and minimize potential contaminant sources
- Tools for the Risk Management Barrier – Treatment and System Operation
  - Obtain water supplier and stakeholder Memoranda of Understanding (MOU) and integrate regulatory requirements
- Tools for the Risk Monitoring and Compliance Barrier – Detecting and Fixing Problems
  - Coordinate a watershed monitoring plan and develop programmatic indicators
  - Monitor and maintain the drainage and stormwater/BMP infrastructure

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- Tools for the Individual Action Barrier – Consumer Awareness and Participation
  - Integrate outreach efforts and implement interactive public involvement activities

Several states are linking TMDLs and stormwater management requirements through National Pollutant Discharge Elimination System (NPDES) permits, placing a new and significant burden on municipalities to clean up their streams. This integration of regulatory requirements is creating the need to find alternative funding for integrated water resources management programs.

Funding - Infrastructure needs and limited funding create the need to identify funding sources to support water resources management programs. Identifying and implementing practical funding alternatives is of critical importance to meet these needs. These funding alternatives are key to achieving the successful integration of water resources management.

In addition, since federal and state governments are requiring through regulations that specific actions be taken by local governments on an ongoing basis as described above, reliable and stable funds should be dedicated annually to address these requirements. If these funds are not available, proper maintenance of infrastructure is forgotten, steady and well-planned expenditures are deferred, costs go up, and effective management of the water resources programs goes down.

Local governments that are successfully integrating water resources management are linking project objectives and regulatory requirements to facilitate obtaining multiple or alternative funding sources. Linking project objectives and regulatory requirements also facilitates stakeholder acceptance of the water resources management programs and support for funding alternatives.

Identifying funding alternatives is a challenging task because of the number of alternatives available. In 1998, the Water Environment Federation, Watershed & Wet Weather Technical Bulletin, published an article on *Fifty Ways to Fund a Watershed Management Program* (Rogers, Matichich, Pasquel, 1998). In 2008, the U.S. Environmental Protection Agency (U.S. EPA) published the *Guidebook of Financial Tools* (U.S. EPA, 2008) that includes over 300 different tools for financing environmental systems, including watershed and stormwater programs. Even though the number of funding alternatives continues to increase, the even more challenging task is to select and implement funding alternatives at the local level.

The following is a summary of funding alternatives that are available for watershed and stormwater programs (modified from U.S. EPA, 2008; and Rogers, Matichich, Pasquel, 1998):

- Funding Alternatives for Raising Revenue. These alternatives include fees and taxes typically implemented by local governments.
- Funding Alternatives for Acquiring Capital. These alternatives include bonds, loans, and grants typically obtained by local governments from or through local, regional, state, and federal sources.
- Miscellaneous Funding Alternatives. These alternatives include private incentives that leverage watershed stewardship efforts, redirection of programs that leverage non-water program funds to water resources management programs, and surcharges that leverage specific opportunities or local situations.

Data

Leveraging data sources and products from different programs or program areas facilitates integration of water resources management. These data and products can be used by stormwater, water, and wastewater utilities to protect and manage their assets and comply with regulations.

For example, the Federal Emergency Management Agency (FEMA) is nearing completion of Flood Map Modernization (Map Mod), a multi-year effort to transform FEMA's flood map inventory from a paper format into a digital format in order to provide communities across the nation with updated flood hazard maps and data. By the end of this billion-dollar effort, FEMA will have created modernized, digital flood maps for 92 percent of the U.S. population, covering 65 percent of the U.S. land area.

The data available from FEMA is stored and maintained in a multi-faceted web-based system known as the Mapping Information Platform (MIP). The MIP is used to develop and store the nation's flood hazard data, and provide a standardized national process for map making. Highlights of the data available that could be used for water resources management efforts include:

- Engineering (e.g., hydrologic and hydraulic analysis and models) data
- Topographic data as well as the resulting flood maps
- Flood study project status across the nation
- National Flood Hazard Layer (NFHL), a nationwide set of flood hazard GIS data

This type of data could be valuable for analyzing the impacts of floods on water and wastewater treatment plants, and for developing stormwater master plans, TMDL studies, source water protection studies, and watershed management plans. FEMA is currently implementing its Risk Mapping, Assessment, and Planning (Risk MAP) program that will continue to increase the inventory of engineering and topographic data for riverine and coastal areas.

Framework

A simple framework that identifies common goals, provides targeted outreach, and presents practical solutions and monitoring/feedback mechanisms typically results in plans that are implementable. This framework, or different versions of it, has been used to facilitate the implementation of integrated water resources management.

Identifying common goals among stakeholders and programs facilitates the integration and use of data and funding sources. This framework also facilitates the identification of tools (e.g., green infrastructure; BMPs; hydrologic, hydraulic, and water quality models; and watershed -based permitting) used to develop water resources management plans that will have wide acceptance among stakeholders. Understanding the stakeholder needs and developing effective monitoring and feedback mechanisms for the components of the water resources management plans ensure that the plans are useful for many years.

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Conclusions

Integrated water resources management has been described under many names such as total water resources management, watershed approach, or sustainable water management. Regardless of its name, it is needed given the significant regulatory requirements, infrastructure needs, and limited funding available at the federal, state, and local levels. A simple approach and framework, described above, facilitate the implementation of integrated water resources management plans that break organizational and programmatic silos and that use regulations as tools to meet local needs. The described approach and framework also leverage the use of data available in other programs and assist water and wastewater utilities in the protection and management of their assets and water resources.

Identifying and implementing practical funding alternatives is of critical importance to the successful integration of water resources management. There are many funding alternatives available to local governments, but additional legislation and guidance is needed to facilitate implementation of these alternatives.

Fernando Pasquel
ARCADIS U.S., Inc.
fernando.pasquel@arcadis-us.com
Based on a presentation given at WEFTEC 2010

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DEMAND MANAGEMENT – CONTROLLING ENERGY COSTS

Bryan Lisk PE, CEM – Hazen and Sawyer P.C.

Reducing energy costs is rapidly becoming a major priority for water and wastewater utilities. Many water and wastewater utilities are implementing energy management projects to reduce energy usage and energy costs. Typical energy management strategies for water and wastewater facilities fall into the following 3 categories:

- Energy Efficiency Improvements – These opportunities focus on reducing the amount of energy used to perform a specific function such as aeration, pumping, mixing, lighting, etc..
- Resource Recovery – Resource recovery opportunities include opportunities to recover wasted energy sources (i.e. biogas, hydraulic energy, heat) and beneficially use them to offset the purchased energy sources (electricity, natural gas, fuel oil, etc..) This includes opportunities such as biogas fueled combined heat and power systems (CHP) and thermal energy recovery systems.
- Demand Management – Demand management opportunities are focused on managing a facility's operations to reduce the electrical demand as metered by the electric utility to reduce purchased energy costs.

It is important to note that energy efficiency improvements and resource recovery opportunities are focused on reducing the energy usage where as demand management focuses less on reducing energy usage and more on reducing energy costs. Since most demand management opportunities require little or no plant modifications, demand management opportunities can be implemented at a very low or zero capital costs. The purpose of this article is to describe common demand management strategies that can be implemented by water and wastewater facility owners and the important role the electric utility billing rate has on demand management strategy development.

Demand Management and Electric Utility Billing Structure

There are numerous demand management strategies that water and wastewater facilities can implement to reduce energy costs. Since all water and wastewater facilities have different operating requirements and different utility billing rates, effective demand management strategies will be unique for each facility.

In order to identify and implement beneficial demand management opportunities, the purchased electric utility billing rate structure must be fully understood. The electric utility billing structure defines how a facility is charged for its largest energy source and will therefore have the highest impact on the demand management strategy development. Electric utility billing rates vary greatly among the utilities and the regions they serve; however, most electric utilities base their billing rate structures on energy usage charge (kilowatts-hours), demand charge (kilowatts), and a facility charge for the utility owned equipment. The following is a description of each of these billing components.

Energy Usage Charges. Energy usage is the product of the plant demand and time. For example, a 1 kilowatt (1000 watts) heater operating for one hour will use one kilowatt-hour of energy. Typically, the electric utility billing energy usage charge is either a flat rate (i.e. ¢6.25/kWh) or the energy usage charge can vary with the "time of use." Time of use rates vary the cost of energy with time of day the energy is used. Generally, utility companies change their time of use rate for the summer and winter seasons so that the higher energy rates coincide with the seasonal high demand periods.

Metered Demand Charges. Demand charges are used by the utilities to provide the capital cost for the facilities to provide the electric service to the customer. Demand charges are typically based on the peak 15 to 30 minute plant demand metered by the electric utility during a billing period. For example, the demand charge for the billing period shown on *Figure 1 (next page - 42)* will be based on the metered peak 15 minute demand (7500kW) for the 30 day billing period even though the average demand is well below the peak demand.

