Buckeye Bulletin

Ohio Water Environment Association | Volume 84:3 | Issue 3 2011

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

www.ohiowea.org

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September 28 & 29, 2011
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For further information on submitting articles or advertising, please contact our organization at:

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Contact Hour Information: OWEA training is submitted for contact hour approval. Free Webinars are not submitted for contact hour approval at this time.

Check out OWEA's website *ohiowea.org* for a complete listing of OWEA approved training.

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Get Involved

Join a Committee Today

The Ohio Water Environment Association has 25+ committees with 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

Contact Hour Tracking
The Ohio Water Environment Association has tested the barcode scanning process at the 2011 Collections Workshop and Annual Conference. Back up paper forms are still being used for verification. Soon you will be able to retrieve your training record online at *ohiowea.org*. Watch for future details.

Ohio Science Day Judges
The 2011 Ohio Science Day and Stockholm Junior Water Prize Judging Team reviewed projects and papers by Ohio's brightest young scientists on a variety of water quality projects. See the results of this year's judging on page 13.

2011 Ohio Science Day Judges Dave Stewart, Dan Markowitz, Judi Henrich, and John Rogers

Summer Intern Amit Agrawal
Amit Agrawal, student at Otterbein, is serving as a summer intern at OWEA. Amit came on board just prior to the 2011 Annual Conference and has assisted with pre and post conference tasks, contact hour verification, and the Buckeye Bulletin. He has also assisted with upgrades to OWEA computer hardware, software, and network setup.

OWEA Office Assistant Position Available
OWEA is accepting applications for a part-time office assistant to help with bookkeeping, database and event management, website maintenance, Buckeye Bulletin preparation, and association administration. View the job posting at *http://www.ohiowea.org/career_opportunities.php.* Keith Justice, who temporarily filled this position, has moved on to a full time position with another company. We'll miss Keith, who provided an energetic attention to detail in all areas of OWEA operations, and wish him well in his future career.

Submit your water quality question to the experts at ***www.ohiowea.org***

and view other "Ask the Expert" questions and responses

2011 Calendar of Events

August 2011

11	OWEA Free Lunchtime Webinar
17	Executive Committee Meeting
19	NESOWEA LAC Training

September 2011

8	OWEA Free Lunchtime Webinar
14	OWEA Mega Meeting
15	SW Collection System Hands-on Workshop
20-22	Farm Science Review (Biosolids Booth)
22	SE Collection System Hands-on Workshop
23	Lab Certification Exam Applications Due
28-29	Plant Ops/Lab Analysts Workshop

October 2011

1	NESOWEA Operator Certifcation Review
6	NW Collection System Hands-on Workshop
6	OWEA Free Lunchtime Webinar
13	NE Collection System Hands-on Workshop
14	SWOWEA Operator Education Day
15-19	WEFTEC.11 in Los Angeles
16	Ohio Mixer at WEFTEC.11
21	Lab Certification Exams

November 2011

16	Executive Committee Meeting
17	SWOWEA Plant Operations Seminar and Section Meeting

December 2011

8	Biosolids Workshop

Please send all calendar updates to *info@ohiowea.org*. Your event will be noted in the Buckeye Bulletin and on OWEA's online calendar at *www.ohiowea.org.*

President's Message

Douglas Clark
OWEA President

While thinking about what to write in my first President's message it became clear to me that I should share a few things about myself that you may or may not know.

I am an extreme introvert, yes that's right, an extreme introvert! Through the years of progression in my career I have taken three of the professional development courses, the ones where you spend half of the morning taking a self-assessment test and then the other half analyzing it (I hate those things!) Over a span of 12 years and 3 different assessment styles, they all came back the same . . . as far as the scale allows for introverts. Believe it or not, conferences, workshops, social hours, or any type of event that has more than 5 or 6 people in it are very challenging for me and I work extremely hard to make it look like I have not a care in the world.

I have no formal education. In fact, while in high school I attended a vocational school for accounting and the rest has been the school of hard knocks. Due to this, I typically feel inferior to my peers during conversations that are technical in nature and writing an article such as this is extremely difficult for me.

I am not comfortable being President of the Ohio Water Environment Association. Because of the previous two paragraphs, this just stands to reason.

So what does all of this have to do with OWEA and the President's message??? EVERYTHING! As trying as all of this has been (and still is) for me, someone took the time to encourage me to take that first baby step and become involved.

I remember my very first meeting like it was yesterday. It was at the Perrysburg WWTP; Jon Eckel, Kelly Shupe, and Elizabeth Wick reached out to me and showed me what a great organization this was to be involved with, so I went out of my comfort zone and took the first baby step and became a member of OWEA.

Then I decided to attend a Section Executive Committee meeting and they happened to be holding elections. At that time no one was interested in becoming Secretary of the Section. All eyes were on me, smiling and saying you should do it, we will help, and all those types of things, so I did. Once again there was encouragement to participate and again, going out of my comfort zone, I took another baby step.

After going through the Chairs at the Section level, our section (Northwest) was in need of a Delegate. Once again people that I have met, and have grown to know, encouraged me to become a Delegate and once again I stepped out of my comfort zone, another baby step.

After serving as Delegate I did have the opportunity to bow out and not become vice-president. Once again, through encouragement of others, I stepped out of my comfort zone, took another baby step and here I am writing this President's message.

I share this story with you for numerous reasons:

Encouragement: For those who are active (no matter what level) in OWEA, please reach out to those who are not active and encourage them to participate in this organization. Sometimes all it takes is a smile and gentle nudge, sometimes it takes a little more, sometimes it won't work at all, but we still need to try.

Don't feel inferior to others: We all have something to offer! Once you take that first baby step and participate, you will find that you end up teaching people as much as they teach you. This is just how life is. When you participate you begin dialogue, with dialogue comes the exchange of ideas, with the exchange of ideas you teach and are taught.

Baby steps: If you happen to be a member who is not active, take a baby step and participate. I am not asking you to become the President of OWEA but once you become active you may want to, who knows? What I am asking you is to take your first baby step, possibly help out with a section meeting, maybe give a small presentation, offer to become a committee member on a

committee of your choice. Whatever the case may be, just take that first baby step. Once you start participating you will quickly find out that the rewards are at least a ten-fold of the commitment!

The Ohio Water Environment Association and industry as a whole will survive, that is in our nature. But for OWEA and our industry as a whole to be sustainable we need you! In this day and age of doing more with less, OWEA is becoming a much more needed and cost effective organization. OWEA is financially sound, we have the greatest minds in the industry right here in our organization, and we have resources in every facet of the industry right here at our finger tips. All we need is you!

I encourage, no I challenge, each of you to become active. Offer encouragement to members, bring a nonmember to a meeting to show them what OWEA has to offer, take a baby step and go just outside of your comfort zone. Don't feel like you have nothing to offer or you are inferior to your peers. I say all of these things because this is what has helped me get beyond just surviving as a "wastewater guy" to become a thriving member of an organization that has everything needed to sustain our profession and industry!

Doug Clark
OWEA President
douglas.clark@bgohio.org
WPC Superintendant, City of Bowling Green

MINUTES OF THE 2011 OWEA ANNUAL BUSINESS MEETING

The 86th Annual Meeting
The Kalahari Resort and Convention Center, Sandusky, Ohio.
June 21, 2011

President Kocarek called the meeting to order at 1:34 pm. .

Items for approval were the 2010 Annual Business Meeting minutes. Jane Winkler, Secretary-Treasurer, reported that the minutes were published in the Fall 2010 issue of the Buckeye Bulletin. Copies of the minutes were available. Dianne Sumego made a motion to approve the minutes, with a second by Marlay Price. Motion carried. Jane Winkler, Secretary Treasurer, gave the Treasurer's report. A motion to approve the report was made by Kim Riddell and seconded by Leon Smith. The motion passed.

Section reports were given. Mike Welke gave the Northeast Section report; Kim Riddell reported for the Northwest Section; Mike Frommer, reporting for Steve Elliott, represented the Southeast Section; and Jeff Olsen presented the Southwest Section report. Written reports were submitted for the official minutes. Each outgoing section President was presented a certificate of appreciation for their service by President Kocarek.

WEF Board of Trustee member, Sandra Ralston, offered greetings from WEF. Sandra commented on the Strategic Planning progress, WEF's work on joint opportunities with AWWA, membership strategies and the need for training at the MA level.

Standing/Ad Hoc Committee Reports - Committee chairs were permitted to give brief updates on their committee's activities. Written reports were submitted for the minutes.

Items for Voting-
Nominations and Elections - Dale Kocarek, for Phil Anderson, presented the following names for the 2011-2012 officer positions: President - Doug Clark, President Elect - Tom Angelo, Secretary-Treasurer - Jane Winkler, and Vice President - Dan Sullivan. Dale Kocarek will serve on the executive committee as Past President. Jim Johnson motioned to accept the nominations as presented, seconded by Dianne Sumego. Motion carried.

OWEA had received letters of support from the Southwest Section for the appointment of Jamie Gellner as the SW delegate and for Dan Sullivan to the position of Vice-President.

Announcements - Marlay Price reported that he has been appointed as the AWWA Ad Hoc Chair to investigate presenting a joint OWEA-AWWA conference.

A moment of silence was held for deceased members.

President Kocarek adjourned the meeting at 2:42 pm.

Submitted by Jane Winkler
Secretary-Treasurer
Ohio Water Environment Association

WEF DELEGATES' REPORT

WEF Delegate Report

Sandra Ralston attended the OWEA 2011 Annual Conference as our WEF representative in June. Sandra is currently a member of the 2010-2011 Board of Trustees for the WEF. However, since our last Delegate Report in the Buckeye Bulletin, the House of Delegates received notice that Sandra has been nominated as the next WEF Vice President. As reported by the WEF Nominating Committee "Sandra Ralston possesses extensive experience in various leadership positions in the Water Environment Federation and the Indiana Water Environment Association." Sandra's confirmation as our Vice President will be voted on by the HOD at the upcoming WEFTEC in Los Angeles, California in October.

WEF Strategic Planning

As mentioned in our May Delegate Report, WEF is undergoing a strategic planning process to ensure that the organization moves into the future in the best possible way. A survey was available for members to fill out and express their recommendations and concerns about WEF and the future of our industry and profession. The survey submission process ended June 10, 2011 and we are currently awaiting the results. We thank those members that took the time to submit a survey.

Representation of Member Associations in the HOD Work Group

The mission of this work group is:

- Review current policy established by the Constitution and Bylaws on the representation of Member Associations (MA) in the House of Delegates
- Make recommendations for ways to better represent the needs, wants and desires of Member Associations to WEF
- Determine better ways for the Delegates to represent WEF to the MAs by defining and clarifying the delegate role and the MA role in selection of delegates.

The work group was tasked with examining the HOD representation of those MAs with a WEF membership of over 1000 members (OWEA membership is >1,800). Any recommendation that comes from this group will have an impact on the entire HOD. For that reason, the work group developed a survey for the MA to voice their opinions. The OWEA Executive Committee (EC) discussed the survey and made comments and returned it to the work group.

The survey presented two scenarios. The first would give OWEA three Delegates and larger MAs up to four, the other scenario would give OWEA four and larger MAs up to six. OWEA currently has the right to have two Delegates. The EC believes that more than 4 Delegates is excessive and strongly disagreed with a MA having as many as six delegates. We are awaiting the announcement of the results of the survey. Once a recommendation comes from the work group it has to be voted on by the House of Delegates and may become a recommendation to the Board of Trustees.

WEF Operator Certification and Training Summit

On Thursday and Friday, June 23 – 24, 2011, Kim Riddell and Dianne Sumego attended the Operator Certification and Training Summit hosted by WEF in Alexandria, VA. This meeting came out of WEF's Operator Initiative which was launched earlier in 2011. Over the years, there have been discussions about how WEF and its member associations (MAs) can effectively support wastewater system operators and help raise their visibility as frontline public health professionals. In recent months, the need for leadership and collaboration in this effort has become increasingly clear. Due to budget cuts, several states are struggling to maintain their operator certification programs – some have even considered eliminating them altogether as there is no federal requirement for wastewater professionals to be certified. This meeting brought together representatives from many MAs with representatives from the USEPA, Rural Water, AWWA, WEF, and other organizations who collectively are all concerned with operator certification, training and professional recognition.

The meeting consisted of several presentations on such topics as WEF's position statement on Wastewater Operations Certification and Training, a Comparison of Wastewater Operator Certification Program State Requirements, How Certification is Handled by Other Professions, Drinking Water Operators, and Funding Alternatives for Operator Certification Programs. Then a large portion of the meeting was spent in break-out sessions discussing three main topics – Strategies for Sustainable Certification, National Model for Minimum Standards for Operator Certification, and Nationally Recognized Professional Designation. Many objectives and initiatives were developed in these breakout sessions. It is clear that these are important issues that affect all of us in this profession and that continued discussions among key groups are imperative to continuing to develop and train our operators who work hard every day to treat wastewater to the highest standard and maintain our nations lakes, rivers, and streams.

WEF Committee Communication Webcast – August 17th

WEF is offering a complimentary WEBCAST on WEF and MA Committee Communications' Initiative for Member Associations' Board and Committee Leaders and WEF Committee Leaders on August 17th, 1:30 – 2:30 pm EDT. This will provide a great way to learn more about WEF Committees and how to get involved on the national level, committee mapping, navigating the WEF MA resource website, quick links to MA Resources, and more. The Committee Leadership Council and the House of Delegate WEF – MA Committee Relationship Workgroup have worked together to provide this free webcast to our MA leaders and to our members who are considering committee involvement on the WEF or MA level.

Water Environment Federation®
Preserving & Enhancing the Global Water Environment

Phil Anderson
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Kim Riddell
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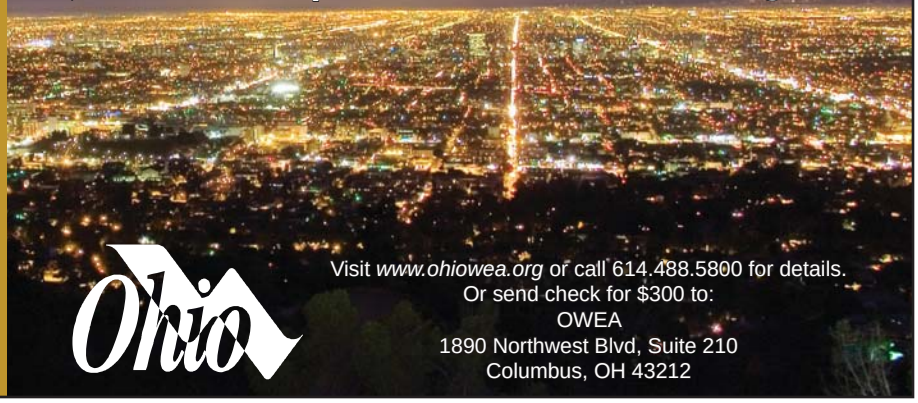
WEFTEC 2011 - Los Angeles

Sunday, October 16, 2011
6:00 - 7:30 p.m.
Diamond Ballroom Salons 6-8
JW Marriott at L.A. Live

Come Say "hi" at the

Ohio Mixer

Join OWEA as a Sponsor of this annual networking event



Ohio

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PERSPECTIVES OF A FORMER PRESIDENT

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

This is my first article since relinquishing the title of President at the OWEA 2011 Annual Conference on June 22, 2011. Currently, I serve as the organization's Past President, which is an actual title on the OWEA Executive Committee, and signifies this is my final year of service on the Board.