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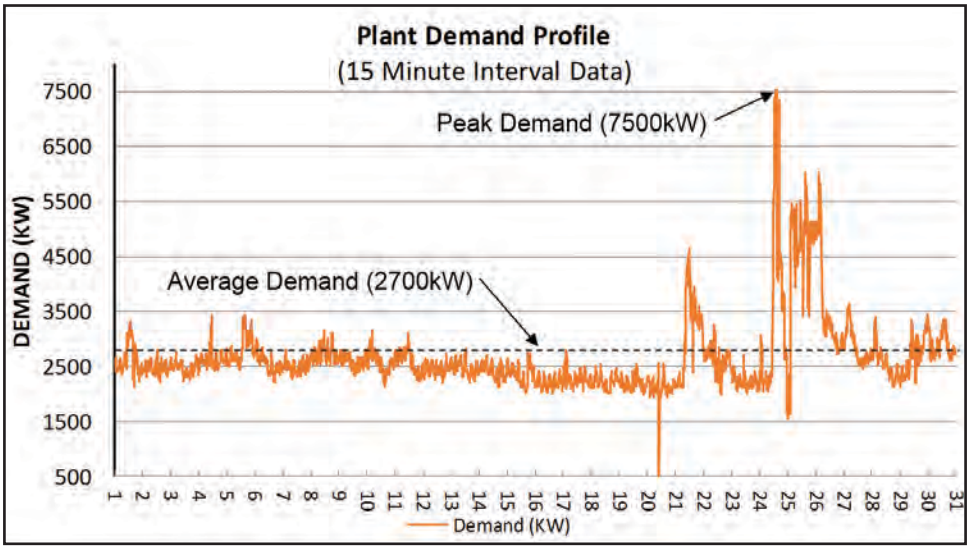

Figure 1 - Single Billing Period Demand Profile

Minimum Billing Demand Charges. Many electric utility billing rates will include a minimum billing demand charge that will be charged to the customer if the metered demand charge is below the minimum billing demand charge threshold. In most cases, the minimum billing demand charge is defined as a part of the electric utility service contract. Some electric utilities will establish the minimum billing demand charge as a percentage of the peak metered demand from the preceding 12 billing periods. Figure 2 shows an example of a 12 month minimum demand charge based on 90% of the peak demand. Demand management opportunities can only generate benefit from demand reduction if the plant demand is above the minimum billing demand level. This example illustrates the importance of understanding minimum billing demand charges when developing demand management strategies. Many electric utilities use demand ratcheting to establish the minimum billing demand. A commonly used electric rate from Duke Energy of Ohio (Rate DS) established their 12 month minimum billing demand charge at 85% of the highest monthly demand metered during the summer months (June-September). Facilities that are on this rate can benefit by managing their demand during the summer months to reduce the minimum billing demand threshold. *See Figure 2 below.*

Developing Demand Management Strategies

Most demand management strategies are based on managing the plant load in coordination with the electric utility billing rate to minimize energy usage during the periods when energy costs are high (on peak periods) and/or to reduce the plant's peak demand to reduce electric demand charges. Other demand management opportunities exist by utilizing on-site power generation systems to participate in electric utility emergency response and load curtailment programs.

The goal of managing demand is to minimize cost by minimizing the electrical demand when energy and demand charges are at their highest per the electric utility billing rate. This is typically achieved by managing plant operations to reduce demand during on-peak hours and/or utilize on-site power generation capacity to manage plant demand. The demand management strategy will depend on the cost ratio between the energy and demand charges and the differences in cost between the on-peak and off-peak billing periods as defined in the facility's electric utility rate structure. The first step in developing demand management strategies is to evaluate the electric utility billing rate structure and the average plant demand profile to understand how the plant

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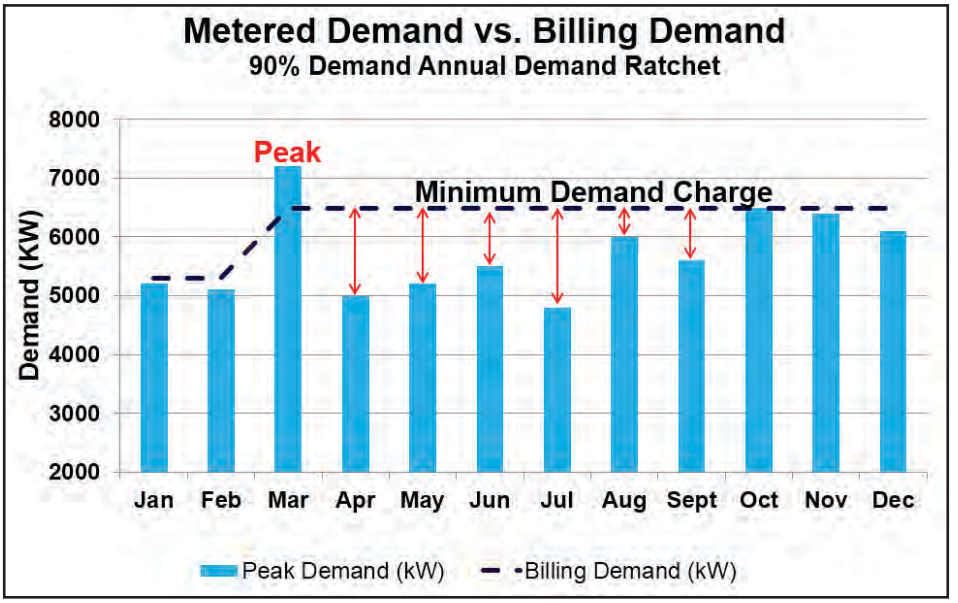

Figure 2 - 90% Minimum Demand Charge Example

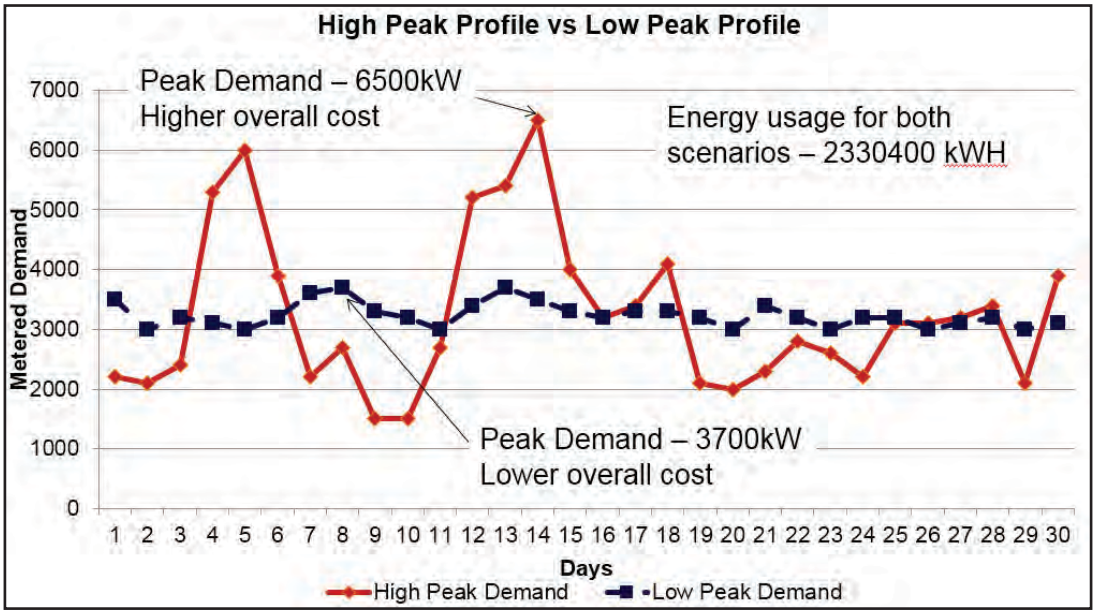

Figure 3 - High and Low Peaking Plant Demand Profiles

demand profile in conjunction with the electric utility billing rate is impacting the overall electric energy cost. In many cases, the plant peak demand charges will have a significant impact on the overall cost of electric energy. To illustrate this concept, Figure 3 shows two hypothetical plant demand profiles, one with a high peaking factor and the other with a lower peaking factor. For each profile, the energy usage for the billing period is the same (2330400 KWH each). For most utility billing rates that include a demand charge, the electric utility costs for the high peak scenario will be higher due to the elevated demand charges than the low peaking scenario, even though the energy usage was the same in both cases. This illustrates the potential benefits from managing a plant's operations to minimize the peak demand charges. *See Figure 3 above.*

Common demand management strategies that can be used to control demand and energy costs include:

- Defer non-critical loads to off peak hours when energy and demand charges are lower. Non critical loads such as dewatering, filter backwashing, and some mixing loads are examples of loads that are commonly deferred to off-peak periods. Deferring dewatering operations has a secondary benefit by reducing the nitrogen loading from the filtrate return to the secondary process during the on peak periods which can increase the aeration demand.
- Utilize equalization storage to reduce diurnal fluctuations to minimize high pumping and aeration loads.
- Interlock intermittent loads such as filter backwash pumping, air scour blowers, and large air compressor loads so that they do not operate concurrently resulting in elevated demand charges. It is also possible to interlock intermittent loads with other continuous loads (i.e. backwash pumps and digester mixing pumps) that can be stopped without negatively impacting the process to offset the demand.

Utilizing Onsite Power Generation to Manage Demand

Many electric utilities offer demand response programs that provide a financial incentive to their customers to reduce their demand during periods of high demand. A plant's ability to reduce or eliminate their demand during peak hours benefits the utility by balancing the utility grid loads during periods of high demand. Plants that have the ability to significantly reduce their load through operation changes and/or by using onsite power generators can benefit significantly from these programs. For example, Duke Energy's Powershare® demand response program will compensate a customer that has the ability to reduce their load during curtailment periods defined by Duke Energy. Typically, water and wastewater facilities can reduce their energy costs up to 10% and sometimes more when participating in demand response programs.

Many water and wastewater utilities utilize onsite power generation to curtail load under an electric utility demand response program. Utilizing onsite power generators to manage demand under a demand response program is a very effective way to reduce energy costs, however, the use of onsite power generators to manage demand is considered non-emergency use by the EPA and therefore must comply with the non-emergency use emission requirements of the local air permitting board, the EPA New Source Standards, and the EPA National Emission Standards for Hazardous Air pollutants.

Summary

Demand management opportunities can result in energy savings, implemented at low or zero capital costs. The key to developing beneficial demand management strategies is to understand the plant's electric utility billing rate and identify process and operation changes that, in coordination with the electric utility rate schedule, reduce energy and demand charges. Significant cost savings have been realized when incorporating electric utility demand response programs into the overall demand management strategy.

Bryan Lisk PE, CEM
Hazen and Sawyer P.C.
blisk@hazenandsawyer.com

ENERGY LOAN FUND HELPS IMPROVE ENERGY EFFICIENCY

by April Kasun, Ohio Development Services Agency - Office of Energy

For wastewater treatment plants, energy can be a significant portion of the operating budget. The U.S. EPA estimates that wastewater treatment facilities consume about 3 percent of all of the energy used in the United States. Lowering energy use through efficiency or advanced energy technologies can lower operating costs and improve environmental quality at wastewater treatment facilities. Improvements in lighting, pumps, aerators and motors can have a big impact on the amount of energy used in the facility. And implementing technologies such as combined heat and power, anaerobic digestion and installing solar panels can offset the energy the facility draws from the grid.

Before implementing energy efficiency measures at a wastewater treatment facility, it is important to understand how the facility is using energy and the associated costs. Facility managers should prioritize the implementation of efficiency measures into three categories, no-cost, low-cost and high-cost. The U.S. EPA released a report in 2010 that can help guide this process, called *Evaluation of Energy Conservation Measures for Wastewater Treatment Facilities*. This report can be found at *http://water.epa.gov/scitech/wastetech/upload/Evaluation-of-Energy-Conservation-Measures-for-Wastewater-Treatment-Facilities.pdf.*

To help Ohio businesses, communities, and nonprofit organizations implement larger scale energy efficiency projects, the Ohio Development Services Agency has established the Energy Loan Fund. The Energy Loan Fund provides financing for energy improvements that can be difficult to finance through traditional lenders. Eligible projects include energy retrofits, energy distribution technologies and renewable energy technologies that reduce energy usage and associated costs, reduce fossil fuel emissions and/or create or retain jobs. Projects also must achieve at least a 15 percent reduction in energy usage and demonstrate economic and environmental impacts.

Loans administered through the Energy Loan Fund may carry annual fixed interest rates set below the prime rate published in the *Wall Street Journal*, and are currently around 3 percent. Loan terms are determined by the project activity and verified estimated energy cost savings, but cannot exceed 15 years. For a limited time, borrowers who close on an Energy Loan Fund are eligible to receive a rebate up to 50 percent for the cost of equivalent comprehensive facility energy audit.

To apply for a loan, entities must complete an online pre-application to determine the project's eligibility. Eligible projects will then move to the full application process and undergo technical and financial reviews. More information on the Energy Loan Fund can be found at *http://development.ohio.gov/bs/bs_energyloanfund.htm*.

Along with its financing tools, the Development Services Agency also works to educate and train customers on alternative and renewable energy technologies. Wastewater treatment facilities in northwest Ohio can utilize the Agency's Solar Potential Map (*www.nwohiosolarmap.org*) to determine if solar power is right for their facility. The online tool allows users to search addresses within a 1,000-square-mile area in northwest Ohio to gauge the potential of a solar installation.

If solar energy will help improve its efficiency and lower costs, a community can utilize the Ohio Solar Supply Chain Map (visit *www.ohiosolarenergy.org*) to find solar industry manufacturers, installers, and other providers in their area. Developed in partnership with Ohio University, the map is an online database of Ohio companies that are part of the solar industry supply chain.

The Ohio Development Services Agency understands that utilizing energy efficiency and advanced energy technologies is one of the best ways to manage energy costs. For more information about the Agency's programs, visit *www.energy.development.ohio.gov* or call 1-866-SAV-NRGY (1-866-728-6749). Working together, we can improve Ohio's energy efficiency for future generations.

April Kasun
Outreach Coordinator
Office of Energy
Ohio Development Services Agency
April.Kasun@development.ohio.gov

Solar panels installed on the roof of Greater Cincinnati Water Works

POWERING Ohio
Employing Efficiency. Fueling Growth.

Ohio | Development Services Agency

TAP INTO ENERGY EFFICIENCY SAVINGS WITH INCENTIVES FROM AEP OHIO

by Scot Thrapp, DNV KEMA, Outreach Professional for AEP Ohio's Business Incentives Program

When the Del-Co Water Company in southern Delaware County completed a $16,885 energy efficiency project, almost half the cost was covered by financial incentives from AEP Ohio's energy efficiency programs for business. With annual energy savings of more than 100,000 kWh, Del-Co's project will pay for itself in one and a half years.

AEP Ohio's incentive programs are designed to help offset the cost of installing energy-efficient technologies. Energy efficiency measures that are eligible for incentives from AEP Ohio range from simple lighting system upgrades to industrial control system installation.

Most water and wastewater facilities were built 40 or 50 years ago, designed when energy costs were not a major concern. In many of these plants, few major changes have been made since then. Operating inefficiently could be wasting a lot of valuable budget dollars. At water treatment plants, savings are generally more than 10 percent and some facilities have seen even more dramatic savings by upgrading to new, more efficient equipment.

Learn the Incentive Lingo

AEP Ohio offers a broad range of energy efficiency programs to business customers for the installation of energy-efficient products. Here is a sample of programs and measures that would apply to projects at wastewater facilities.

The Prescriptive program offers incentives on a per unit basis: per fixture, per watt reduced or controlled, or per horsepower, for example. Prescriptive program incentives would apply to premium efficiency motors, high efficiency pumps, and variable speed drives (VSDs) on pumps, blowers and air compressors. Del-Co's project earned incentives under the Prescriptive program. (See right sidebar for details.)

Prescriptive Incentives for Del-Co Water Company Measures: Lighting and VSDs	
Total Project Cost	$16,885
AEP Ohio Incentives Paid	$ 7,375
Projected Annual Energy Savings	105,492 kWh
Payback with AEP Ohio Incentive	Approximately 1.5 years

Custom programs are for those projects that don't fit into the Prescriptive program, but still reduce energy or peak demand. Incentives are calculated at $0.08 per kWh reduced. A pre-approval application is required. The AEP Ohio program team provides assistance throughout the application process and determines final approved savings and incentives. Energy efficiency measures that could be eligible for Custom program incentives include:

- Fine-bubble aeration
- Dissolved oxygen control of aeration
- Low pressure ultraviolet (UV) systems
- High efficiency blowers - can achieve 35 percent aeration energy savings
- Control of dissolved oxygen (DO) systems - can achieve 15 to 30 percent aeration energy savings
- SCADA - plant energy savings of 20 to 25 percent

Del-Co Cuts Energy Use With Efficiency Upgrades

Like many water and wastewater treatment plants, Del-Co's operation relies on some very old equipment. Del-Co formed in 1969, and is now the largest rural water system in the state of Ohio, operating four water treatment plants and 18 booster stations.

A Rotoverter in one of Del-Co's booster stations first came online about 75 years ago. It runs the pump with a single phase motor on all the time, generating so much heat that air conditioning had to operate constantly to keep the booster station cool. After installing two new variable speed drives (VSDs) to run the 20 hp motors at the booster station, Del-Co saw estimated electric savings of 25 to 30 percent. The VSDs have also provided these benefits:

- The air conditioner was removed because the waste heat was reduced.
- The soft start of the VSDs cuts wear and tear on the pumps.
- The pumps can now run at 53 hertz for additional energy savings and extended pump useful life.