I confess that I loved serving as OWEA President, and wish that I could have continued for a second year. But, alas, I could not, and this is not necessarily bad. For you see, the level of effort required to do the job of President as I wanted, a second year would have demanded more energy that I could have sustained. In addition to the demands of my job as an engineering consultant my OWEA/WEF Committee work has increased since June 2010. In addition to serving as the Chair of the OWEA Government Affairs Committee (GAC), I am a member of the WEF Government Affairs Committee, and a member of the OWEA Publications, Publicity, Strategic Planning, and Small Flows Committees.

Given that the term of President is so short (one year), my advice to our current OWEA President Doug Clark, is for him to view the senior leadership as a unified body of three individuals or Leadership Team. For the 2011-2012 year, our Leadership Team consists of the following individuals:

Doug Clark – President
Tom Angelo – President-Elect
Dan Sullivan – Vice President

I believe that it is imperative for our Leadership Team to communicate regularly, and often, to transfer as much knowledge as is possible within its ranks, and the rest of the Executive Committee. I was pleased to see this already taking effect at the conference between Doug, Tom, and Dan through spirited discussions on a myriad of topics. This unity, which is being formed now, will guarantee that the continuity of thoughts, initiatives, ideas, programs, imperative to the success of OWEA, will continue into the future.

My role of Past President is mostly that of a senior advisor to the Leadership Team. I have pledged to assist them achieve their goals as successfully as is possible. President-Elect Angelo has already asked me to prepare a history of OWEA, including past issues, and challenges, and where we stand today. I was pleased to accept this assignment.

My focus and direction as OWEA President was to evoke visionary idealism while concurrently directing other efforts to enhance our existing operational practices. While posterity will be the ultimate judge if I was a good or effective president, I was pleased to hear many provide comment that my term was successful. Tom Angelo felt that I helped steer our "ship" (that is the OWEA organization) on a new course, and this was gratifying to hear.

However, any credit earned by me as President must be shared by others who helped me along the way. Key groups and individuals deserving much of the credit for success in my term include but are not limited to the OWEA Executive Committee of 2010-2011; Steve Morrison and Dianne Sumego (former Board members who left in 2010); Section Presidents Kim Riddell, Mike Welke, Steve Elliott, and Jeff Olsen; Committee Chairs, Co-Chairs, and Vice Chairs. Last but not least, I wish to thank Judi Henrich and OWEA staff for being so efficient in the office and behind the scenes. This permitted me to focus on doing many of the things that I like doing best, which include planning, writing, educating, and outreach.

Also, I wish to congratulate Mark Livengood for his election to the Water Environment Federation House of Delegates. This election ensures that Mark can remain active on the OWEA Executive Committee for a three year term of 2011-2014. We are fortunate to have Mark continue his storied tenure of service to the organization.

In closing, I have provided my Farewell Address as it expresses my beliefs and passions on the importance of OWEA, WEF, and the world around us. I hope that you will enjoy reading it as much as I enjoyed writing and delivering it.

Thank You,

Dale E. Kocarek, PE, BCEE
Past President
The Ohio Water Environment Association

FAREWELL PRESIDENTIAL ADDRESS

Dale E. Kocarek, PE, BCEE
85th President of the Ohio Water Environment Association
June 22, 2011

Dear Friends,

Five decades ago, US President John F. Kennedy declared to citizens of the United States of America:

"Ask not what your Country can do for you, but what you can do for your Country . . . Ask not what you can do can do for your Country, but what we together can do for the freedom of mankind."

John F. Kennedy (1917-1963)
35th President of the United States
Presidential Inaugural Address, January 21, 1961, Washington DC

Today, I am completing my term of service as the 85th President of the Ohio Water Environment Association (OWEA). I believe that President Kennedy's words are as true today as they were when spoken on that cold and snowy January day in 1961. To those of you who live this creed by example, and calling; dedicating your lives to the protection of human health and water quality; and thus elevating the status of the human condition here and abroad, I offer my gratitude. You truly understand what it means to be citizens of the world.

Let me make one thing perfectly clear: organizations such as OWEA exist only with an engaged, enthusiastic volunteer force in all facets of our organization. As leaders, it is our job to tirelessly and relentlessly encourage, nurture, develop, and empower a

new generation of leadership recognizing the skills and needs of the young and seasoned alike. In doing this, we must always seek to encourage, as people can be fragile and discouraged by the slightest of negative utterances. This is a difficult job, but a worthy calling.

One lesson that I have attempted to learn as President was the art of cultivating greater patience. As someone who is impatient by nature, this has not been easy and is long overdue. In learning this lesson, I came to enjoy working with my Executive Committee, seeking and engaging all, and working with each person as an individual. In this manner, it was my objective to go beyond building consensus to agreement, which is a much higher level of achievement. Governance in this manner is a slow and laborious process. This taught me in the end that patience is a virtue, and the results gained and relationships forged are its truest rewards. The best style of being President of an organization such as OWEA is not like the CEO of a company, but better described as the "first among equals" to borrow a phrase used to describe the cabinet of US President Woodrow Wilson from 1913-1921. President Wilson treated his cabinet members as equals and actively sought their opinions in policy and decision making matters.

At this time in the program it is the tradition of the departing President to extol his or her accomplishments. In doing this, I cannot, nor will not, take credit for gains that have been made in the past year. In borrowing from the spirit of Woodrow Wilson, I view the accomplishments of this organization as not due to one man or one woman but to the larger collective efforts of our Boards, our Sections, our Committees as we worked together to achieve a greater good in a unified effort. For I believe that it is always the greater good – rather than the individual accomplishments – that is what is most enduring and creates lasting legacy.

During the last year, I invoked the use of business case analysis to this organization to identify performance limiting factors. I believe that this approach, as applied through the active deployment of the Governance Committee, was successful, and should be considered as a model for my successors. In addition to identifying critical issues with consequences to the organization, this process helped engage each member of the Executive Committee in work aligned to match individual talents and aptitudes. This in turn helped build unity and confirmed my belief that as a team we can meet any challenge.

Did all of what I wanted to do get accomplished? No. However, many things were accomplished, initiated, or put on the right track. For these, I feel that it is fitting and proper for us to celebrate today. As OWEA moves into the next frontier, I also believe that the active deployment of flexible strategic planning and effective publicity are essential ingredients for future success. For the truth is: there is no such thing as a static organization - it is either up or down. If we fail to be relevant or lose our saltiness as quoted by the Resurrected Christ in the New Testament Book of Revelations, we fail as an organization. To this end, our leaders and champions must not be afraid to push the envelope, improve, explore opportunities with other organizations, and reinvent ourselves where appropriate and necessary so that we may continue to be meaningful, attractive, and sustainable for years to come.

Highlights from the past year include the following:

Governance Committee

The following tasks were undertaken under Governance:

1. Wilo Pump SOP/Insurance
2. Office Computer Systems
3. Staffing and Compensation
4. Sponsorship
5. Financial and Investment Practices
6. Membership Cost/Services
7. Buckeye Bulletin Production
8. Working with Ohio AWWA
9. YP Sponsorship Initiatives

Ad Hoc Committees

I established the following ad-hoc committees:

1. Publicity—to get the word out of who we are!
2. Training and Development—to help coordinate our training programs and identify islands of excellence in our sections and committees
3. Small Flows—to recognize a need, which has long been unrecognized
4. Storm Water Steering Committee (established on May 11, 2011)—to explore working with the Ohio Stormwater Association for our mutual betterment in this growing and highly important area
5. Strategic Planning—to take stock of ourselves and determine where we need to go
6. Ohio AWWA Conference Steering Committee (established on June 20, 2011) to explore the feasibility of a joint conference in 2014

Other Initiatives

Other initiatives that were accomplished this year:

1. Produced high quality webinars by our Utilities Enhancement Committee
2. Initiated Contact Hour Tracking (increased member service)
3. Participated in the AWWA-WEF Fly In to Washington DC to meet with Capitol Hill
4. Working with WEF on the 2011 Disinfection Conference in Cincinnati
5. Participated in the WEFMAX in Louisville
6. Encouraged, directed, and further empowerment the YP Committee
7. Began working with other Member Associations (MAs) and organizations for outreach. Examples are the Ohio AWWA for the Fly In, the Ohio Storm Water Association, and the Columbus Children's Water Festival
8. Re-invented the Public Education Program for school age children

Strategic Planning

I wanted to say a few words about Strategic Planning. Former OWEA President and WEF House of Delegates member Dianne Sumego is leading this task as chair of this committee. One year ago, I identified a number of leading questions for OWEA to consider:

continued on page 12

1. What matters most to us, and are we relevant to our members and industry?
2. Why should someone wish to be an active member?
3. Do we understand who our members are and what matters most to them?
4. What to other MAs do that we don't, and we should be doing?

In the end, I believe that OWEA must:

1. Cultivate and empower our leaders
2. Work to actively recruit future leaders—not based on entitlement but on ability
3. Main stream YPs, because they will be part of the pool of our future leaders
4. Hold onto and recognize our senior leaders with institutional knowledge
5. Enhance and strengthen the value our products and deliverables
6. Continue to increase our profile through effective outreach to the outside world
7. Undertake business case analysis to support prudent decision making and financial stewardship
8. Reach out to other organizations that share our common cause of Clean Water

Moving Ahead

The following considerations warrant attention in moving ahead:

1. The three pillars of OWEA are the Executive Committee, the Sections, and the Committees. Each pillar must be equally balanced on a strong foundation of our members. In doing so, we must adhere to the lessons of Apostle Paul I in I Corinthians 12 that we are members of one body and need each other.
2. It is important for all of us to understand that OWEA is a bottom up rather than a top down organization. Many good organizations are in fact this way. A lot of our best thinking and member services come from our members, our sections, and our committees. This is a strength that we must recognize.
3. Ultimately, I want to see OWEA become more efficient in providing value based training that reconciles training type, need, location, and cost. We are doing a good job, but I feel that we could do better, particularly for vocation based operator training. This is being explored by Strategic Planning.
4. In the future, OWEA must reach out, build relationships with and seek out opportunities to work with nearby MAs on projects and initiatives.
5. We must pay close attention to the Ohio Storm Water Association and other organizations such as the Ohio AWWA for opportunities to work together for the common cause of Clean Water. With this in mind, I established several ad hoc committees this year with the intention of exploring possibilities of working with these organizations.

In Closing

It has been an honor and privilege to be your president this past year. On June 16, 2010, I said that becoming OWEA President was a long time dream. Serving as OWEA President has been a personal growth experience for me in ways that I could not have imagined. For anyone attempting this work with the passion and intent of affecting positive change must be forewarned that the work is not easy, but it is ultimately rewarding.

I am indebted to all of you, my family, and my employer Stantec for providing me with the opportunity to have this experience. Also, thank you for sharing yourselves with me. You are special and a treasure to this organization. At this time my friends, I bid you adieu, which is not goodbye, but until we meet again.

As my term ends, I wish to not pass into oblivion. I hope to continue to write my Kocarek Korner in the Buckeye Bulletin, which is based loosely after the writing style of Benjamin Franklin, and participate in committee work. My recent experience on the AWWA-WEF Fly In to Washington DC inspired me to refine the mission of the Government Affairs Committee to align it more closely with the Ohio AWWA and WEF. But, perhaps the closest description of where I find myself is found in the last stanza of a poem by Robert Frost, *Stopping by Woods on a Snowy Evening*

The woods are lovely, dark, and deep,
But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep.

Robert Frost (1874-1963)
"Stopping by Woods on a Snowy Evening"

About the Author:
Dale E. Kocarek is an Associate with Stantec Consulting Services, Inc. in Columbus, Ohio, the Past President of OWEA, and Chair of the Government Affairs Committee.

dale.kocarek@stantec.com

STOCKHOLM JUNIOR WATER PRIZE EXPERIENCE

by Rachel Yurchisin, Padua Franciscan High School, Ohio Representative at the National SJWP Competition

I can't help but have a smile on my face when I think of my experience in Chicago for the Stockholm Junior Water Prize National Competition. There are so many amazing memories that I will keep in my heart forever. There is not only the competition itself; but there are also friendships that I plan to keep for a long time to come. On the first day of my experience at SJWP, we all participated in a very interesting ice breaker when we played a game of Bingo with interesting facts about ourselves and then had a team building project that required us to use play dough to illustrate how the engineers reversed the flow of the Chicago River to improve sanitation for the city. Afterward, we were entertained by a comic group from Chicago. We then had free time until curfew when we all were able to meet our fellow science companions. We were also introduced to our "coaches", who were our chaperones, and responsible for keeping track of us during our stay in Chicago. Selina was my coach and she was one of the best. She knew how to handle teenagers and let us have fun and socialize with other members of the different groups because friendships were forming fast and time was fleeting.

The next day we went to Millennium Park and Lorie Gardens where we took a tour and we learned more about the history of Chicago. After taking a few group photos, we participated in the actual competition. All of the judges who were present were extremely pleasant and seemed especially interested in everyone's project and the individual. Even though there was a short time that was suggested for a judge to be at a presentation; many of my judges expressed an interest in me as person, my past experiences with science fairs, and my research. After judging, we had an ice cream break which was well deserved by everyone there.

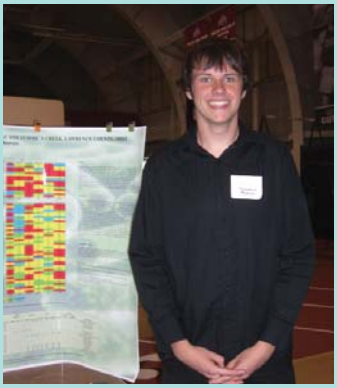
The next day was full of fun and exciting trips for everyone involved with SJWP. We went to the Shedd Aquarium and saw a program that showed how the trainers taught the Beluga Whales from the time they were calves to their current training as adults. We were also able to explore the various exhibits that were present in the Aquarium that I found quite interesting. Although above all, the best part of that day was going to the Field Museum. There are so many amazing exhibits that even if we had the entire day we wouldn't have been able to go through it all. We ate lunch and then set off on a "scavenger hunt" of sorts so that we all got to see at least one or two entire exhibits. After we all completed our hunt, we then set off with our friends to take in as much as we could in the limited amount of time left. I desired to see the animal exhibits. There were some mammals in the collection that I had only seen on the television or read about. It was an amazing experience to see many of these almost "mystical" creatures in real life.

All in all, my entire experience in Chicago was amazing, unforgettable, and a true blessing. I made new friends from all around the United States and I can say that I went to a national science fair for one of the most important resources on our planet - water.