The lighting retrofit part of Del-Co's energy efficiency project cut energy consumption by 50 percent. Old metal halides in a maintenance facility were replaced with energy-efficient fluorescent T8 fixtures. With T8s, occupancy sensors could be installed. Before, the slow-starting metal halide lamps had to be left on all the time.

AEP Ohio incentives of $7,375 covered almost half the $16,885 project.

- Projected annual energy savings: 105,492 kWh
- Estimated payback period: 1.5 years

The Self-direct program is for the largest energy users, companies that use 700,000 kWh or more annually and generally have multiple locations or are part of a national account.

In the Self-direct program, energy efficiency projects that have been completed within the past three years can receive credit. The program "rolls" each year; for 2013, installations completed after Jan. 1, 2010, may receive credit and incentives. In this way, funds from completed projects help pay for the next project. Incentives are calculated at 75 percent of the amount the project would have originally earned in incentives. One application is required, which will be filed with the Public Utilities Commission of Ohio (PUCO). Approval by both AEP Ohio and PUCO is required.

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Planning a construction project? Program incentives could help offset costs of energy-efficient equipment for new additions, major renovations, or new facilities that go "above and beyond" ASHRAE 2007 90.1 building code standards. Prescriptive or Custom incentives may apply, depending upon the measure installed. For larger buildings and more complex systems, Whole Building incentives are available when two or more building systems are removed and redesigned.

Once you determine which program your project falls into, look for applications online at *AEPOhio.com/Solutions*. Download the application or log-in to use the new, streamlined online application. Support is available at 1-877-607-0739 for questions about any phase of the process.

Join the User's Group

AEP Ohio recognized special characteristics of the water treatment industry that could create barriers to energy efficiency implementation:

- Decision-makers weren't familiar with the energy, operational and maintenance savings possible with more efficient technologies.
- Existing plants functioned as built, so plant operators needed to be confident that efficiency changes would produce the same or better results.
- Sustaining interest in energy efficiency changes through successive budget cycles is critical. Efficiency upgrades had to be top-of-mind to be included in budget discussions, largely in municipal government settings.

To help overcome these unique obstacles, AEP Ohio formed the Water/Wastewater Users Group for municipal customers, engineering companies, and trade allies. The Users Group combines education and peer-to-peer experience for a continuous learning process through multiple budget cycles.

The Users Group was designed around biannual meetings, where topics generally centered on energy efficiency opportunities. The presentations addressed the efficiency of the overall process and also covered prescriptive measures that could make small incremental changes for those who wanted to "test drive" efficiency. After the first year, when initial projects were completed by Users Group members, presentations with "lessons learned" were made by the members for peer-to-peer validation of the positive results.

Over the course of the two-and-a-half years that the Users Group has met, several new topics have been added to the meeting agendas, including state financing and grants, and ENERGY STAR® benchmarking. Members of the Users Group stay current on the latest program changes, such as expanded incentive offerings in 2013 for compressed air systems and HVAC Prescriptive measures.

The Users Group has been successful in bringing industry participants together and saving energy.

- Since the Users Group was formed in 2011, 86 projects have been completed, for a total of 6.2 GWh in annual savings or 81.3 GWh lifetime savings.
- In 2013, 13 projects will be completed, for 1.84 GWh in annual savings.
- In one year, members of this group earned more than $98,000 in cash incentives for taxpayers in nine different Ohio communities.

For information about the Users Group or AEP Ohio's business incentive programs, contact one of these outreach professionals:

Barry Gritton, Outreach Professional, Southern Ohio
614-420-0103
barry.gritton@dnvkema.com

Scot Thrapp, Outreach Professional, Eastern Ohio
614-563-9203
scot.thrapp@dnvkema.com

George Munis, Outreach Professional, Northern Ohio
614-446-5374
george.munis@dnvkema.com

Rebecca Karason, Outreach Professional, Central Ohio
614-601-2989
rebecca.karason@dnvkema.com

AEP Ohio Business Program Incentives at a Glance

Incentive Program	Applicable Energy Efficiency Measures
Prescriptive	• Premium efficiency motors • High efficiency pumps • Variable speed drives (VSDs) on pumps, blowers and air compressors • High efficiency lighting (interior and exterior)
Custom	• Fine-bubble aeration • Dissolved oxygen control of aeration • Low-pressure UV systems • Control of DO systems • High-efficiency blowers • SCADA control system
Self-direct	Installations completed after Jan. 1, 2010 (Rolling 3-year timeframe.)
Whole Building	Two or more building systems removed and redesigned. Energy modeling required.

WEF Membership Application 2013 Ohio MA

Water Environment Federation
the water quality people

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Last Name	M.I.	First Name	(Jr., Sr., etc.)
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City	State	Zip	Country
Home Phone Number		Business Phone Number	
E-mail Address to receive *WEF Highlights Online*		FAX Number	

❑ Please send me information on special offers, discounts, training and educational events, and new product information to enhance my career. ❑ by e-mail / ❑ by fax

Member Association (MA) Choice** Ohio Water Environment Association

*** By joining WEF, you also become a member of a local Member Association (MA). Please select the MA you wish to join from the list on the previous page. Note: Illinois residents have two MA choices – Central States WEA (CS WEA) and Illinois WEA (IL WEA) – please indicate your choice here. If you wish to join both, please add the other in the Dual MA section below.*

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1. ORG Code:	Other *(please specify):*	2. JOB Code:	Other (please specify):
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LANCASTER UPPER HOCKING WATER POLLUTION CONTROL FACILITY

by Mike Nixon, Water and Wastewater Superintendent, City of Lancaster and Tom Bulcher, Associate Vice President, ARCADIS

Background

Growth in the City of Lancaster, due to the new US 33 Bypass and by the general expansion of the Columbus metropolitan area into Fairfield County, stimulated the need for significant infrastructure expansion for both water and wastewater facilities. In addition, the City was facing pressure from the Ohio EPA to address combined sewer overflows occurring within the system. The Upper Hocking Water Pollution Control Facilities were constructed in order to reduce the flow volumes handled by the combined sewer system, to reduce the combined sewer overflow volumes, and to provide the required infrastructure to accommodate new growth in the west and northwest portions of the City.

To address the growth and regulation issues, the City of Lancaster began developing a Combined Sewer Long Term Control Plan (LTCP) for their combined sewer system and an overall Water and Wastewater Master Plan. The combined recommendations from the two reports demonstrated the necessity of the new Upper Hocking Water Pollution Control Facility (UHWPCF) and the Upper Hocking Pump Station (UHPS) and force main.

The UHWPCF is located in the northwest part of the city, between Campground Road and Collins Road, within the corporate limits of the City of Lancaster, Ohio. The facility was started up in early in 2011. The UHWPCF accepts flow from several existing separated sanitary flow areas. The initial facilities have been designed to treat an average day flow of 2.0 mgd and a peak hourly flow of 8.0 mgd, serving only the existing collection system areas. For future development, mainly in the US 33 bypass corridor, the UHWPCF was designed with provisions to expand in 2-mgd average day flow increments to a total average day flow rate of 8.0 mgd. The plant is staffed 8 hours per day, seven days per week. The total cost for the project including engineering, land acquisition, financing, and administrative costs was $50,100,000.

Upper Hocking Pump Station

The UHPS transports flow from several separated sewer subareas in the northwest section of Lancaster to the UHWPCF, which is located several miles to the north and west. A flow diversion chamber on a 30-inch interceptor near the pump station site diverts the flow to the new UHPS. During extreme wet weather conditions, a weir in the diversion chamber allows any flow exceeding the capacity of the UHPS to pass to the downstream collection system for treatment at the Lawrence Street WPCF – Lancaster's older wastewater treatment facility.

There are two force mains, a 14-inch line and an 18-inch line from the pump station to the UHWPCF. These lines were designed to accommodate current dry weather low flows down to 0.5 mgd as well as peak flows up to 8.0 mgd. The UHPS includes a single manually-cleaned bar rack with 1.5 inch openings. After the bar rack, flow enters a trench-type self-cleaning wetwell designed in accordance with the Hydraulic Institute Standards (ANSI/HI9.9-1998). There are five dry pit submersible pumps, all controlled via variable frequency drives (VFDs). Each of three small pumps is rated at 925 gpm (1.33 mgd) and each of two large pumps is rated at 2,780 gpm (4.0 mgd) for a total firm pumping capacity of 8.0 mgd. Standby power sufficient for the entire pump station facility is provided in the form of a 400-kw diesel engine driven generator.