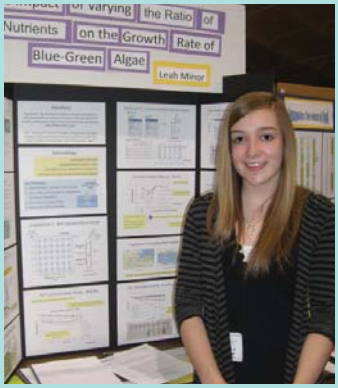
Tom Glover (Sponsor ITT Corp), Rachael Yurchisin, and Matt Bond (WEF President-Elect)

OWEA'S OHIO SCIENCE DAY AWARD WINNERS

Selected May 7, 2011 at The Ohio State University



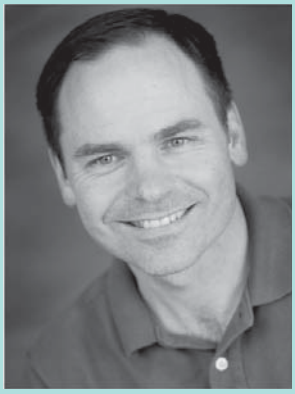
$1000 Scholarship
Mr. Timothy J. Beavers
Grade 11
South Point High School, South Point
Antibiotic resistant bacteria in Burlington Lake and Symme's Creek Lawrence County, Ohio



$500 Award
Ms. Leah Minor
Grade 10
Upper Arlington High School, Upper Arlington
The impact of varying the ratio of nutrients on the growth rate of cyanobacteria (blue-green algae)

$300 Award
Ms. Courtney Bush
Grade 8
Incarnate Word Academy, Parma Heights
Does the amount of Escherichia coli (E. coli) change with location and rainfall along the Rocky River?

$200 Award
Mr. Mitchell K. Pallaki
Grade 7
St Raphael, Bay Village
The Best Oil Absorbent Clean-up Analysis



NE SECTION

Ed Haller, President

NESOWEA President Ed Haller serves as an Assistant Superintendent at the Northeast Ohio Regional Sewer District (NEORSD) Southerly Wastewater Treatment Plant in Cuyahoga Heights. He has worked at the District for over 26 years starting as an engineering co-op student in 1983. He worked through the District operational ranks as an operator, shift supervisor, shift manager and assistant superintendent, with 3+ stops at each of the three NEORSD plants. Ed earned a Bachelor's Degree in Chemical Engineering from the University of Akron, a Class IV Wastewater Operators License, and is currently pursuing an MBA at the University of Phoenix Cleveland Campus. Ed enjoys teaching technical and leadership classes and has authored "Simplified Wastewater Treatment Plant Operations" text and workbook available online through CRC Press. Ed developed a basic wastewater treatment course covering math and theory and has taught the course many times in multiple locations including the Collinwood High School as a part of a District outreach project. Ed currently serves as a facilitator for NEORSD diversity and inclusion workshops.

Ed is blessed to work with a great section executive team and a group of excellent section committee chairs as it requires a team effort to provide the quantity and quality of section events the NE Section has been known for. He has benefitted from having a number of past section presidents invest in him and he hopes to do the same for others. One of Ed's goals has been to provide detailed instructions for each chair on the NE Section EC and to distribute the responsibilities so that no one individual is overly burdened.

The NESOWEA educational opportunities this year will include three plant-hosted section meetings in November, March and May, an Operational Seminar in January and an Industrial Waste Seminar in February. Less known are the four excellent laboratory seminars held throughout each year, the Industrial Pretreatment Coordinators Workshops, and the most recently added Watershed Workshop. In October, the section is considering the addition of a Supervisory Skills Seminar to the calendar. Many of our members work for municipalities that are not able to provide skills training in communication and effective supervision. It is the NES EC's hope for those in leadership positions as well as for those who aspire to become leaders, that each one will discover this option to develop their skills. All of the NE Section meetings, seminars and workshops are open to everyone and we invite you to consider joining us for one or more of these events this year.

Ed hopes to see the NESOWEA web site, *nesowea.org*, continue to improve this year. A number of NE members are currently working on a treatment plant information database that we hope to see added to the section web site upon the completion of the database.

Ed lives in Lodi with his wife, Irene. They have four grown children and five grandchildren. In their spare time, they both enjoy singing in their community choir and on the church worship team. Ed has enjoyed acting in a few Medina County theatrical performances including playing the role of Ali Hakim in a production of Oklahoma. Ed enjoys staying active, eating healthy, and working out regularly at the local recreation center.

Ed Haller, *hallere@neorsd.org*

SW SECTION

Dan Martin, President

Hello, I'm Dan Martin, Project Manager at RA Consultants in Cincinnati. It is truly my privilege to serve as SWOWEA Section President. I graduated from the University of Cincinnati in 2000 and started work as a consultant in the wastewater/water industry. I am a professional engineer licensed in the State of Ohio. I joined RA in 2005 – about a year after the firm was organized. It has been a joy seeing the company grow to 55 employees during challenging economic times. I live with my wife Laura and son in the suburb of Blue Ash – just two blocks from the office (tough commute). We are eagerly awaiting the arrival of our second child in October. When I'm not working or volunteering for OWEA, you'll probably find me on the golf course or tending to my yard.

In case you haven't heard, I'm an avid advocate for young professionals. In this year of my 35th birthday, I am happy to fully pass on the reins of the YP Committee to the excellent leadership of Kris Ruggles, Nick Bucurel, and Anil Tangirala. I have served on this committee since 2003 and am glad to say it is alive and kicking! Please take a moment to think of at least one person (YP or otherwise) you could encourage to explore membership in WEF and pay forward the opportunities you have enjoyed.

A special thanks to Jeff Olsen who served as the 2010-2011 Section President. SW is a strong section with a great heritage. As I look ahead to this year I will be talking to the Southwest Executive Committee about enhancing member benefits. One way to do this will be to provide one reduced-cost section meeting for our WEF members. I also believe we should look at incentives to encourage YP attendees at section meetings. Finally, I will tirelessly pursue policies and procedures on committees and executive committee duties, which will dovetail with the Rules and Regulations that were ratified during our May section meeting.

Please join us for our Section meeting in Piqua on September 15th. We will earn contact hours while learning valuable information about pumping systems at a Crane Pumps manufacturing facility.

I would like to close this report with a welcome to our new Third-Year and Second-Year Directors Jason Tincu and Roger Rardain. Also a hearty congratulations to newly elected OWEA Vice President Dan Sullivan and Ohio WEF Delegate Mark Livengood.

Dan Martin, SWOWEA, *dmartin@raconsultantsllc.com*

NW SECTION

Tom Horn, President

Greetings, I'm very honored and privileged to serve as President of NWOWEA for 2011. I have been employed with Industrial Fluid Management, Inc. (IFM) since 1998. IFM gave me the first opportunity to get into the environmental field and encouraged my involvement in OWEA. Currently, I serve IFM as Vice President and Operations Manager and I thank the staff and management of IFM for the opportunities to meet the people that make OWEA what it is today.

The 2011 State Conference was a perfect motivator for me to get into my new position as President. The camaraderie amongst our members and passion exhibited by our leadership at all levels is amazing and helps make to make OWEA the major training provider for treatment professionals in the state of Ohio. The State Conference also reminded me I have very big shoes to fill as NWOWEA President, not only to maintain, but to continue the upward path OWEA has shown in the recent years. I encourage all water treatment professionals to get involved and keep an eye on the OWEA website for the meeting announcements and other activities.

My introduction to OWEA began in 2004 as the NWOWEA LAC Committee Chair. That involvement grew with the NW Executive Committee as Secretary in 2008. Currently, I hold OEPA WWIII Wastewater Works, OEPA WSIII Water Supply, OWEA II Laboratory Analyst and MDEQ C, D Wastewater Licenses.

Recently, the NWOWEA held our annual Spouses and Friends Day at Put-In-Bay on August 5th. Plans are underway for upcoming meetings including our October meeting that features our Water for People Pancake Breakfast fundraiser. March and May 2011 meetings are also being planned.

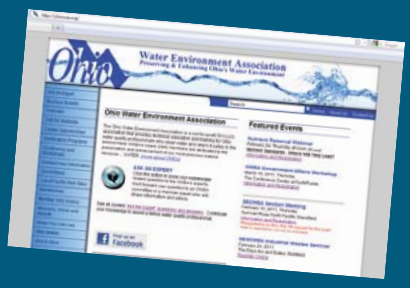
Originally, from southern Michigan, I transplanted to Ohio through my educational experience at Defiance College where I earned a Bachelor of Science in Environmental Science. I was introduced to industrial wastewater treatment during an internship experience at the GM Foundry Wastewater Treatment Plant in Defiance.

I have remained in Defiance with my family, wife (Holli), daughters (Hannah-11, Quinn-8), and son (Elliot-2). I am also involved as coach in Northeastern Little League (Tinora) and have been involved with Defiance College Football Gameday events, and as a board member of the Purple and Gold Club.

Tom Horn, *thorn@ifmenviro.com*

Visit *ohiowea.org* to register online for your section's meetings and events

Most OWEA Events are listed in the Featured Events Section at ***www.ohiowea.org.*** Save time and postage by registering online for upcoming OWEA state, section, or committee workshops, meetings, and training sessions. You will receive immediate confirmation of your registration and can indicate your choice of payment options for each particular event.



SE SECTION

Bryan Curry, President

My name is Bryan Curry and I am the 2011-2012 president for the Southeast Section Ohio Water Environment Association. I am currently the Assistant Superintendent for the Newark Wastewater Treatment Plant with a Class IV Wastewater license. I graduated from The Ohio State University with a Bachelor of Science in Natural Resources and have been employed with the city for 18 years, starting out as an Operator in Training. I have held various positions at the plant including Midnight shift operator and Operations Technician. I was a team member of the Nerk's Clearwater Revival operations challenge group for 7 years and involved with the SE section for the last 6 years, receiving the J.W. Ellms award for the Southeast Section in 2007. I have been married 23 years to my very supportive wife, Beth, and have two wonderful daughters. We are involved in our church and like to go boating and horseback riding.

I would like to thank past president, Steve Elliot for his commitment to the Southeast section. Last year was a very productive year. We updated our Constitution and By-laws with the able help of our EC members and had several successful section meetings.

I would also like to welcome 2 new faces to the Southeast Executive Committee; Kris Ruggles and Brenda Van Cleave. Hopefully this coming year will be another productive year. With the help of a highly capable Executive Committee I am sure we can accomplish much.

Bryan Curry, *bcurry@newarkohio.net*

Don't Miss Out On Important News
Update Your Membership Profile

Maintain an accurate mail and email address so you receive timely communications from OWEA regarding upcoming events, important news affecting water environment issues, and your copy of the Buckeye Bulletin.

Please check your member profile at: *www.wef.org* by clicking on the Membership link. You may also update your OWEA/WEF membership account by contacting WEF at 800.666.0206 / *csc@wef.org* or OWEA at 614.488.5800 / *info@ohiowea.org.*

YOUNG PROFESSIONALS COMMITTEE

by Kris Ruggles and Nick Bucurel, Co-Chairs

OWEA Conference Recap

This year's conference proved to be successful for the YPs involved. Congratulations to the following YP presenters who did a tremendous job with very interesting presentations: Ashley Elber (CT Consultants), Kelly Kuhbander (Strand Associates), Ting Lu (Metropolitan Sewer District of Greater Cincinnati), Mel Meng (DLZ), Joe Tillison (Bowling Green).

A special thanks to those who supported the YP conference activities and presenters, including each section Executive Committee and the Conference Planning Committee for accommodating and supporting this initiative.

The Young Professionals Committee held a brief meeting during the conference to outline goals and events for the upcoming year, including potential joint events with other professional organizations to help build connections and look for opportunities to provide value for OWEA and build our student initiatives. The YP committee is looking at extending a liaison to other committees within OWEA. One idea would be for the YP liaison on each committee to track new technologies or trends for each committee.

Watershed 101 Workshop

One of the major initiatives of the YP Committee is to conduct a Watershed 101 – Back to Basics Workshop. This workshop will provide a great opportunity for YPs to strategize and manage a technical workshop from concept to completion. The workshop will be open to OWEA member and nonmember water professionals interested in watershed management topics and will cover watersheds from many perspectives. One key topic that many have expressed interest in is understanding funding mechanisms that support watershed management projects. The committee is also considering other professional development topics for this workshop. Spring dates are being considered for this workshop. Watch for more information soon. Please contact Anil Tangirala - Chair, OWEA Watershed Committee, for any ideas, questions, or details at *anil.tangirala@stantec.com*, or 614.844.4016.

Notable Happenings

- The Northeast YP Committee is actively trying to identify YPs in the Northeast section to join the committee and become more involved in the section, and even present at upcoming meetings. If you are a young professional (under age 35, or less than 5 years in the industry) please contact Ashley Elber (contact information below).
- Southwest YPs had a successful event with 20 attendees on May 26th. They toured recent green street improvements to Cincinnati's Oakley Square. Attendees earned 1 contact hour and enjoyed some quality networking at Oakley Pub and Grill. Special thanks to Kelly Kuhbander of Strand Associates for organizing this event. Southwest YPs are eyeballing a watershed-related event in Mason, Ohio sometime in early fall – more details to come. Thanks to all the Southwest YPs who attended the annual conference in Sandusky - it was a bit of a drive, but well worth it.
- The Northwest YP Committee would like to send a big thank you to all of the YPs that volunteered to help with this year's annual conference. YPs from the Northwest gave technical presentations, volunteered to serve as room moderators and monitors for the technical sessions, assist with registration, and perform very valuable behind the scenes duties.

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

NW - Walter Ariss
Walter.Ariss@epa.state.oh.us

NE - Ashley Elber
aelber@ctconsultants.com

SW - Dan Martin
dmartin@raconsultantsllc.com.

SE - Brandon Fox
bfox@co.fairfield.oh.us

Special thanks to all the committee volunteers who make the YP committee vibrant! As always, if you have any suggestions or questions, please contact:

Kris Ruggles
614.835.0460
kris.ruggles@strand.com

Nick Bucurel
216.912.2141
nick.bucurel@arcadis-us.com

Southwest YPs tour green street improvements at Cincinnati's Oakley Square. (photo below)

Career Opportunities

Does your organization have a position to fill?

Are you looking for a position?

Visit *www.ohiowea.org* and select Career Opportunities.

Or contact OWEA 614.488.5800 or *info@ohiowea.org*

LABORATORY ANALYST COMMITTEE

by Chairs Eva Hatvani and Denise Seman

Hello Everyone! Hope you are enjoying your summer!

Please remember to use the new email address for any communication with the State Lab Committee or WW Lab Analyst Certification. The email address is *oweastatelac@yahoo.com*.

Ops Challenge was held in Columbus, OH at the Jackson Pike WWTP on May 27, 2011. The lab event was E. coli by HACH's mColi blue 24 method. The judges/ instructors for the lab event this year were Denise Seman, Nancy Taylor, Karen Tenore, and Jerry Wright. Thanks judges for your help!

The hands on training portion on the E. coli method was very well received. Most of the attendees were interested in the method due to permit changes, and were anxious to learn any tips and tricks the judges were able to provide.

Congratulations to the Bowling Green Wastewater Rangers and the Northwest EPA Regulators for winning the 2011 Operations Challenge. These two teams will be representing Ohio at the WEF Operations Challenge in October.

We would like to welcome the lab committee chair for the SE Section: Melodi Clark. Melodi's e-mail is: *MLClark@columbus.gov*. Melodi is looking forward to setting up lab meetings in the SE section. Want to help, or have an idea? Send her an e-mail and let her know. Melodi is the Lab Manager for the City of Columbus Surveillance Lab. Her address is 1250 Fairwood Ave, Columbus, Oh 43206.