Odor control facilities include a chemical odor control system in which the chemical is dosed to the wet well and oxidizes the hydrogen sulfide that has already formed in the pump station influent. The chemical also retards additional formation of hydrogen sulfide in the force mains to the UHWPCF. An odor control biofilter is used to treat odorous air collected from the wet well area of the pump station. The biofilter media is an inorganic substrate material that hosts bacteria which together biologically destroy the odors. This system treats a flow rate of 1,350 cfm through

Upper Hocking Pump Station

Upper Hocking Influent Fine Screen

a packaged self-contained biofilter system. Odorous air passes through a humidification system at the head-end of the system prior to entering the biofilter in order to prevent drying out the biofilter media. A water sprinkler system is also provided on top of the biofilter to maintain proper moisture within the media.

Upper Hocking Water Pollution Control Facility

Treatment Process Overview - An overview of the wet stream treatment process is shown in the process flow schematic at the end of this article. The current peak capacity of the headworks is 8.0 mgd and the peak capacity of the biological system is 6.0 mgd. The average day capacity of the facility is 2.0 mgd. The membrane bioreactor (MBR) system is limited to a 3 to 1 peaking factor, requiring the peak flow to the secondary treatment to be capped at 6.0 mgd. To accomplish this, a 1-million gallon equalization tank is provided at the UHWPCF to store flow in excess of 6.0 mgd. The plant wet stream processes include influent fine screening, flow equalization, a Vertical Loop Reactor™ (VLR) oxidation ditch, membrane bioreactors (MBRs), ultraviolet (UV) disinfection, and post aeration. Solids treatment includes the Cannibal® sludge reduction system, liquid sludge storage, and a centrifuge for dewatering. Dewatered sludge is landfilled.

Headworks - The influent screening process is located on the upper level of the Screening and Dewatering Building (SDB) and consists of two perforated rotary drum screens with 2.0 mm openings. Fine screening is necessary to protect the membrane fibers downstream. Each screen is rated at 8.0 mgd, providing a total installed screening capacity of 16 mgd. There is a screenings washer/compactor unit for each screen. The compacted screenings are discharged into a dump truck on the ground floor level of the SDB for landfill disposal.

Influent Fine Screen

A magnetic flow meter and motorized control valve are installed in the piping between the influent screens and the VLR oxidation ditch. When the flow rate from the UHPS exceeds 6.0 mgd, the control valve throttles as necessary to maintain a constant flow of 6.0 to the secondary treatment process, causing the level in the discharge basin below the influent screens to rise and eventually overflow the weirs in the basins. The screened wastewater overflowing the weirs is conveyed by gravity to the equalization tank for holding. If the equalization tank becomes full, a level detection device in the tank signals the pumps at the UHPS to decrease their total pumping rate to 6.0 mgd, so as not to overfill the equalization tank or overload the secondary treatment process. Once the influent flow decreases, the screened flow is pumped from equalization directly to the VLR oxidation ditch for secondary treatment. The equalization facility consists of a single cast-in-place, 88-ft. diameter by 21.5-ft. sidewater depth, 1.0 million gallon tank. The tank includes a jet mixing system with four radial jet mixing headers and with two external recirculation pumps.

Secondary Treatment - Secondary biological treatment consists of three VLR tanks normally operated in series, followed by three MBR tanks normally operated in parallel. Each VLR tank contains a mechanical disc aerator to provide oxygen, mixing, and directional velocity. The disc aerators operate on VFDs so the oxygen input can be varied. Each VLR tank also contains coarse bubble diffusers to provide additional oxygen when requirements exceed what can be supplied by the disc aerators. The three positive displacement blowers that supply air to the VLR tanks also have VFDs to facilitate process control. The volume of each VLR tank is 285,000 gallons which results in a hydraulic retention time of 10.3 hours. The MLSS is maintained at between 7,000 and 10,000 mg/l. The high mixed liquor concentrations are possible because of the MBR process used for solids separation.

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Secondary treatment facility

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Raw wastewater, interchange activated sludge from the interchange tanks, and return activated sludge (RAS) from the RAS screen are combined in the influent pipe prior to entering the VLRs. Although not required by the current NPDES permit, oxidation/reduction potential (ORP) control of the system facilitates partial denitrification and phosphorous uptake. An axial flow propeller pump is provided in the third VLR tank (VLR1C) to improve operational flexibility. The pump can be used to pump mixed liquor from VLR1C to VLR1A or VLR1B to improve denitrification efficiency. The three VLR tanks discharge to a common effluent trough, which is also the VLR effluent wet well

Membrane Bioreactor and Vertical Loop Reactor Tanks - Mixed liquor from the VLR effluent wet well is pumped to the membrane tanks for solids separation. Each of the three membrane feed pumps are dedicated to one of the three membrane tanks. Each pump includes a VFD and a magnetic flow meter on the discharge to control the membrane tank feed rate. The membranes are hollow fiber type, polyvinyldiflouride with a 0.1 µm pore size. Each of the three membrane tanks has 17 racks of membranes with 16 modules per rack. Under normal flow conditions, two tanks will be in service, with the third tank being brought on-line only during peak flow conditions. At the average day flow rate with two MBR tanks in service, the flux rate is 13.3 gpd/sf. At the peak flow rate with three MBR tanks in service, the flux rate is 26.4 gpd/sf. Three additional racks of membranes can be added to each tank for future capacity if needed. The volume of each MBR tank is 77,600 gallons.

Membrane Fiber Rack - A dedicated variable speed filtrate pump for each MBR tank applies suction vacuum to the inside of the membrane fibers. As mixed liquor from the MBR tank is drawn through the pores of the membrane fibers, the solids in the mixed liquor are retained on the outside wall of the fibers. The filtrate pumps then pump the clear filtrate passing through the membrane fiber to UV disinfection.

To keep solids from building up on the membrane surface, the membrane tanks contain a jet scrubbing system which uses a combination of air and mixed liquor, introduced at the base of the membrane modules, to provide turbulence and scouring efficiency. Air for the jet scrubbing system is provided by three positive displacement blowers that are equipped with VFDs. The jet scrubbing system keeps the mixed liquor in suspension and also provides oxygen for the ongoing biological activity. The concentrated mixed liquor in each membrane tank overflows a weir into a common channel and is returned by gravity to the VLR tanks. The mixed liquor from the MBR tanks can be directed to either VLR1A or VLR1B.

Membrane filter rack

Membrane cleaning is provided via several operational sequences. The most frequent sequence is a continual relaxation cycle. Each relaxation cycle consists of a 60-second relaxation period (filtrate pumps turned off) followed by 12 minutes of active filtration. A maintenance clean cycle is completed for approximately every 7 days of operating time with a 300 ppm sodium hypochlorite solution. Clean-in-place cycles are also completed periodically to remove any build-up of contaminants on the membrane surface. A clean-in-place cycle with 1,500 ppm sodium hypochlorite is completed for every 90 days of operating time and a clean-in-place cycle with 2 percent citric acid is completed for every 90 days of operating time.

The UHWPCF does not currently have a total phosphorous limit or total nitrogen limit. However, a goal has been set of 1 mg/l total phosphorous or less. A chemical system for phosphorous removal is included in the facility to assure that 1 mg/l total phosphorus can be attained. Ferric chloride or alum can be added at three separate points in order to optimize dosage rates.

Secondary effluent is disinfected with a horizontal type, low-pressure, high-output UV system. The UV system facility includes a bypass pipe to direct flow around the system during the winter months, or as necessary. After disinfection, flow passes through a cascade aeration system, to maintain the required level of 6.0 mg/l of dissolved oxygen, prior to discharge to the Hocking River. Although disinfection was required as part of the initial design, Ohio EPA has since allowed Lancaster to operate without UV disinfection because they have demonstrated that the MBR effluent meets the NPDES permit E. coli limit of less than 362/100ml (weekly) and 161/100ml (monthly).

Residuals Treatment - To reduce the amount of waste sludge and the associated handling, hauling, and disposal costs, the UHWPCF includes a Cannibal® residuals reduction system. The system consists of a residuals separation module and sidestream interchange bioreactors.

The residuals separation module consists of an ultra fine mesh, wedge-wire rotary drum type RAS screen (250 micron openings) for the removal of trash and inerts. Mixed liquor from the VLR tanks is continuously pumped to the RAS screen that is located on the upper floor of the SDB. The screened material is processed through a washer/compactor that discharges into a dump truck on the ground floor of the SDB for landfill disposal. After screening, the RAS is normally directly returned into the influent line of the VLR tanks. However, intermittently, flow from downstream of the RAS screen is pumped through hydrocyclones and a grit classifier to remove fine grit and sand. The frequency of hydrocyclone operation varies with influent wastewater characteristics. Grit is dewatered through a filter bag for landfill disposal.

Once per day, screened mixed liquor is directed to one of the two interchange tanks where the mixed liquor biology

is conditioned to produce a minimum net biological solids yield. Each interchange tank includes a floating mixer, coarse bubble diffusers, and a decanter to control the environment as necessary to achieve sludge reduction. Air is provided from two constant speed positive displacement blowers located at the Residuals Reduction Facility. Each day, one of the two interchange tanks is operated as a batch process with a withdrawal cycle and a fill cycle. The tank is first decanted and then a portion of the thickened interchange tank residuals is removed. Both the decant, and the thickened RAS are sent back to the influent line of the VLR tanks. Screened RAS is then directed to the interchange tank to refill to the designated level. During a six-month process demonstration period, the facility met the required yield rate of 0.28 lbs. residuals per lb. of influent BOD5.

Periodically, residuals are wasted to a liquid storage tank, located adjacent to the interchange tanks. The storage tank has a decanter and air diffusers, similar to the interchange tanks. A third positive displacement constant speed blower located at the Residuals Reduction Facility provides air as necessary to the tank. Periodically, waste residuals from the storage tank are pumped to a centrifuge for sludge dewatering. The centrifuge is located on the upper level of the SDB and discharges via screw conveyor into a roll-off container below in the SDB at ground level. Residuals cake solids concentration is approximately 20%. The dewatered residuals are landfilled.

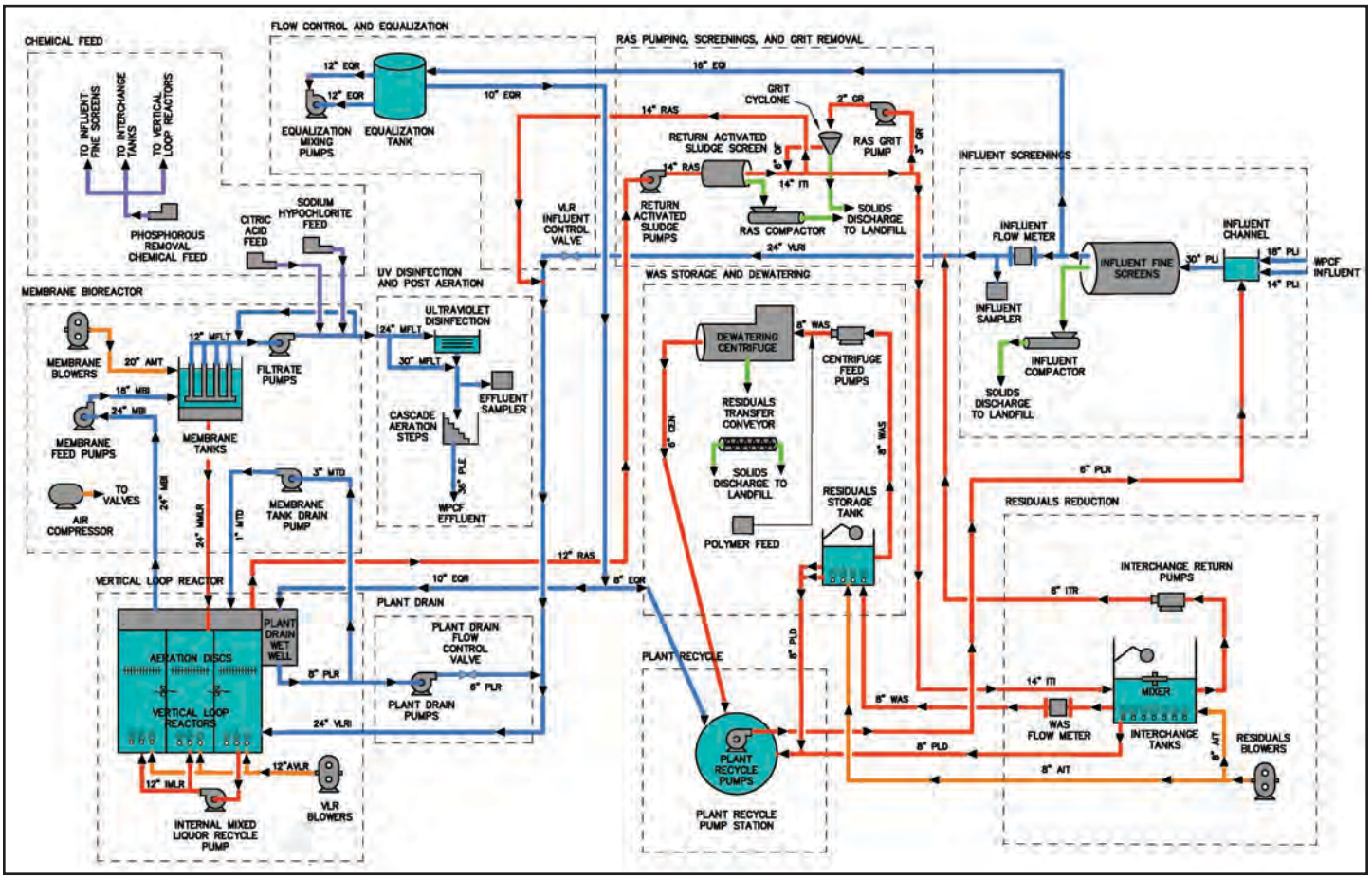
Plant Support Systems - Standby power sufficient for the entire UHWPCF is provided in the form of a 1,000-kw diesel engine-driven generator. Natural gas is provided for heating and the city potable water system provides for fire protection and for other general water needs. The UHWPCF supervisory control and data acquisition (SCADA) system consists of a series of area-wide and equipment-specific PLCs distributed throughout the facility. The UHPS can also be monitored and controlled from the UHWPCF.

Plant Performance - The following is a summary of plant performance data for the year 2012 compared to NPDES Permit conditions:

Pollutant Parameter	NPDES Permit		2012 Average Day	
	Week	*Month*	*Influent*	*Effluent*
$CBOD_5$ (mg/l)	15	10	177	< 2.1
TSS (mg/l)	18	12	246	< 3.7
NH_3 – win (mg/l)	4.5	3.0	13.8	< 0.2
NH_3 – sum (mg/l)	1.5	1.0	19.0	< 0.2
Flow (mgd)	2.0		1.2	

Mike Nixon, Water and Wastewater Superintendent
City of Lancaster
mnixon@ci.lancaster.oh.us

Tom Bulcher, Associate Vice President
ARCADIS US, Inc.
tom.bulcher@arcadis-us.com



Lancaster Schematic - Operations and Maintenance Pollution Control

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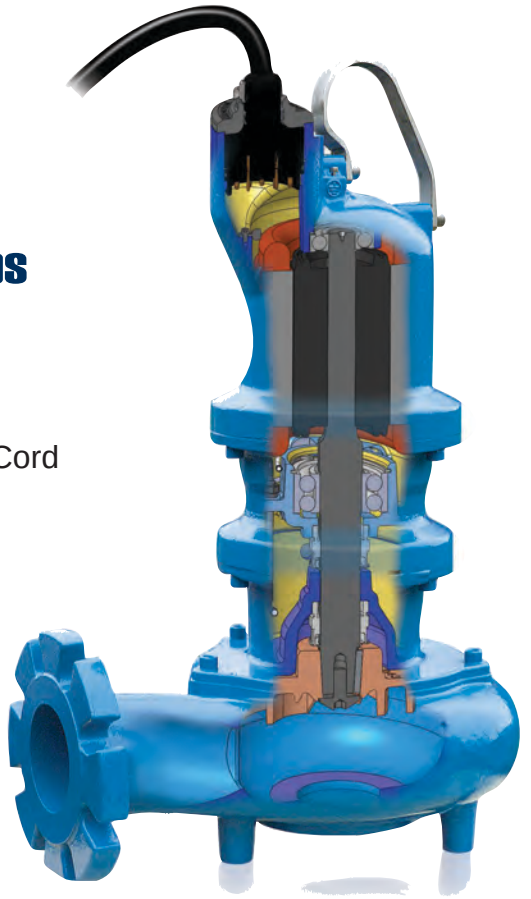

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FREMONT WATER POLLUTION CONTROL CENTER PLANT EXPANSION FOR NUTRIENT REMOVAL AND WET WEATHER FLOW TREATMENT

by Jeff Lamson, Superintendent, Fremont WPCC

The Fremont Water Pollution Control Center

Sewers were first installed in Fremont in the late 1800s and flowed directly to the Sandusky River. From 1946 to 1949, two main interceptor sewers were installed that flowed to a new treatment facility designed for an average flow of 3.5 MGD. The facility had a grit removal channel, coarse bar screens, two comminutors and three raw sewage pumps that pumped sewage to a primary clarifier. Sewage then flowed by gravity to three trickling filters and then to a final clarifier. The original plant had two anaerobic digesters, which are still in operation. Sludge was dried in glass-enclosed sludge drying beds. The original trickling filters and final clarifier have since been converted to sludge holding tanks. The original plant also consisted of an administration building that was remodeled in 1988.

The first major upgrade to the facility occurred in 1964. At this time a garage with maintenance facilities was added on to the west end of the Administration Building. A pre-aeration facility with an aerated grit tank and grit removal system was added. A new main sewer was installed in 1964 to service the area north of town. A second primary clarifier was constructed during this upgrade as well as the activated sludge system with six aeration tanks and two new secondary clarifiers. Also added was a filter building for vacuum filtration of sludge. The upgrades to the facility increased the secondary treatment capacity to an average flow of 7 MGD with a peak of 13.75 MGD.