The NE Section has a new lab co-chair: Beverly Hoffman from Geneva. We'd like to welcome Bev to our group, and thank her for volunteering for this position.

For those of you that were at the conference in June, Lab Munkee made his (her?) debut appearance. Follow Lab Munkee on Facebook and twitter (@LabMunkee) for upcoming events, and possibly some new games/ challenges as we approach the state events.

Save the Date

Remember to save the date for the Plant Operations/LAC Joint Meeting September 28-29, 2011. The lab sessions will be on Thursday, September 29.
Tentative Topics Include: (6.0 contact hours)

- E. Coli from A to Z – Jen Alexander, OEPA
- Microscopic Evaluation of Mixed Liqour: The Care and Feeding of Your Bugs - Jon VanDommelen OEPA
- BOD/CBOD from A to Z - Amy Starkey, Stark County
- An Introduction to the State of Ohio General Lab Criteria Audit. - Steve Roberts, OEPA
- Laboratory Game – Eva Hatvani, Retired, NEORSD and Nancy Taylor, City of Newark
- Training Through Utilization of On-line Courses - Mark Citriglia, NEORSD

OWEA WASTEWATER ANALYST EXAM

The exam was given on Friday, April 29, 2011. Congratulations to the following analysts for passing the exam.

Class I	Class II	Class IV
Kasey Carlisle	Matthew Cox	Mark Ciccone
Jason Jones	Achal Garg	Inez Preyor
Stephanie Lohman	Wanda Harney	
Lindsay Mosovsky	Leroy Huber, Jr.	
Walter Pollock	Kevin Krejny	
Terry Wright	Natasha Tramble	
	Christen Wood	
	Corey Yugulis	

RENEWAL OF CERTIFICATES FOR 2012-2013

The current certificates are valid until December 31, 2011. Renewals are on a two year cycle. The mailing for the next round of certificate renewals will be in the FALL 2011. If you do not get one, you may not have notified us about a possible move, retirement, or other situation. Download forms from *www.ohiowea.org*. Please email any changes of information to *oweastatelac@yahoo.com*. The cost will remain at $25.00.

CONGRATULATIONS!!

We would like to congratulate the following inductees for their induction into the Crystal Crucible Society Class 2011.

(Pictured l-r)
Gregg Mitchell – City of Sidney
Jon VanDommelen – OEPA
(Dale Kocarek - 2010-2011 OWEA President)
Bharati Torgalkar – City of North Olmsted
Marc Morgan – City of Mansfield
Keith Kroeger – OEPA

continued on page 19

LAB CERTIFICATION EXAMS

Fall exam date: October 21, 2011
Application Deadline: September 23, 2011

Print applications from the OWEA website as the mailing address has changed to the OWEA Office.

Southwest LAC - Roger Rardain and Jim Davis

On April 7, 2011, the SW Section Laboratory Analysis Committee held a meeting at the City of Dayton WWTP in Dayton OH. Attendance was very good, with 44 people attending.

Technical sessions included the following presentations:

- Henry Beauchamp, Director of Technical Sales, Wibby Environmental – How Performance Testing samples are prepared and how to perform better on DMRQA 31.
- Steve Roberts, Quality Assurance /Quality Control Supervisor, OEPA – DMRQA 31 and OEPA's Reporting Requirements

2.25 contact hours were approved. Refreshments were provided by the City of Dayton

Attendance figures for our recent meetings were as follows:

1/21/2010 - 52
4/15/2010 - 59
7/15/2010 - 57
7/15/2011 - TBA
10/14/2010 - 67
1/27/2011 - 59
4/7/2011 - 44

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

Roger Rardain *roger.rardain@ci.fairborn.oh.us*
Jim Davis *davisji@mcohio.org*

Northeast LAC- Kathy Richards & Beverly Hoffman

Our last session was held on May 13, in Columbiana. 19 people attended the presentation by Larry Anderson from Analytical Sciences, Inc. on Automated Discrete Chemical Analysis and John Hoffman from Alloway on Laboratory Information Management Systems.

We are also planning August & October events. Please make sure to check Sparkling Waters newsletters and online at *www.OhioWEA.org* and *www.NESOWEA.org* for the details.

While you are visiting these websites, please consider responding to the NESOWEA LAC Questionnaire. The information we compile will go a long way towards building a networking database that will enable analysts to better connect with each other and share experiences and support. If you would like to be added to our NES membership directory and receive automatic updates for training events and other news, please send your contact information to me at *NESOWEALAC@Gmail.com*. All our training events are free and open to everyone – regardless of which section you may call home.

We are actively seeking venues, topics & speakers for our LAC section meetings! If you have suggestions or would like to volunteer yourself or a "special coworker", please get in touch with any of the NES committee members:

Kathy Richards *krichards@akronohio.gov*
Beverly Hoffman *genevawwtp@ncweb.com*
Dale Holmes *daleh@mclw.com*
Lisa Feigle *lisaf@gcdwr.org*
Amy Starkey *ajstarkey@co.stark.oh.us*
Marie Wenzel *marie@northcoastlabs.net*
Melanie Rangel *mrangel@lakecountyohio.org*

COMMITTEE CONTACT INFORMATION

State Chairs
Eva Hatvani, 440.846.8220, *oweastatelac@yahoo.com*
Denise Seman, 330.742.8820, *dseman@cityofyoungstownoh.com*

Northeast Chairs
Kathy Richards, 330.928.1164, *NESOWEALAC@gmail.com*
Beverly Hoffman, 440.446.4228, *genevawwtp@ncweb.com*

Northwest Chair
Kevin Hughes, 419.488.5440, *watertreatment@tiffinohio.gov*

Southwest Chairs
Roger Rardain, 937.754.3075, *roger.rardain@ci.fairborn.oh.us*
Jim Davis, 937.496.7051, *davisji@mcohio.org*

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

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

OWEA's 2011 Event Schedule

August 11, 2011 .....Free Lunchtime Webinar - CSO Treatment Alternatives
September 8, 2011.....Free Lunchtime Webinar - City of Bowling Green's Approach to Wet Weather
September 15, 2011.....Collections's Hands-On Workshop in Dayton, Ohio
September 22, 2011.....Collections's Hands-On Workshop in Columbus, Ohio
September 28-29 .....Plant Operations and Laboratory Analysts Workshop
October 6, 2011.....Free Lunchtime Webinar - City of Columbus OARS Deep Sewer Tunnel
October 6, 2011.....Collections's Hands-On Workshop in Holland, Ohio
October 13, 2011.....Collections's Hands-On Workshop in Akron, Ohio
December 8.....Biosolids Workshop

Visit ***ohiowea.org*** for more information and registration

GOVERNMENT AFFAIRS COMMITTEE

by Dale Kocarek, Chair

Another year has come and gone, and it is time to start planning for the 2011-2012 OWEA calendar year, which runs between July 1st and June 30th. We have a new President, Doug Clark, who is making plans on what he wishes to accomplish, and has assigned committee chairs at the OWEA Executive Committee (EC) meeting at Kalahari on June 20, 2011. I was granted the opportunity to continue as the Chair of the Government Affairs Committee (GAC).

This year, I want the OWEA GAC to be a little different. Based on my recent involvement with the WEF Government Affairs Committee (GAC), I wish to adjust the focus of the GAC to bring it more in line with the WEF GAC. Traditionally, the WEF GAC performs reviews on a myriad of white papers and proposed regulations. I hope to use the resources of our own OWEA GAC to assist where possible.

In moving forward, I wish to focus the OWEA GAC in three major areas:

1. OWEA GAC Workshop: This is unchanged from the previous year.
2. Technical Review Group: This is also unchanged from the previous year.
3. Legislative: This is a new function this year.

Each is discussed briefly below:

1. Workshop: The workshop has been the mainstay of our Committee. This year, the workshop will be held on March 8, 2012 at the NorthPointe Conference Center. We will be putting out a call for papers in the near future.
2. Technical Review Group (TRG): This effort is being led by Dianne Sumego. The purpose of this group is to engage members in OWEA with select interest on various topics that may come up. Most of the work done to date has dealt with affairs in the State of Ohio.
3. Legislative: This effort is new and born out of my recent experiences with the AWWA-WEF Fly In to Washington DC on April 4-5, 2011. In addition to providing opportunities to meet and discuss important issues with legislators on Capitol Hill, this effort will also be used to interface with the WEF GAC. I am looking to participate in this event again with the Ohio AWWA on March 7-8, 2012.

Starting this year, I wish to direct a portion of my efforts to outreach with other groups that share the common cause of Clean Water, including the Ohio AWWA, Water Utilities Council, and others, which are too numerous to list by name. My extensive efforts on the OWEA Leadership Team precluded me from spending the time that I would have liked on this critical component. With more time, and through my new involvement on the WEF GAC, I feel that our committee can make a stronger presence with other organizations on projects and initiatives. I am looking for assistance in doing this. If you are interested, I would love to hear from you.

WIFIA

One of the important messages communicated to members of Capitol Hill on April 4-5, 2011 was WIFIA, which stands for **Water Infrastructure Financing Innovation Authority**. WIFIA is modeled after the popular TIFIA, which is a similar program established for transportation projects.

WIFIA would provide low interest loans for public water and wastewater projects in one of two ways: (1) loans to supplement existing State Revolving Loan Fund (SRF) programs and (2) as direct loans to larger projects with potential regional interest or whose costs would exceed amounts of the SRF. One of the most potentially appealing features of WIFIA is that it would work in harmony with SRF programs to rebuild water and wastewater infrastructure in the United States with the theme that a strong economy is built on a foundation of strong infrastructure.

WIFIA would be an entirely new program. Funds would be created in a "bank" derived from revenues generated by bonds issued by the Treasury Department and monies previously earmarked for special projects. In addition to adding more money to help fund new infrastructure, WIFIA has gained interest in Republicans and Democrats by being close to "budget neutral."

Following my experience on the Fly In, I had the pleasure to meet with US Representative Bob Gibbs on April 25, 2011 with the objective of finding a sponsor for the bill. Congressman Gibbs is on the House Transportation and Infrastructure Committee. This meeting was set up by Dave Weihrauch of the Ohio AWWA, Water Utilities Council, who knowledgeably explained the purpose of the bill in exquisite detail. Since our April meeting, Dave and other representatives from AWWA met with the Congressman on "the Hill" to further explain the bill. I will keep you informed on the progress of WIFIA as it hopefully becomes a reality.

Dale Kocarek
dale.kocarek@stantec.com

(l-r) Dave Weihrauch, Dave Rager (AWWA Water Utilities Chair), Cliff Shrive, Steven Roberts (guest speaker), Alan Vicory, Mike Gradoville, Marlay Price, Dale Kocarek (OWEA President 2010-11), Bob Davis (Ohio AWWA Chair), and Doug Clark (OWEA President 2011-2012) at the April 2010 AWWA-WEF Fly In in Washington, D.C.

RESIDUALS COMMITTEE

by Jamie Gellner, Chair

The OWEA Residuals Management Committee continues to remain active in the monitoring of issues related to biosolids management and to seek opportunities to serve the membership of OWEA. Since our last update, we have remained active in several main focus areas, including the following:

- Farm Science Review – The 2011 Farm Science Review will be held September 20th through September 22nd. The Residuals Committee provides manpower and educational materials on the benefits of biosolids land application at the OWEA sponsored booth. A large number of attendees typically visit the booth. Promotional items are normally given away as an enticement to visit the booth and learn about biosolids. We will definitely continue to use the "wheel of trivia" to spur conversation, curiosity, and hopefully a little "BS" . . . in a good way – HA! Thanks to Bruce MacLeod for his continued leadership on our involvement in this important public relations opportunity.
- Biosolids Workshop –The 2011 workshop is scheduled for December 8, 2011. If you have an idea or topic you would like to present, please contact me.

This year, we are also working on a few additional areas, including the following:

- Exploring new venues for booth / information / PR – members are exploring other events where we can showcase the information that we normally present at the Farm Science Review. If you have any ideas related to good locations for a display or information related to biosolids, please let me know.
- Verify member list / update contacts – If you haven't received any correspondence from me lately and were previously on the committee email list, that probably means that we need to update your information. Drop me an email if you'd like to be included on our mailing list or if your contact information has recently changed.
- Reach out to neighbor associations – We have reached out to our neighboring Indiana and Michigan association residual committees. During our initial call, we compared current activities and experiences and found many similarities. We hope to combine resources on many fronts to provide OWEA members more information on biosolids related issues and activities. Thanks to Rob Smith for taking on this important initiative for the committee.
- Rotating venue for Residuals Management Committee meetings – We have historically been meeting at the Delaware County Olentangy Environmental Center on a quarterly basis. We will be exploring some venues in and around the Columbus area for meetings in the future. The hope is to have a meeting followed by a facility tour at future meetings. If you have ideas related to locations that would be good in central Ohio, please let me know.

We would love your involvement in these initiatives and others throughout the year. 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 would love to have you at our next meeting. If you are interested in getting involved or if you have any questions, please contact me.

Jamie Gellner
513.317.0337
jgellner@hazenandsawyer.com

2011 OHIO WEA 5S INDUCTEES

by Mark Livengood, Influent Integrator

During the 2011 Conference, five quasi-worthy OWEA members and one probably worthy honorary inductee were welcomed into the Ohio 5S "family".

During the Awards Brunch, the following individuals were introduced for induction: Frank D'Ambrosia (NW; Village of Archbold); Dan Johnson (NE; Burgess & Niple); Debbie Schafer (SW; Jacobs); Nancy Taylor (SE; City of Newark); Steve Hallett (At-large; City of Toledo), and Sandra Ralston (WEF Board of Trustees).

Inductees carried the required "little red bucket" and collected $1,292.00 during the conference. During the pre-banquet induction ceremony each inductee was "roasted" by a fellow 5S member and received their fashionable 5S jacket and lapel pin (additional pins for sale for $15 each). There was at least one anti-U of M joke and even some anti-Steelers and Penn State jokes. At the Thursday morning 5S Breakfast (once again sponsored by Jones & Henry Engineers) the inductees received a plaque suitable for hanging and the group voted to donate $500 to Water For People.

(l-r) Sandra Ralston, Steve Hallett, Nancy Taylor, Debbie Schafer, Dan Johnson, and Frank D'Ambrosia

PLANT OPERATIONS COMMITTEE

by Kim Riddell and Jim Borton, Co-Chairs

This year's Plant Operations/Lab Analyst/Safety Seminar will be held on Wednesday and Thursday, September 28th and 29th. There are state and nationally recognized experts on the agenda again, so plan on attending or sending your employees to hear the likes of Julian Sandino, Eric Wahlberg, Tom Angelo, Steve Samuels and many more! Don't worry, there are plenty of topics for the Operations, Laboratory and/or Safety Professional(s), we didn't skimp on any of them. See the full schedule on page 24.

For the price and for what is included; up to 13 contact hours, two continental breakfasts, two lunches, an excellent dinner, breaks and a social hour, this seminar continues to be the best bang for the buck for earning your contact hours without breaking the training budget! But don't take the Plant Ops Committee's word for it, come see for yourself and find out what you have been missing! We plan on seeing you there!