In 1976 two 350 HP Hoffman blowers were installed to provide additional air capacity to the aeration basins. At this time sludge filter presses were installed and the sludge drying beds were removed. These presses were removed in 1980 and a sludge loading station was added to load tanker trucks for liquid land application, which is still the method of sludge disposal utilized at the facility today.

The next major improvements were completed at the facility in 1988. At this time a sludge thickener, two new secondary clarifiers and tertiary sand filters were added. The Administration building was also remodeled during this facility upgrade.

The current population of the area serviced by the Fremont WPCC is approximately 25,384. The current average daily flow is approximately 6 MGD. The design peak flow is 13.75 MGD through secondary treatment. However, when the activated sludge system was installed in 1964 no improvements were made to the raw sewage pumping capacity, which at the time was approximately 7.56 MGD. In 1964 the only increase in flow realized was from the installation of the North Street Sewer that amounted to a maximum increase in flow of approximately 4.0 MGD. The actual peak daily flow we are currently able to get through the plant is approximately 10.5 MGD based on pump capacities. NPDES Permit loadings are based on an average design flow of 7.6 MGD. The plant had been a Class 3 facility until June 1, 2012 when, in the most current permit, Ohio EPA reclassified the facility as a Class 4 facility.

The facility is currently under construction for improvements, in part, to meet the goals of our Combined Sewer System Long Term Control Plan (CSSLTCP). The improvements will include new head-works, a new secondary treatment system, new disinfection facilities and a new effluent pumping station to bring the peak flow of the facility up to 24 MGD. An Autothermal Thermophilic Aerobic Digestion (ATAD) process will also be installed by renovating parts of the current facility.

The current facility consists of the following treatment: Preliminary treatment of coarse bar screens and aerated grit removal. Primary treatment consists of two primary clarifiers. Secondary treatment consists of an activated sludge system operated in a step feed mode and three secondary clarifiers. Sodium hypochlorite provides disinfection with sodium bisulfite being used for de-chlorination. Tertiary treatment consists of four traveling bridge sand filters. Biosolids are treated in two anaerobic digesters with the preferred disposal method being liquid land application on farm land with pressing and landfilling as back-up.

The City received the requirement to develop a Combined Sewer System Long Term Control Plan (CSSLTCP) as part of its NPDES permit in 2002. The original approach of the City's

contracted engineering firm was the demonstrative approach. After a meeting in December of 2004 with OEPA, the City was informed that this approach was not acceptable and would not be approved. The CSSLTCP was due by February of 2005 so the firm quickly developed a plan that would utilize our existing CSO holding pond as a treatment area to give the CSO volume basically primary treatment, with large solids removal at the various sites of the CSO discharges and chlorination/de-chlorination prior to discharge to the receiving stream. Problems with this plan were that the pond was not designed to be a treatment device and would fill with solids and require more frequent cleaning. Also, no flow studies were conducted to determine whether the proposed plan would result in the needed reduction in CSOs. The OEPA reviewed the plan for several months and a meeting was held with OEPA Division of Surface Water's Wet Weather Workgroup in December of 2005. In a letter dated June 29, 2006 the OEPA listed 25 deficiencies and concerns with the submitted CSSLTCP. The City Administration decided, at that time, to cut ties with the engineering firm that developed the plan and put out a Request For Qualifications (RFQ) for other engineering firms to basically start the process over.

Based on the City's experience up to this point in developing a CSSLTCP and the comments made by OEPA, it was becoming clear that a more involved approach was needed to meet OEPA's requirements. One of OEPA's comments was "Under the existing sewer rates it appears that a more ambitious schedule is affordable", making it clear that OEPA had a certain expectation as to the amount of money the City should spend to meet the CSSLTCP requirements. This presented a dilemma for the City as there were issues at the WPCC, due to its age, that needed to be addressed and these were also going to require a monetary investment. For years the WPCC staff had been working toward making improvements to the biosolids process, but had been unable to secure funding from the City Administration. There were also concerns about structures in the facility that were approaching 45 and 60 years of age. Having limited funds and needs that reached beyond the CSSLTCP, it was imperative that the City develop a plan that addressed both the concerns at the WPCC while also meeting the requirements of the CSSLTCP. With this knowledge the City solicited RFQs for a firm to develop a CSSLTCP and a Master Plan for the WPCC. In late 2006 the City selected a new engineering firm to perform these services.

The newly hired engineering firm investigated three alternatives that were combinations of sewer separation, conveyance to the WPCC for conventional treatment and high rate wet weather treatment.

- Alternative 1
  - Separate sewers at Pine St. (east side) and west side of town
  - Plant improvements to increase conventional capacity to 24 MGD
  - Capital Cost $106 million
  - Present Worth Cost $98 million
- Alternative 2
  - Partial separation of west side sewers
  - Separate Pine St. (east side)
  - 24 MGD wet weather treatment at WPCC site
  - Conventional treatment stays at 9.2 MGD
  - Capital Cost $76 million
  - Present Worth Cost $74 million
- Alternative 3
  - Convey wet weather flow from west side to plant site
  - Separate Pine St. (east side)
  - 44 MGD wet weather treatment at WPCC site
  - Conventional treatment stays at 9.2 MGD
  - Capital Cost $60 million
  - Present Worth Cost $67 million

Analysis of the three alternatives revealed that as sewer separation increased, so did the cost of the project.

Based on these alternatives, the firm developed a new CSSLTCP and submitted it to OEPA on December 27, 2007. The submitted CSSLTCP was a 20-year plan and listed Alternative 3 as the best choice for the City. The OEPA made proposed modifications to the City's NPDES permit based on the submitted CSSLTCP, but it contained language that the City opposed. The City filed an adjudication request with OEPA to prevent the proposed permit modification from being implemented. Throughout 2009 and early 2010 this issue was debated between the City, OEPA, the City's engineering firm, and the City's environmental attorney. In late winter 2010 the adjudication issue was settled and language was inserted into the permit that was acceptable to all. A modified NPDES permit was issued with an effective date of May 1, 2010 and a requirement for the City to conduct a No Feasible Alternative (NFA) study. This study required the City to determine what volume of water the City could afford to treat with biological treatment. This NFA study was due to the OEPA by November 1, 2010. The City's engineering firm submitted the NFA on the City's behalf on October 28, 2010. The recommendations contained in the NFA included improving the existing secondary treatment system at the WPCC to operate at a peak daily flow of 18 MGD and to construct a 33 MGD high rate wet weather treatment facility. Also recommended was to build influent pumping, preliminary treatment, disinfection and effluent pumping facilities that would support a peak plant flow of 51 MGD. Total cost for these improvements with the common projects listed in the original CSSLTCP was estimated at $78.4 million, an increase of $15.4 million from the original CSSLTCP. The portion of that cost for improvements at the WPCC was $52.8 million. The OEPA reviewed the NFA report and noted that the cost to make improvements at the WPCC that would enable treatment up to 24 MGD was $54.5 million and felt the additional 6 MGD in treatment warranted the extra $1.7 million dollars and that the City could afford the extra cost based on financial evaluations of the City's median household income. The OEPA also felt the City should build head-works and high rate treatment facilities that would enable the WPCC to treat a total of 60 MGD, since planned conveyance improvements would allow that volume of water to reach the WPCC in the future.

Discussions took place between the City and the OEPA throughout 2011 in which the City voiced concerns as to the escalating

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requirements and associated costs being suggested by OEPA. Also of concern was whether it was wise to invest this much money in a facility that is approaching 50 years of age and has known structural deficiencies. To treat 24 MGD with the current facility, even with improvements, might not be possible and would require additional studies.

The engineering firm re-evaluated the project based on OEPA's comments requiring increased treatment capacity. The cost to build a new 24 MGD oxidation ditch and 36 MGD high rate wet weather treatment facility was projected to be $60.3 million, compared to $54.5 million to renovate the current facility. However, maintenance and operating costs would be lower for a new facility and taking that into consideration the present worth cost for a new facility ($91.4 million) was less than the present worth cost of upgrading the current facility ($92.8 million). Figuring in the cost of a new facility the CSSLTCP total cost had now risen to $94.4 million for all projects listed, an increase of $31.4 million from the original cost in the CSSLTCP submitted in 2007.

The City had its engineering firm re-evaluate the rate structure to determine whether the existing structure could support a $94.4 million project. In anticipation of the upcoming projects the City implemented a 16% increase in 2008 with 13% increases scheduled thru 2014. It has been projected that there will be additional 4.6% increases thru 2028. The annual utility service charge based on 1037 cf/mo in 2007 was $286. In 2028 with the projected increases, this cost will be $1,370. In addition to the rate increase a service fee was added for every meter a user had in service. The fee is $6 per month for a 5/8" meter and increases with meter size up to $1433.88 per month for a 12" meter.