The Plant Operations Committee also has the responsibility of coordinating the annual Operations Challenge. It should be noted that this contest does not work without partnership from the Laboratory Analyst, Safety, and Collections System committee members along with many dedicated individuals. The Executive Committee has committed to sending the two winning teams to represent Ohio at the National Operations Challenge at WEFTEC in Los Angeles. This is accomplished fully through the generous contributions of OWEA's sponsors, especially OVIVO, NE, SE, SW and NW Sections who contributed directly to the Operations Challenge in support of the operations professionals comprising the teams.

On May 24, 2011, the Ohio Operations Challenge/Hands-On Operator Education Day was held at the City of Columbus Jackson Pike WWTP. Participants in the Operator Education Day could earn up to 5 contact hours and have some fun doing so without sitting in a classroom all day. In addition, the non-team attendees could take some time watching the competitive Operations Challenge teams and root their favorite team to victory. This format again appeared to be successful in its third year and will be considered again for 2012. In total, 2 competitive teams and 45 individuals registered and participated in the day.

The two Ohio teams were from Bowling Green and Ohio EPA-NWDO. At the end of the day, Bowling Green had won Division I, taking three individual event trophies in Collections, Maintenance, and Safety events while OEPA-NWDO took the Division II title and Process Control and Laboratory events. Teams, organizers, and judges can agree that it was an excellent opportunity to learn new things, improve teamwork, and make some new acquaintances throughout the state.

As a committee, we are continuing to challenge treatment plant managers to find a team within their ranks (managers can play too) or combine with another utility and show up in 2012 to compete. The committee is even challenging the OWEA State and Section Executive Committees and other OEPA offices to form teams as has been done in previous years. Existing teams are more than willing to help new teams get started, and team members don't all have to work for the same employer; contact Kim Riddell at *kim@go-smith.com* or Jim Borton at *jborton@woosteroh.com* for a list of potential team members nearest you. Remember, participating team members are eligible to earn up to 12 contact hours, and at the going rate, the contact hours are some of the cheapest around when comparing dollars/hour.

2011 Operations Challenge Sponsors

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Sections
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Southwest Southeast

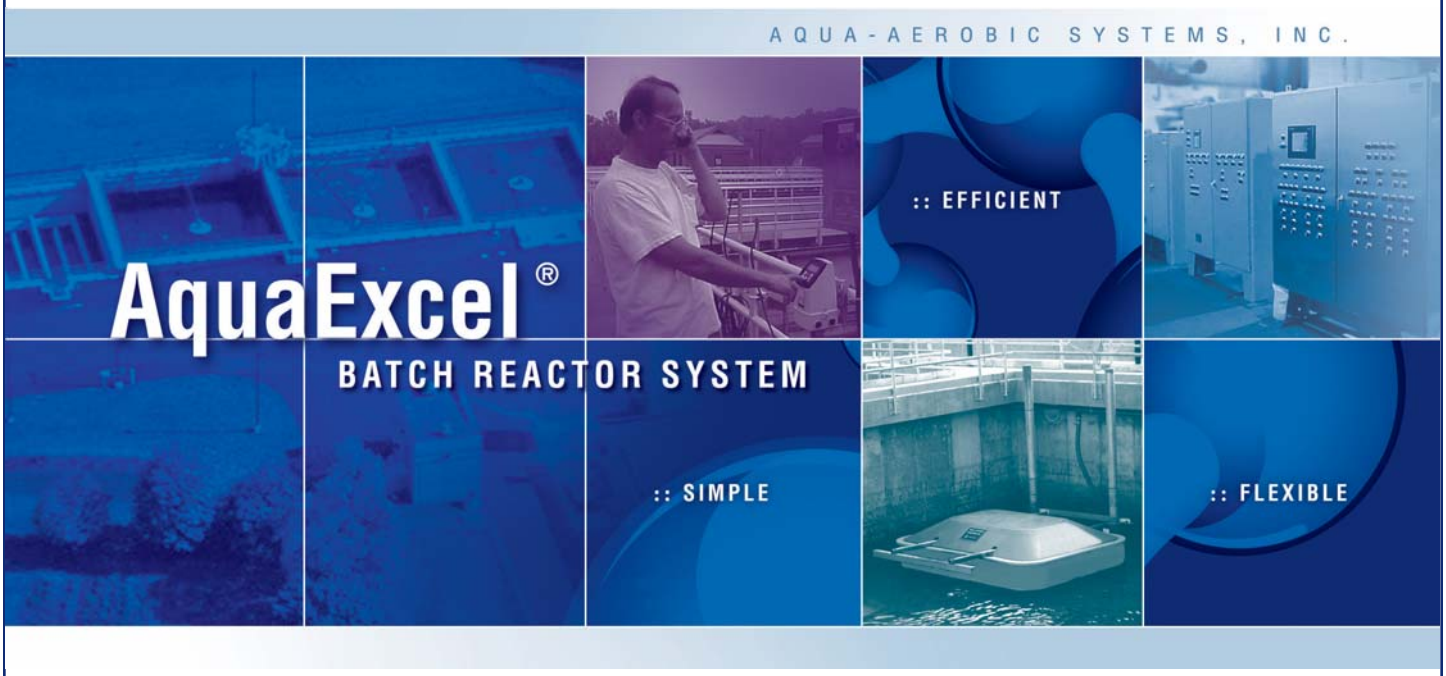
Current members of the committee are: Dave Wilson (SW), Joe Tillison (NW), Steve Elliott (SE), Pat Jameson (NE), Kim Riddell (WEF Operations Committee Representative and Co-Chair), Barb Wagner, Gary Hickman, Tom Kutcher, and Bill Hill. Other individuals acting as their respective Committee Chairs might as well be listed as committee members as the partnerships between the committees run deep, Ed Nutter (Safety), and Eva Hatvani and Denise Seman (Lab Analyst). Of course we are still looking for more members, so contact one of the section reps or myself for more information.

Kim Riddell
kim@go-smith.com

Jim Borton
jborton@woosteroh.com

Division 1 Winners - Bowling Green Wastewater Rangers

Division II Winners - Ohio EPA-NWDO Regulators



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- Lunch Included

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September 28 - 29, 2011

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Wednesday, September 28, 2011	
8:00 - 8:30	**Registration, Coffee, and Pastries**
8:30 - 8:45	Welcome/Introductions/Opening Remarks *Doug Clark - OWEA President, City of Bowling Green*
8:45 - 9:45	Where Activated Sludge Design Meets Operations: Part 1 *Dr. Erik Wahlberg, Brown and Caldwell*
9:45 - 10:00	**Break in Exhibit Area**
10:00 - 11:00	Where Activated Sludge Design Meets Operations: Part 2 *Dr. Erik Wahlberg, Brown and Caldwell*
11:00 - 11:15	**Break in Exhibit Area**
11:15 - 12:15	General Operational Considerations in Nutrient Mgmt for Wastewater Treatment Facilites: Part 1 *Dr. Julian Sandino and Dr. Sam Jeyanayagam, CH2MHill*
12:15 - 1:15	**Lunch Provided**
1:15 - 2:15	General Operational Considerations in Nutrient Mgmt for Wastewater Treatment Facilites: Part 2 *Dr. Julian Sandino and Dr. Sam Jeyanayagam, CH2MHill*
2:15 - 2:30	**Break in Exhibit Area**
2:30 - 3:30	General Operational Considerations in Wet Weather Flow Mgmt for Wastewater Treatment Facilities *Dr. Julian Sandino and Dr. Sam Jeyanayagam, CH2MHill*
3:30 - 3:45	**Break in Exhibit Area**
3:45 - 4:45	The Futrue of NPDES Permits in the Aftermath of Fairfield County vs. OEPA *Stephen Samuels, Esq*
4:45 - 5:00	**Break in Exhibit Area**
5:00 - 6:00	Consultants vs. OEPA vs. Attorneys vs. Operators - A Panel Discussion *Jim Borton, City of Wooster & Kim Riddell, Smith Environmental*
6:00 - 6:30	**Break in Exhibit Area**
6:30	**Dinner***

**Included in Full Registration and Wednesday Only Registration with Dinner Option*

*Please contact **info@ohiowea.org** if you have any special dietary needs*

Thursday, September 29, 2011	
7:30 - 8:00	**Registration, Coffee, and Pastries**
8:00 - 9:00	Ladder Safety / Slips, Trips, and Falls *Bryan Parcels, AMP*
8:00 - 9:00	Enhance Your Laboratory Training Program Using On-Line Training *Mark Citriglia, NEORSD*
9:00 - 9:15	**Break in Exhibit Area**
9:15 - 10:15	A Plant Safety Plan - An Operator's View *Ed Nutter, City of Newark*
9:15 - 10:15	BOD / CBOD from A to Z *Amy Starkey, Stark County Sanitary Engineers*
10:15 - 10:30	**Break in Exhibit Area**
10:30 - 11:30	Facility Inspections - A Cooperative Effort *Elizabeth Wick, OEPA / Doug Clark, City of Bowling Green*
10:30 - 11:30	Microscopic Evaluation of Mixed Liquor: Bug O&M/ Troubleshooting *John Van Dommelan and Keith Kroeger, OEPA*
11:30 - 12:30	**Lunch Provided**
12:30 - 1:30	The Fracking Truth About Marcellus Brine *Tom Angelo, City of Warren*
12:30 - 1:30	Standard Methods is Right! *Nancy Taylor, Newark/Eva Hatvani, NEORSD*
1:30 - 1:45	**Break in Exhibit Area**
1:45 - 2:45	Working on Sewer System I/I Reduction Without Breaking the Bank *Stacy Passaro, Passaro Engineering LLC*
1:45 - 2:45	E. Coli Analysis *Jen Alexander, OEPA*
2:45 - 3:00	**Break in Exhibit Area**
3:00 - 4:00	Perfomance Improvements and Energy Efficiency Efforts at Jackson Pike WWTP *Gary Hickman, City of Columbus*
3:00 - 4:00	An Introduction to the Ohio General Lab Criteria Audit *Steve Roberts, OEPA*

PASSINGS

Felix Sampayo, noted Civil Engineer, passed away in April 2011. He was 73. Felix was a great friend and mentor to many at Jones & Henry and throughout the wastewater treatment profession. He will be greatly missed by those who knew him.

Felix was born in Havana, Cuba. In 1956, as a first year student at the University of Havana, he met Jack Townsend, Dean of Arts and Sciences at the University of Toledo, and his wife, Florence. They offered to sponsor him to attend the University, and as Felix would tell it, he initially wrote them a refusal letter. After dictator Fulgencio Batista closed the university, Felix tore up his refusal and accepted their sponsorship. He graduated from the University of Toledo with an undergraduate degree in Engineering (BSCE) in 1960 and went on to Purdue University, where he earned a Master's degree in Civil Engineering (MSCE) in 1963. He also completed coursework for his Doctorate at Purdue in 1965. Felix returned to Toledo in 1965 and went to work for Jones & Henry Engineers. In 1967, he accepted a position with the national consulting firm Malcolm Pirnie Engineers, in White Plains, New York. He returned to Jones & Henry as an Associate Engineer, specializing in wastewater treatment. He became a Partner at Jones & Henry in 1976, and then President of the firm in 1995, a position he held until his retirement in 2002. Although officially retired, Felix continued with Jones & Henry as a part-time resource. He led civil engineering projects throughout the United States and abroad, and was recognized by his peers and clients as a remarkable problem-solver and service provider.

Felix actively mentored numerous young engineers throughout his career and maintained a close relationship with the University of Toledo College of Engineering. Felix also served as Board Chairman of Jones & Henry Laboratories, Inc., and was a founding Director of Hull & Associates, Inc. Felix was affiliated with the American Water Works Association, American Society of Civil Engineers, Sigma Xi (Research Honorary Society), Tau Beta Pi (Engineering Honorary Society), Water Environment Federation, and was a Diplomat of the Academy of Environmental Engineers. He authored fifty technical publications. Felix also was awarded the OWEA Lifetime Engineering Achievement Award in 2003. His research and design work led to the development of one of the first nitrification towers installed in the United States at Lima, Ohio. These towers have been in operation since 1975. Felix was also very instrumental in major innovative wastewater treatment plant projects for Kalamazoo, Michigan, and for Cincinnati's Metropolitan Sewer District.

Felix was a scholar, gourmet, world traveler and accomplished man. He was known for his long-time association with and support of the arts in Toledo. He was active in support of the Toledo Museum of Art and became a member of the Apollo Society this past year. He was supportive of classical music, sponsoring concerts by the Toledo Symphony's Brass Quintet at the Old West End Junior High School. Friends were always welcome in his Old West End home, where he was always the genial host.

As the Soviet Union disintegrated in the early 90's, never forgetting the opportunity afforded him by the Townsends, Felix sponsored two scholars to come to the United States to study and remain: Dr. Nickolai Talanin, now a dermatologist in Washington, D.C., and his cousin, Anya Krivelyova Robati, now an economist in Atlanta, GA.

ROLL CALL

Richard Atoulikian, PMP, P.E., BCEE has been named as the Water Business Group's Vice President, Northeast Area Client Service Manager for HDR**,** an architecture, engineering and consulting firm. Rich is based in the firm's Cleveland, Ohio office. His role will involve pursuing and delivering water and wastewater planning and design projects in the Northeast U.S. Prior to joining HDR, Rich was employed by MWH in Cleveland for 34 years. Rich received Master and Bachelor of Science degrees in Civil Engineering from Cleveland State University and is currently registered as a Professional Engineer in 11 states, including Ohio.

Mary Ann Driscoll, P.E., has joined the RW Armstrong team as a Project Manager for the Water Services Group in the Cleveland Office. Mary Ann has more than 13 years of experience in project management and the design of water and wastewater facilities and infrastructure. Her project experience includes wastewater plant design, infrastructure rehabilitation, pump station design, construction administration, and site development. Mary Ann is a graduate of the University of Akron with a bachelor's degree in civil engineering and a master's degree in engineering management. She is a WEF member and active in both OWEA and the Northeast Section. Mary Ann is currently the Secretary for the NE Section Executive Committee.

Jennifer Frommer, PE, has been named as Senior Project Manager and Vice President in the Water Business Group for HDR**,** an architecture, engineering and consulting firm in Columbus, Ohio. Her role will involve business development and project management of water and wastewater projects with focus in Ohio. Prior to joining HDR, Jennifer was employed by W.E. Stilson Consulting Group in Columbus. She received her bachelor's degree in Civil Engineering from Ohio Northern University, and is currently a member of the Ohio Northern University Board of Trustees. Jennifer is currently registered as a Professional Engineer in Ohio.

Keith Riley retired at the end of July from Ohio EPA, after 39 years of state service. Keith served the past 11 years as the Assistant District Chief of Ohio EPA's Northeast District Office. Prior to that, Keith worked 27 years in Ohio EPA's Division of Surface Water. Keith has served in the Ohio Water Environment Association for over 18 years as an officer in the Section, as a State Delegate, on the OWEA Executive Board, as a WEF Delegate, and one year on the WEF Board of Trustees.

Keith indicated, "I have thoroughly enjoyed my involvement serving the Ohio Water Environment Association. The Association has always given me back more than I contributed. Building strong relations with the operators, consultants, and vendors that support our business of clean water made the day to day job much easier and more enjoyable. I plan to stay involved, but the job won't get in the way of my volunteer work. I am looking forward to having more time for fishing, golfing, and playing with the grand kids."

WATER FOR PEOPLE

by Keith Riley, Chair - retired

I retired on August 1st after 39 years. While I plan to stay involved with OWEA and Water For People, I believe it is time for some new committee leadership after 8 years. Incoming President, Doug Clark has appointed new Water For People Co-Chairs, Doug Borkosky and Dale Kocarek. I will be around to help them get started. I am so excited about these choices to lead us forward in our continued journey to support this important cause.

I would like to take this opportunity to thank everyone for attending and supporting the Water for People Fundraiser held on May 19th sponsored by CDM and supported by both AWWA and OWEA. Thank you to the event chairs, John Schroeder and Afaf Musa from CDM. The event was a great success, with about 70 attendees and a total of $2,000 was raised to support the Water For People. The organizers are looking forward to making this event even bigger for next year.

At the Annual Conference, our raffle raised $705 dollars for Water For People and our 5S Society Members donated another $500. I want to thank everyone for your continued generosity.

Keith Riley

ROLL CALL

continued

Elizabeth Wick, P.E., was recently promoted to Manager of the Division of Surface Water in Ohio EPA's NWDO where she will oversee the activities of the district. Elizabeth has worked for Ohio EPA for 24 years. Previously, she supervised the Enforcement, Pretreatment, Storm Water, 401 and Maumee RAP programs in the district. She has a Bachelor of Science degree in Chemical Engineering from the University of Toledo and is the OWEA NW Delegate.

OWEA Members may submit brief announcements with photo to **info@ohiowea.org** *for publication in the Buckeye Bulletin. Please include your OWEA/WEF member number. All requests subject to editorial review.*

UTILITY ENHANCEMENT COMMITTEE'S FREE LUNCHTIME WEBINAR SERIES

by John Newsome, Chair

The Utilities Enhancement Committee is pleased to announce the second 3-part webinar series for 2011 in its continuing commitment to educate members and reach out to potential members.

Be sure to mark your calendars for the 3 part series on Wet Weather Issues!

- August 11, 2011 - Wet Weather Issues - Webinar #1
  Time: Noon - 1 p.m.
  Presenter: Curtis D. Courter, Hazen and Sawyer
  Topic: CSO Treatment Alternatives
- September 8, 2011 - Wet Weather Issues - Webinar #2
  Time: Noon - 1 p.m.
  Presenter: Douglas P. Clark, City of Bowling Green
  Topic: City of Bowling Green's Approach to Wet Weather
- October 6, 2011 - Wet Weather Issues - Webinar #3
  Time: Noon - 1 p.m.
  Presenter: John G. Newsome, City of Columbus
  Topic: City of Columbus OARS Tunnel

In the first 2011 series, relating to Nutrient Removal, attendees heard from 3 different agencies on nutrients, their impacts on Ohio municipalities, and mitigation. Recorded webinars are posted at *www.ohiowea.org* keyword *"Webinars"*.

- Part 1: February 24, 2011
  Dan Dudley of Ohio EPA
  Nutrient standards and where they may lead us in the future
- Part 2: March 31, 2011
  John Kessler of the ODNR
  Gulf Hypoxia and its impacts to Ohio municipalities
- Part 3: 28, 2011
  Dusty Hall of the Miami Conservancy District
  The Little Miami Nutrient Trading Program.

On average, over 100 people have registered to take advantage of each of OWEA's free webinars in 2011.

Due to the complexity of tracking contact hours during a webinar, they are not offered for the webinars. PDH's are at the participants discretion. That being said, GOOD training and FREE training is a PRICELESS VALUE!! As most presenters are more than willing to present in public (allowing contact hour tracking), I urge you to join us on these webinars and suggest which speaker you would like present at one of the many training/specialty workshops hosted by OWEA through-out the year.

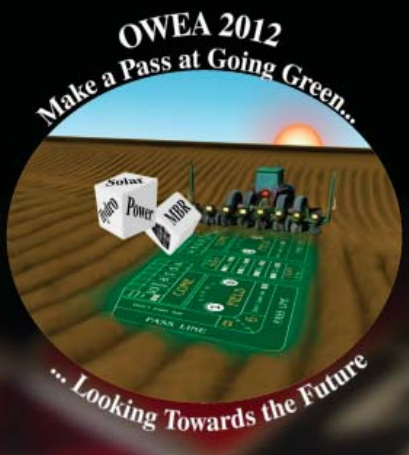
WE NEED YOUR HELP! If you or your employer has done anything that you have found to be beneficial to your utility please share it by being a speaker. If you do not like to speak in public, don't worry as this is done by way of computers and you are not in front of a "live" audience. The sharing of ideas is how we all learn, so please share your successes so we can all learn from you!

Utilities Enhancement Committee contacts;

Chair: John Newsome
614.645.8460, *jgnewsome@columbus.gov*

Vice Chair: Jim Hewitt
330.375.2185, *hewitji@ci.akron.oh.us*

Ohio Water Environment Association



June 18 - 21 2012

Did You Ever Want to Beat the House?

The Ohio Water Environment Association (OWEA) is looking for papers on topics of interest to present at the 86th OWEA Annual Conference in Aurora, Ohio

The Abstract Form for submittal can be found on the OWEA Web site at www.ohiowea.org
Forms are due November 1st, 2011

Please submit to:
Tom Angelo, Program Chair
City of Warren, Ohio
2323 Main St., S.W.
Warren, Ohio 44481

Phone: (330) 841-2591
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Here is the Annual Conference Paradox: OWEA Annual Conference is almost exactly the same each year, but it is never the same as the previous year . . .

The reality of Annual Conference is that we (OWEA) follow the same agenda from year to year with only minor changes. As such, please don't expect a play by play in this article. Instead, let's just glance backwards at some of the highlights from the 2011 OWEA Annual Conference...

Golf – The 2011 Golf Outing on Monday of conference was perhaps the fastest played round in recent memory. With foursomes doubling up on only three holes per course, most of the teams were able to play at their own speed! Overall, it was an enjoyable day on two beautiful courses, with good food and company afterward!

Awards Brunch – For the first time in many years (since 2003?), the OWEA Awards were presented during brunch rather than at breakfast. Regardless of the hour, the celebration of excellence in operations, engineering, management, government, and service to OWEA was truly a highlight of the conference (as usual). When award recipients are recognized in front of their peers, the professionalism is demonstrated. Of course, these award winners are only the tip of the iceberg . . . a small sampling of the professionals at work every day in our industry. (Oh, and the food served at the brunch was awesome! From the typical breakfast foods to salmon to the strawberry shortcake bar . . . mmmm . . .)

There are examples of excellence around you.

Pay someone a compliment today - a little recognition goes a long way . . .

Exhibition – Seventy exhibitors joined OWEA for the exhibition. Eight of them provided presentations for contact hours. All in all, it was nice to have a full and active hall before and after the brunch.

Facility Tour – The Kalahari operations staff led seven (7!!!) tours of the waterpark and hotel support systems including a myriad of pumps, pressure filters, chemical feed, and the wave generator. Originally, we planned for only 5 tours (with 10 to 15 people per tour), but the interest was so great that two additional tours were added!

Meet someone new at the conference?

Send them a follow-up email or give them a call.

Meet & Greet—Hog roast, bbq chicken, old friends, new friends, cold drinks, great music, great location (outdoor waterpark with one of the largest tiki-huts in Ohio)—do you really think rain could ruin all that? Not at all! After about 2 hours of meeting and greeting, we relocated the party to the indoor restaurant/bar and the band played on! We ended up with almost five hours of live music and a really great evening! There just isn't any way to describe this year's Meet & Greet without using lots of exclamation points!!!

Technical Sessions—True to form, OWEA's technical program had breadth (4 concurrent sessions Wednesday) and depth (OEPA Director's talk, special asset management sessions, and the usual complement of innovative technologies, money saving case studies, and green technology presentations). Although we weren't planning to repeat a long list of "thank you's", we wanted to take our hats off to Doug Clark and his Technical Program Committee (Frank D'Ambrosia & Roberta Acosta) for arranging the program AND also to all of the presenters—all of whom submitted papers without phone call or email solicitation by the committee. Thank you OWEA members and guests!

Are you part of the OWEA Family? If so, tell a nonmember about your friends and experiences in OWEA. If not, check out membership at www.ohiowea.org - its time for you to experience the OWEA Community.

Banquet—As mentioned at the event, the Banquet serves as OWEA's "family" time. Similar to a family dinner table, this year's banquet was a time of sharing. It was a time for looking outward – as Sandra Ralston (WEF Trustee) shared about WEFs efforts including movement toward interstate standards for licensure. It was a time for looking backward – as Outgoing President Dale Kocarek recounted the good works that OWEA's leaders have accomplished—from the minutia of rules and regulations to the very outward and visible specialty conferences and the new contact hour tracking system. It was a time for looking sideward—as Incoming President Doug Clark reminded each of us that, although we work in different roles (operators, engineers, regulators, sales, etc.), together we form an association that is comprised of many members that bring diversity and strength to the industry—especially when we work together.

For those members that journeyed to Sandusky for conference—we hope that your trip was enjoyable and worthwhile. We are glad that you made it! We hope that the hospitality and hard work of the Northwest Section Conference Committee (and dedicated committee members from the other sections) allowed you to learn, to network, and to relax . . .

For those of you who were not in attendance—we missed you. Mark your calendars for next year as the Northeast Section hosts next year's Annual Conference June 19-21, 2012 in Aurora, Ohio! (And get your abstracts in soon!)

Have you recently completed a challenging task or project?

Do you have a special area of expertise? Submit a paper/presentation for the 2012 conference.
(see page 28)

Yours Truly,

2011 Annual Conference Co-chairs
Doug Borkosky, *doug@hlbaker.com*
Dave Sprague, *dsprague@cityofstmarys.net*

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Tussing Road WRF
Facility Image Award

See more conference photos at *http://www.ohiowea.org/2011_conference_recap.php*

A COMPARISON OF NUTRIENT SOURCES, CONCENTRATIONS AND LOADING TRENDS FROM THE CUYAHOGA AND SANDUSKY RIVERS

by David Baker, National Center for Water Quality Research, Heidelberg University

Introduction

The Cuyahoga and Sandusky rivers are two of Ohio's major tributaries to Lake Erie. Over the past 10 years, the average-annual, unit-area export of total phosphorus (TP) to Lake Erie from these two rivers is similar, with the Cuyahoga yielding 1.36 lbs/acre at Independence and the Sandusky yielding 1.41 lbs/acre at Fremont. However, these two rivers differ substantially in the forms of phosphorus they deliver, the relationships between concentrations and stream flow, and the timing of delivery. These differences illustrate the characteristics of point source versus nonpoint source dominated streams. As such, these differences are important to keep in mind relative to total maximum daily load and nutrient trading considerations, as well as to the development of watershed action plans and assessment of their impacts on Lake Erie.

Both tributaries are part of Heidelberg University's Tributary Loading Program, which includes ten other stations in Ohio. At each station refrigerated automatic samplers are used to collect three samples per day at or near US Geological Survey gages. At weekly intervals, samples are returned to our laboratories for analyses of nutrients, selected major ions, and suspended sediments. During low flow conditions, a single sample per day is analyzed while during high flows, all three samples per day are analyzed. A map of station locations and descriptions of our analytical procedures are presented in our tributary loading web site *(http://www.heidelberg.edu/academiclife/distinctive/ncwqr/data/guide)*. The sampling program on the Sandusky River was initiated in 1974 while that on the Cuyahoga River was started in 1981.

Summaries of the land use upstream from our Cuyahoga and Sandusky sampling stations are shown in Table 1. The Cuyahoga watershed upstream from the Independence gaging station is dominated by urban, suburban, and forested land uses while the Sandusky watershed is dominated by row crop agriculture.

Table 1. Land use in the Cuyahoga and Sandusky watersheds upstream from the monitoring stations.

River	USGS Station Number	Drainage Area	Agriculture-row crops	Grassland pasture	Forest	Urban/ Residential	Other
		sq mile	Land use by percentage				
Cuyahoga	04208000	707	9.3	12.4	34.6	37.7	1.1
Sandusky	04198000	1251	77.7	4.3	8.8	8.0	6.0

Pollutant Export Rates

In Table 2, unit area export rates for selected pollutants from the two watersheds are shown for the time period including the 2001 to 2010 water years. These loads are based on 4,822 samples for the Cuyahoga River and 4,612 for the Sandusky River. The amount of runoff from the Cuyahoga River is larger than that of the Sandusky, apparently due to the additional runoff from lake-effect snows in the Cuyahoga watershed.

Table 2. A comparison of average annual unit area runoff and unit area export rates of suspended sediments, nutrients and chloride for the Cuyahoga and Sandusky rivers from the 2001 to 2010 Water Years.

River	Runoff	Suspended solids	Total Phosphorus	Dissolved Reactive Phosphorus	Nitrate-N	Total Kjeldahl Nitrogen	Chloride
	Inches	lbs/acre					
Cuyahoga	20.8	1,323	1.36	0.21	7.64	5.2	751
Sandusky	15.0	585	1.41	0.32	18.02	5.6	91

Sediment export rates are also much higher in the urban/suburban/forested Cuyahoga watershed than for the cropland-dominated Sandusky watershed. Measurements of daily suspended sediment (SS) export by the U.S. Geological Survey (Hindall, 1989) at these same stations from 1977 to 1986 also showed higher export rates from the Cuyahoga River (1,360 lbs/acre) than for the Sandusky (1,010 lbs/acre). USGS measurements of the SS export rate at the Cuyahoga River's Old Portage gaging station (drainage area of 401 square miles) was very low (239 lbs/acre). Since the average SS export rate from the 707 square mile drainage area upstream from the Independence gaging station was 1,323 lbs per acre, very large amounts of sediment must enter the river between these two stations. The sediment exported from the Cuyahoga apparently originates from a combination of natural sources (stream beds and banks, flood plains, and steeply sloping forested soils) and urban/suburban construction sites. Cuyahoga river sediments also have larger average particle sizes and lower particulate phosphorus (PP) to SS ratios than sediment exported from the Sandusky River. SS exported from the Sandusky River is largely derived from cropland erosion.

Although the TP export rates for the Cuyahoga and Sandusky River are similar, the Sandusky has higher dissolved reactive phosphorus (DRP) and much higher nitrate-nitrogen (nitrate) export rates. Chloride export rates for the Cuyahoga are much higher than for the Sandusky. At least some of the high chloride export from the Cuyahoga is due to road salt applications. Chloride concentrations in the Cuyahoga increase during high flow events in the winter while they decrease as flows increase in the Sandusky.

Point and Nonpoint Phosphorus Export Rates

The procedures used since the 1970s to calculate nonpoint source phosphorus export from watersheds in the Great Lakes are illustrated in Table 3. These procedures involve subtracting upstream point source inputs, as reported for NPDES permits, from TP export, as measured at tributary loading stations. The procedure assumes 100% delivery through the stream system of phosphorus from point sources. Average annual point source inputs upstream from the monitoring stations are shown in Table 3 for the period from 2006-2008. Subtracting these inputs from the average annual export for each watershed gives an estimate of the nonpoint watershed export and respective unit area exports. The agricultural Sandusky River watershed has a higher nonpoint source phosphorus export rate than the urban/suburban/forested Cuyahoga watershed.