The City presented a proposal to OEPA to build a new treatment facility if the OEPA would delay the requirement to build the high rate wet weather treatment facility. One reason being that there is currently not enough space at the site to build both. If the OEPA allowed the City to build a new facility, the old plant could continue to operate until the new was operational, at which time the City could then demo part of the old facility to build a high rate wet weather treatment facility if needed. The City requested a period of two years to evaluate the performance of the new secondary treatment facility and its effect on CSOs and size a high rate wet weather treatment facility appropriately. By spreading out these projects the City would be better able to afford them. OEPA and the City verbally agreed to this proposal.

The City sent out Requests For Qualifications (RFQs) on October 3, 2011 for design of the new facility. The RFQ submittals were due by October 31, 2011 and six firms submitted. Due to the election of a new Mayor in November, the selection process was put on hold until the new Administration took office. The new Mayor formed a committee of City personnel to guide the plant project. The committee reviewed the submittals from the RFQ and chose four engineering firms to conduct interviews with during February of 2012. After conducting the interviews, MWH Americas was chosen as the design engineer.

The City has a very aggressive schedule it must meet and this was one of the deciding factors in choosing MWH Americas as they had a plan on how to meet that schedule. The City currently has a contract with MWH Americas to address the new treatment facility, the new dewatering facility and to look at the flow monitoring study and determine if some of the collection system improvements can be completed sooner than required in order to reduce or eliminate the high rate wet weather treatment facility currently required to be operational by December 31, 2022.

The City has been fortunate to keep the CSSLTCP as a compliance schedule in its NPDES permit and avoid any enforcement action. This will allow the City to negotiate items of the compliance schedule at a minimum each time the permit comes up for renewal every five years. As the City moves forward and experiences progress in removing CSOs it will be able to negotiate items in the schedule that may save the citizens money.

The head-works of the new facility will be built with space available for additional pumps, screens and grit removal equipment to bring the total treatment capabilities up to 60 MGD, should that be required. The secondary treatment facility has been chosen and placed on the property in a manner such that another treatment train can be built if needed in the future. This may be a viable alternative to building a high rate wet weather treatment facility. Also being looked at is the possibility of using the existing aeration tanks as equalization basins, possibly eliminating the need to build a high rate wet weather treatment facility. Using the basins, however, will depend on the structural integrity of the tanks.

When deciding what treatment process to implement for the new facility several things were considered. First, the City wanted to build a facility that would meet the current needs of the community, but also position it well for future growth and economic development. The City also looked at possible future regulations that were discussed at a meeting with OEPA in July of 2012. Knowing that Lake Erie has been struggling with algal blooms and the fact that the City is in the Lake Erie watershed, it was decided to design a system that could perform biological nutrient removal (BNR). The City currently has total phosphorus limits in its NPDES permit and suspects those may tighten and that it may eventually have total nitrogen limits. Our community's economy is heavily influenced by Lake Erie and therefore, even if the City is not given more stringent limits, being able to produce a higher quality effluent is the environmentally correct action to take and will ultimately benefit the community. The process being designed is an anaerobic/anoxic/oxic (A2O) process.

The City decided to take advantage of the new Ohio Construction Reform laws for the plant project. The public construction changes contained in House Bill 153 were signed by Governor Kasich on June 30, 2011 and became effective April 1, 2012. These changes allow public projects to be delivered by alternative methods other than the traditional design-bid-build method. One reason the City decided to look at alternative delivery methods for this project is the tight time schedule. Another reason that the City chose to investigate a delivery method other than design-bid-build was its bad experience with that method during a recent reservoir project. The City decided to pursue the method of hiring a Construction Manager At Risk (CMAR) for construction of our project. Some of the advantages the City felt it would benefit from by choosing this method are as follows:

- CMAR is brought on board before 100% design giving the following benefits

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  - Review design as it is in progress with design engineer, thereby reducing change orders and problems with construction
  - Long lead time items can be ordered earlier, expediting the project
  - Sequencing can be determined earlier, expediting the project
  - Site work can begin before design is complete, expediting the project
- CMAR holds subcontracts and takes on the risk for cost overruns
- More flexibility in how subcontractors and equipment are secured
- Allows for open-book guaranteed maximum price

In June 2012 the City put out an RFQ for a CMAR and received two submittals. Both firms that submitted RFQs were asked by the City to submit proposals. During the process of developing the request for qualifications and proposals the committee reviewed and utilized information and documents provided on the State Architects website. After the proposals were submitted the City conducted interviews with both firms and ultimately selected MWH Constructors as the CMAR. Their experience, well defined construction procedures, safety record, reputation, and positive information provided by referrals were reasons for their selection.

MWH Constructors organized a partnering meeting that was an all day retreat with representatives from the City, MWH Americas, and MWH Constructors. The focal point of the retreat was to develop methods to resolve conflicts during the construction process at the lowest possible level. We identified personnel from all the parties and defined their duties and who their counterparts were in the other organizations. The group that met for the partnering meeting will continue to meet on a quarterly basis to track the progress of the project. There will also be daily, weekly, and monthly meetings with different parties involved in the project. This emphasis on communication was another critical factor in the selection of MWH Constructors as the CMAR.

City representatives have taken every opportunity to visit other facilities to look at processes, equipment, and to talk to other operators. To date facilities have been visited in Newark, Ohio; Glendale Heights, Illinois; Peru, Indiana; Colorado; Steubenville, Ohio as well as several local facilities that have hosted recent Northwest Ohio Water Environment Association section meetings. We will continue to visit and talk to operators at other facilities as we move forward, benefitting from their knowledge and experience.

Jeff Lamson, Superintendent
Fremont WPCC
jslamson@fremontohio.org

2013 & 2014 OWEA Membership Rates

Rates include membership in the Ohio Water Environment Association and the Water Environment Federation. The WEF portion of two rates are increasing for 2014. OWEA has not raised the Ohio Membership Association portion of the rates.

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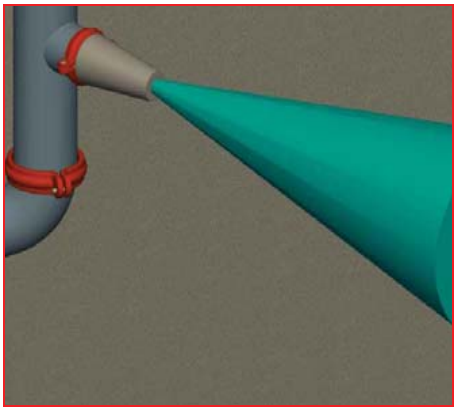
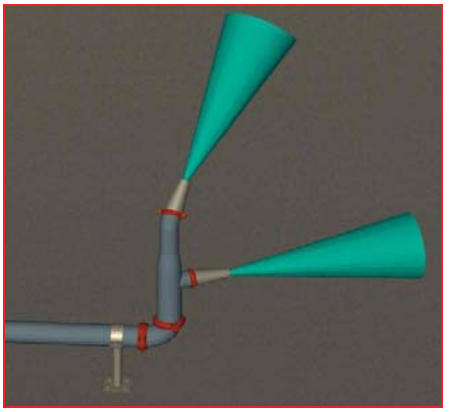
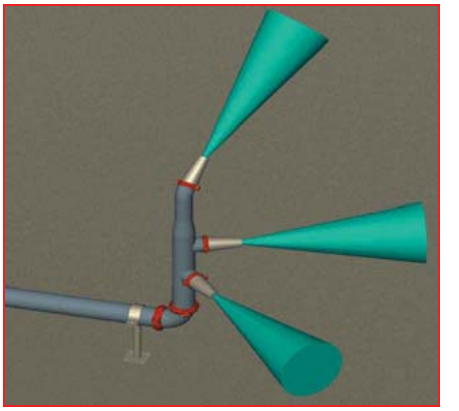
MIXING AND AERATION IN pH CONTROL TANK



SINGLE ZONE MIXING FOR SHALLOW TANKS



DOUBLE ZONE MIXING FOR DEEP TANKS



TRIPLE ZONE MIXING FOR VERY DEEP TANKS

HYDRAULIC SLUDGE MIXING APPLICATIONS

- Digester mixing
- Mixing anaerobic digesters
- Sludge holding tanks
- Aerobic Digester Mixing
- Equalization tanks
- Variable liquid level tanks

MIXING SYSTEMS, INC.

- Prefered provider of submerged jet aeration and jet mixing systems
- Single, double and triple zone mixing
- No rotating equipment in digesters

HYDRAULIC SLUDGE MIXING BENEFITS

- Energy efficient
- Stainless steel nozzles
- Nozzles hardened to a Brinell hardness of 450+
- Chopper pumps
- CFD mixing analysis

MIXING SYSTEMS, INC.

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Ohio Water Environment Association
Preserving & Enhancing Ohio's Water Environment

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