River	Total Phosphorus Export	Upstream Point Sources	Nonpoint Source Load	Unit Area Nonpoint Load
	tons	tons	tons	lbs/acre
Cuyahoga	296	89.4	207	0.92
Sandusky	533	16.2	517	1.29

Table 3. Calculation of nonpoint source phosphorus loading from the Cuyahoga and Sandusky rivers based on average annual total phosphorus export for 2001 to 2010 Water Years.

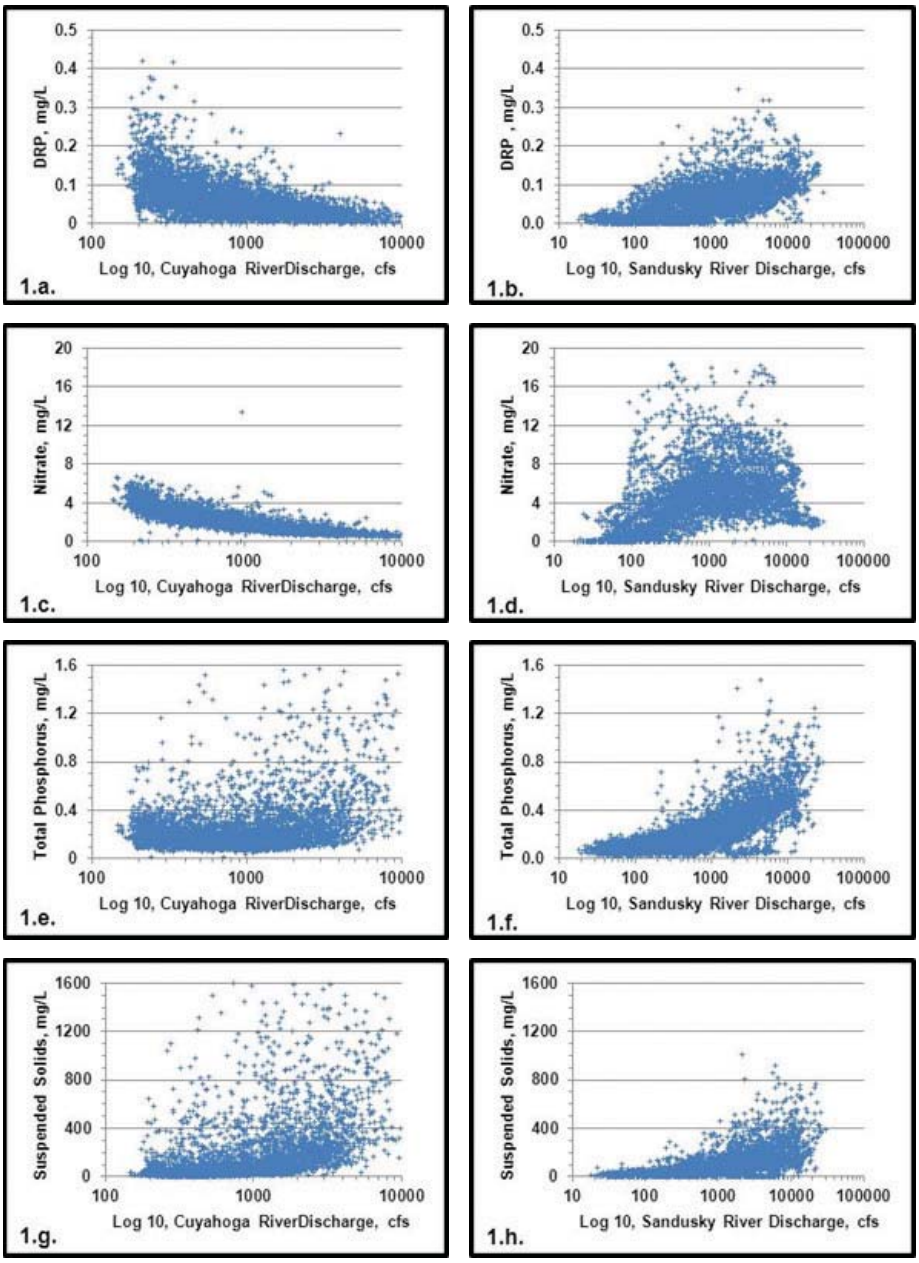

Figure 1. Relationships between nutrient and suspended sediment concentrations and stream discharge for the Cuyahoga and Sandusky rivers for the periods from 10/1/2000 to 9/30/2010.

Relationships between Streamflow and Nutrient Concentrations

The relationships between nutrient and SS concentrations and streamflow are shown in Figure 1. These graphs include all of the data collected during the 2000 – 2010 Water Years, with up to three samples per day during high flows and one sample per day under low flows. For the Cuyahoga, DRP and nitrate concentrations decrease as flows increase (Figure 1.a. & 1.c.). This pattern reflects increasing dilution of the relatively constant daily inputs of DRP and nitrate from point source inputs as streamflows increase. For the Sandusky River, the concentrations of DRP and nitrate increase as streamflow increases (Figure 1.b. & 1.d.). In the Sandusky watershed, the dissolved nutrients are derived primarily from cropland and enter the stream as part of storm runoff water, which also increases streamflow.

The relationships between stream flow and concentrations of TP and SS for the Cuyahoga River are shown in Figures 1.e. and 1.g respectively, while the relationships for the Sandusky River are shown in Figures 1.f. and 1.h. For both rivers, suspended solids concentrations increase with increasing streamflow. The elevated sediment concentrations during high flows reflect some combination of erosion on land surfaces associated with runoff and stream bank erosion during high stream flows. Since PP is associated with SS, PP concentrations tend to increase as SS increases. In the Sandusky River, the increasing TP with increasing streamflow also reflects the increasing DRP with streamflow. TP remains low at low stream flows in the Sandusky. For the Cuyahoga River TP is high at both high and low concentrations, reflecting sediment related PP at high flows and point source related DRP at low flows.

continued on page 36

It is also evident that the SS concentrations in the Cuyahoga River include many values that are much higher than is the Sandusky. The scatter in SS concentrations in the Cuyahoga River is also reflected in considerable scatter in TP concentrations.

The relationships between concentrations and streamflows shown in Figure 1 result in the flow weighted mean concentrations (FWMC) and the time weighted mean concentrations (TWMC) shown in Table 4. The FWMCs reflect the stream concentrations relative to pollutant loading to downstream receiving waters while the TWMCs reflect the concentrations relative to ambient water quality in the streams. Where concentrations increase on average with increasing stream flow, FWMCs are larger than TWMCs, as illustrated by DRP in the Sandusky River. Where concentrations decrease with increasing flows, TWMCs are larger than FWMCs as illustrated by DRP in the Cuyahoga River.

Table 4. Flow-Weighted and Time Weighted mean concentrations of suspended sediments, nutrients and chloride in the Cuyahoga and Sandusky rivers, 2001 to 2010 Water Years.

River	Concentration	Suspended solids	Total Phosphorus	Dissolved Reactive Phosphorus	Nitrate-N	Total Kjeldahl Nitrogen	Chloride
		mg/L					
Cuyahoga	FWMC	266	0.281	0.046	1.68	1.10	162.5
	TWMC	130	0.216	0.068	2.36	0.94	173.8
Sandusky	FWMC	167	0.396	0.087	5.62	1.67	28.7
	TWMC	65	0.186	0.048	4.11	1.07	41.5

Relationships between Streamflow and Pollutant Export

Where pollutants are derived from nonpoint sources, their export is dominated by periods of high flow. Where pollutants are derived primarily from point sources, their export tends to be significant over a much wider range of flows. These characteristics are illustrated in Table 5, which shows the proportions of the total pollutant load over the period from 2000 to 2010 that was exported by flows exceeded 10%, 20% and 50% of the time. For the Sandusky River, where DRP is derived from nonpoint sources, flows exceeded 10%, 20% and 50% of the time accounted for 66%, 84% and 98% of the DRP load. For the Cuyahoga River, where DRP export is derived primarily from point sources, the same flow exceedency periods accounted for 21%, 34% and 66% of the DRP export. The above patterns for DRP are also present for nitrate. Since sediment export from both rivers is derived primarily from nonpoint sources, high flows account for the bulk of the SS export from both rivers.

Table 5. The role of high flows in accounting for total discharge and total pollutant export from the Cuyahoga and Sandusky rivers for the period between 10/1/1999 and 9/30/2010

River	Discharge	Suspended solids	Total Phosphorus	Dissolved Reactive Phosphorus	Nitrate-N
	% of total discharge or load from flows exceeded 10% of time				
Cuyahoga	36.8	73.0	58.1	20.7	22.3
Sandusky	55.4	77.0	72.9	66.3	53.1
	% of total discharge or load from flows exceeded 20% of time				
Cuyahoga	54.1	85.3	71.2	34.2	36.1
Sandusky	74.8	90.8	88.0	83.8	74.7
	% of total discharge or load from flows exceeded 50% of time				
Cuyahoga	82.1	96.4	88.5	65.8	67.1
Sandusky	93.9	98.9	98.2	97.6	95.8

Trends in Phosphorus Loading

During the period from 1982 through 2010, when loading studies have been underway in both rivers, the trends in both DRP and TP loading have been downward in Cuyahoga River while they have been upward in the Sandusky River (Figure 2.a. & 2.b. on next page). In the case of the Cuyahoga River, the downward trend in DRP loads includes rapid decreases in loading during the 1980s followed by smaller increases in loads beginning in 1999 and a leveling off in loads in 2004. These changes in DRP loading likely reflect changes in the loads from municipal sewage treatment plants as phosphorus removal programs continued. The causes of the increased loads from 1999 to 2003 are uncertain but may correspond to the onset of phosphate additions to drinking water supplies to reduce corrosion and lead release in distribution systems. The small annual variability in DRP loads from the Cuyahoga River, relative to the Sandusky River also indicates that the DRP loading in the Cuyahoga River is not greatly influenced by annual variations in runoff.

The upward trends in TP and DRP loads from the Sandusky River are influenced by a combination of increases in stream flow that have occurred during this time interval and changes in farming practices. The increases in DRP loads have been observed throughout Northwestern Ohio. Factors that have been proposed as causes of increased DRP runoff include more broadcast applications of fertilizers

in the fall, phosphorus stratification in soils in the absence of inversion tillage, increases in tile drainage density, and increased soil compaction.

The increases in DRP loading from cropland have been linked to the increasing frequency of blue-green algal blooms in Lake Erie (Ohio EPA, 2010). DRP is 100% bioavailable to algae. In contrast, particulate phosphorus is only about 30% bioavailable to algae. Furthermore, the suspended sediments which carry the bulk of the particulate phosphorus into Lake Erie, settle out of the water column quickly. Thus the particulate phosphorus associated with the suspended sediments is physically removed from water in which algae populations grow.

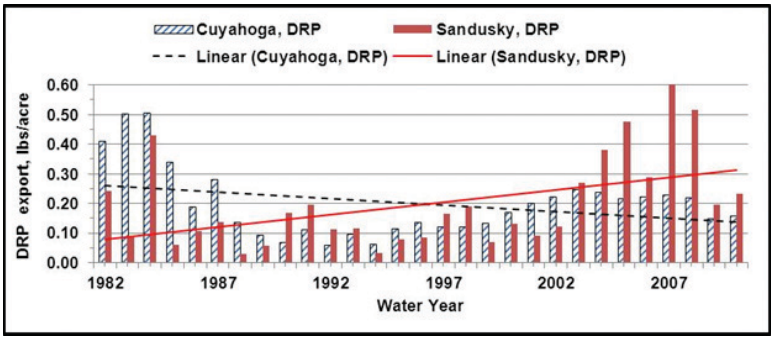

Figure 2.a.

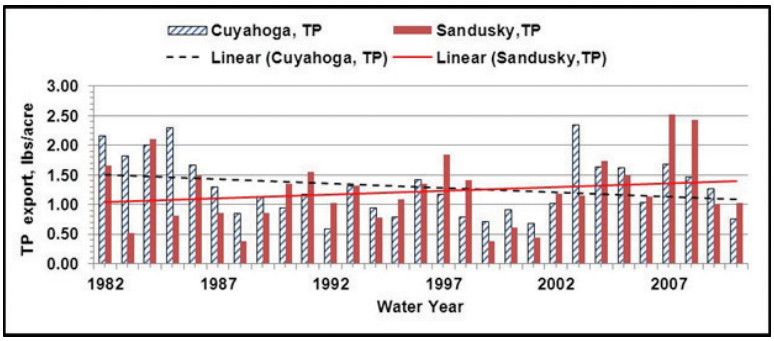

Figure 2.b.

Figure 2. Trends in DRP and TP unit area loads from 1982 to 2010 for the Cuyahoga and Sandusky rivers.

Implications for Management

Programs to manage nutrients are generally directed toward improving ambient water quality within streams and rivers and/or reducing nutrient loading to downstream receiving waters such as Lake Erie. In Ohio, total maximum daily load (TMDL) planning is often undertaken to bring stream and river water into compliance with Ohio's biological criteria. Biological impairments in rivers associated with elevated nutrient concentrations occur most often during low flow conditions when water moves through streams very slowly, allowing more time for the buildup of planktonic algal communities. This leads to larger diurnal fluctuations of dissolved oxygen that can increase stress on fish and invertebrate communities. Under low flow conditions, point sources are the primary source of nutrients to streams, and the resulting high loadings of dissolved nutrients can contribute to excessive algal growth. Consequently, point source controls will generally be essential to reduce the impacts of nutrient loading on ambient water quality in streams (Baker et al, 2006). Nonpoint control programs have minimal impact on nutrient concentrations during low stream flows and instead impact concentrations during high flow periods when ambient water quality programs in rivers are much less frequent. Thus TMDL planning, as well as nutrient trading programs between point and nonpoint sources, may not be appropriate for addressing ambient water quality problems in streams.

Where the goals of nutrient reduction programs are to reduce overall loading to downstream receiving waters, such as Lake Erie, TMDL planning may be more effective. However, a receiving water body may respond rather differently to equal nutrient loads, depending on how the loads are delivered. Nonpoint loads generally move into lakes in pulses having high volumes and high nutrient concentrations. An equal annual load from point sources would likely be delivered at high concentrations but in much smaller volumes at relatively equal daily loads, as opposed to loading pulses. The impact on the receiving waters could be very different depending on how the nutrient loads are delivered to the receiving waters.

Unlike the Cuyahoga and Sandusky rivers, where point sources dominate nutrient loads from one river and nonpoint from the other, many rivers have significant loading from both point and nonpoint sources. In such rivers, the patterns of nutrient concentrations in relation to streamflow combine both the point and nonpoint patterns. This is certainly the case where urban areas are located in watersheds that also have intense row crop agriculture. Examples of such areas abound within Ohio and include rivers such as the Scioto, Great Miami, and tributaries to the Maumee River.

Conclusions

Nutrients provide an excellent example of pollutants that are derived from both point and nonpoint sources. Often it will be essential to reduce loads from both sources. However, the patterns of nutrient concentrations and loading in streams differ greatly depending on whether the nutrients are derived from point or nonpoint sources. Where impairments of water quality due to excessive nutrient concentrations have been identified, it is essential to identify the specific sources of the nutrients that are causing the problem and treat those particular sources. Particularly where ambient water quality problems occur in rivers and streams, trading between upstream point and nonpoint sources of nutrients may not be an effective option.

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References

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Baker, David B., R. Peter Richards and Jack W. Kramer. 2006. Point Source - Nonpoint Source Phosphorus Trading: Applicability to Stream TMDLs in Ohio. In Proceedings: Innovations in Reducing Nonpoint Source Pollution: Methods, Policies, Programs, and Measurement, November 28-30, 2006, pp. 328-347. Rivers Institute at Hanover College, Hanover, Indiana.

Hindall, Steven M. 1989. Summary of Fluvial-Sediment Studies in Ohio, Through 1987. U.S. Geological Survey. Water Resources Investigations report 89-4066. Columbus, OH

Ohio EPA. 2010. Ohio Lake Erie Phosphorus Task Force (Final Report). Ohio Environmental Protection Agency, Division of Surface Water. Columbus, OH. http://www.epa.state.oh.us/dsw/lakeerie/ptaskforce/index.aspx

Richards, R.P, D.B. Baker, J.P. Crumrine. 2009. Improved Water Quality in Ohio tributaries to Lake Erie: a consequence of conservation practices. J. Soil & Water Conservation. 64:200-211.

Abbreviations: TP (total phosphorus); DRP (dissolved reactive phosphorus); PP (particulate phosphorus); SS (suspended sediments); TKN (Total Kjeldahl Nitrogen); nitrate (nitrate-nitrogen)

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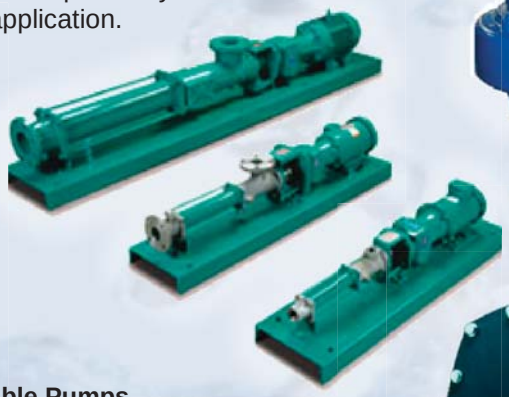

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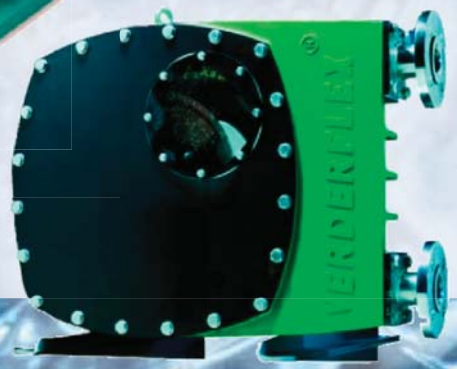

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MSDGC'S SYCAMORE CREEK TREATMENT PLANT

by Tom Kutcher, P.E., Assistant Superintendent

HISTORY OF SYCAMORE CREEK TP

The original Sycamore Creek WWTP was completed in 1954 as a trickling filter plant with a design capacity of approximately 1 MGD. Sludge was treated in a single anaerobic digester with the digested sludge applied to sludge drying beds located on site.

In 1970, the plant was upgraded and expanded hydraulically to treat 5 MGD using contact stabilization activated sludge. The upgrade included the removal of the trickling filter and sludge drying beds. The expansion included the construction of:

- Septic-sludge receiving tank
- Mechanical screening facilities
- Raw sewage pump station
- New primary settling tanks
- Contact stabilization aeration tanks
- Two additional secondary settling tanks
- Chlorine disinfection facilities
- Sludge recirculation pump station
- Sludge thickener
- Second anaerobic digester
- Aerobic digesters for WAS
- Stormwater holding tank
- Pump station
- Service building.

Completion of the 1989 plant expansion increased the average and peak design capacities to 6 MGD and 10 MGD, respectively. The upgrade/expansion included:

- New screen building with two new mechanical fine screens
- New grit and grease removal process
- Two new primary clarifiers
- New primary control building
- New aeration tank (no. 3)
- New aeration control building and generator building
- Conversion of secondary settling tank No. 1 to a hydraulic wasting tank
- Rebuilding of secondary clarifiers 2, 3, and 4 to secondary clarifiers 1, 2, and 3
- Addition of bypass filters
- Conversion of the stormwater holding tank to an auxiliary chlorine contact tank and post aeration Tank
- Replacement of the effluent pumps
- Administration building addition

Peak capacity through primary treatment was 20 MGD and peak capacity through the headworks and chlorination was 32 MGD. The filters were capable of filtering plant and secondary bypass flows before disinfection.

Upgrade of the disinfection system in 1994 included changing the disinfection system from chlorine gas to liquid sodium hypochlorite. Sodium bisulfite was used to de-chlorinate the plant effluent prior to discharge to Sycamore Creek. In 1995, a fourth secondary clarifier was added to the activated sludge process which increased peak capacity to 12 MGD.

Aeration Basin

After a flood in July 2001, which wiped out the plant and its equipment, efforts got underway in 2002 to rebuild and improve the plant to treat a design average flow of 9 MGD, and a peak instantaneous flow up to 50 MGD. Flows up to 18 MGD would receive primary, conventional secondary and tertiary (i.e. sand filtration) treatment. Flows greater than 18 MGD would be treated through a new chemically enhanced high rate settling (CEHRS) process. The flow from each treatment train would be jointly disinfected using ultraviolet light technology prior to plant effluent discharge to Sycamore Creek.

With the addition of a total phosphorus limit in 2010, modifications were made to convert the plant to an enhanced bio-p removal (EBPR) facility with tertiary filtration. Primary settling tanks were converted to anaerobic reactors, anoxic zones with recycle were added to the aeration tanks, and new disc filters replaced the old sand filtration system. Waste sludge is thickened to 3.5% and stored before being hauled to a larger MSD facility for dewatering and incineration.

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July 2001 Flooded Secondaries

New Disc Filters

Anaerobic Reactor

PERSONNEL

The dedicated staff at Sycamore Creek TP consists of a Senior Plant Supervisor, 4 Operators on 12-hour shifts, a Maintenance Crew Leader, 2 Plant Maintenance Workers, 1 Electrician, and 1 Instrumentation Technician. The Sycamore Creek TP is part of the MSD's WWT East Section which also includes the Little Miami TP (55 MGD) and Polk Run TP (8 MGD). Sharing of staff amongst the East Section plants is common especially for lab testing, administration, and maintenance supervision.

PROCESS DESCRIPTION

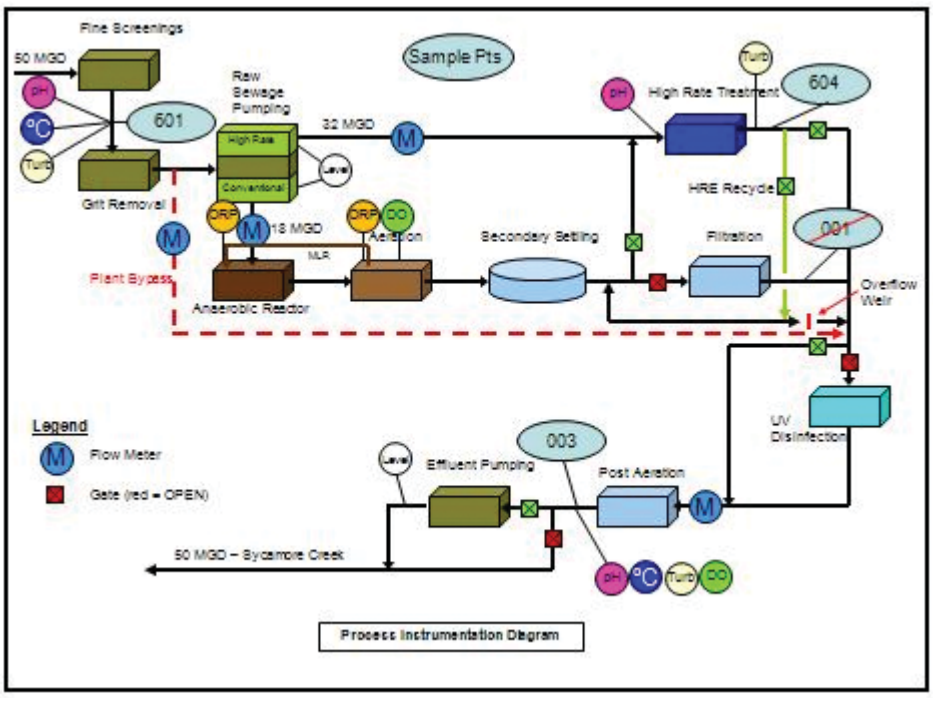
The Sycamore Creek basin delivers wastewater to the plant through three main trunk lines (30", 33", 36") which enter the headworks through a 42" and 36" inlet sewer. A 10-ft diameter stone pit collects large gravel before the flow enters the screening process. Four mechanically cleaned 6-mm fine screens remove rags and debris from the wastewater. Two vortex grit tanks then remove the grit from the wastewater before the influent pump station. The Headworks is designed for firm 50-MGD capacity.

The influent pump station uses four submersible pumps rated at 6 MGD each to deliver the flow to the plant (3 duty, 1 standby). These pumps are on VFD drives. Flows in excess of 18 MGD are diverted to an excess flow wet well which also has four submersible pumps (3 duty, 1 standby) rated at 10.67 MGD each to deliver up to 32 MGD to the high rate treatment process.

The first treatment process after pumping is now the anaerobic reactors. The two reactors provide contact time and mixing of the raw sewage with denitrified mixed liquor. The contact time is approximately 1-hour.

From the anaerobic reactors the flow enters the anoxic zones of the aeration tanks. There are two anoxic zones, with a contact time of 1-hour. The RAS enters the first anoxic zone and mixes with the anaerobic reactor contents. Following the anoxic zones are six aerobic zones with a contact time of 6-hours. Diffused air is supplied through fine bubble membrane diffuser discs by centrifugal blowers.

Solids separation occurs in three 95-ft diameter secondary clarifiers. RAS is returned to the aeration process by submersible pumps on VFDs. Mixed liquor is wasted directly from the aeration process to a gravity thickener where the thickened sludge is then pumped to a storage tank (~3.5% TS).



Plant Schematic

Secondary effluent under goes tertiary filtration through four new 10-micron disc filters, installed in 2011. Filtered effluent then passes through UV disinfection, post aeration, and then out to Sycamore Creek by gravity. If the water level in the creek gets too high, the effluent can be pumped out to the creek by four vertical turbine effluent pumps each rated at 16.67 MGD.

The high rate treatment system at Sycamore Creek is an Actiflo Process. Two trains rated, for 16 MGD each, provide coagulation, ballasted-flocculation, and settling to the excess flow in 6 to 7 minutes while producing an effluent usually less than 20/20 mg/L TSS/cBOD. The effluent from the high rate treatment process combines with the tertiary filter effluent before disinfection.

PERFORMANCE

The Sycamore Creek TP treats over 2.0 billion gallons per year averaging less than 5 mg/L TSS and cBOD. Summer ammonia and total phosphorus average less than 1.0 mg/L.

With the initiation of the EBPR process, the sludge production at Sycamore is less than half of what it was in 2010, averaging around 40-dry tons per month in 2011 versus 100-dry tons per month in 2010.

The kilowatt-hours used in 2010 averaged 2,576.5 kwh/MG, while in the same period for 2011 the plant averaged 1,198.6 kwh/MG. The electrical cost per MG in 2010 was $245.23/MG while in 2011 the plant averaged only $82.23/MG for the same time period.

FUTURE IMPROVEMENTS

The plant staff conducts biweekly continuous process improvement meetings to brainstorm and research ideas to improve the overall cost and performance of the facility. The staff is currently working on improvements to SCADA, adding some process monitoring cameras, and adding a Lint Screen to remove inert debris from the mixed liquor.

Facility tours can be arranged through our Senior Plant Supervisor, Dave Wilson, at 513.793.1525 or *dave.wilson@cincinnati-oh.gov*.

Our hats off to our dedicated staff:

Dave Wilson, Class IV, Senior Plant Supervisor
Joe Baer, Operator 2 w/2 license
Rachael Oscherwitz, Operator 2 w/2 license
Steve Solada, Operator 2 w/1 license
Aly Ouermi, Operator 1
Mike Scalf, Maintenance Crew Leader
Mike Henson, Plant Maintenance Worker
Joe Weems, Plant Maintenance Worker
Jarrod Yost, Instrumentation Tech
Chris Bingham, Electrician

These stewards of the environment make Sycamore Creek TP an award winning facility.

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WET WEATHER DISINFECTION ALTERNATIVES

by Curtis D. Courter, P.E., Hazen and Sawyer

Today utilities are under more pressure than ever to eliminate sanitary sewer overflows and bring CSOs into compliance with the Clean Water Act and the Federal CSO Policy. As the costs of compliance with the Clean Water Act continue to rise, communities are struggling to find alternative methods to address wet weather issues.

Wet Weather treatment alternatives usually require a smaller footprint and can be a lower cost alternative than conventional treatment plant capacity increases to address wet weather water quality impacts from overflows and POTW bypasses. Treatment alternatives vary widely in cost and complexity depending on the pollutants of concern that are being targeted. Beyond the nine minimum control requirements for CSOs, human health concerns often make bacteria reduction the primary basis of design for wet weather treatment. Disinfection is therefore a key component in any treatment system.

The selection of a disinfectant will often drive facility size and cost. There are advantages and disadvantages of alternative disinfectants, as well as design, operational, process control and cost considerations applicable to wet weather disinfection, whether at the POTW or in the collection system. By far, the most common disinfectant used to date in wet weather applications is sodium hypochlorite (NaOCl). However, many utilities are evaluating alternative disinfectants due to concerns over toxic residuals, costs of storage, deterioration of chemical between applications, and longer contact times. Alternatives considered often include ozone, UV, peracetic acid (PAA; also referred to as peroxyacetic acid) and Bromochloro-dimethylhydantoin (BCDMH), a bromine based compound.

Advantages and disadvantages for these alternative disinfectants, including design, operational, process control, and cost considerations are described below.

SODIUM HYPOCHORITE

NaOCl is the most commonly used disinfectant for wet weather flows. It is relatively safe to handle with minimal personal protection and handled with relatively inexpensive materials such as PVC and fiberglass reinforced plastic (FRP). Being a chlorine based compound, disinfection kinetics and the chemical reaction with other chemicals and microorganisms are well known. Thus, empirical equations are available that can predict dosage rates and decay rates based on the specific wastewater characteristics for a given application.

Required NaOCl dose depends on the wastewater characteristics, amount of available chorine in the solution (i.e. solution strength), and the contact time after injection. One commonly overlooked factor is mixing. The relationship of kill to concentration can be represented as: $K = G \times C \times T$

Where:

G is velocity gradient per second (mixing energy)
T is time in seconds
C is concentration
K is log bacteria kill

Depending on the waste stream, a 3 to 4 log kill is typically required to meet water quality standards. In order to achieve this when disinfecting wet weather flows, doses typically range between 5 mg/L and 25 mg/L (as chlorine - Cl2) with contact times from less than 5 minutes to more than 30 minutes. As shown in the relationship above, dose is inversely proportional to the contact time and mixing energy for a given kill. Assuming adequate mixing is provided in the design, the dose rate can then be controlled based on available contact time, which varies with influent flow rate. There are several benefits to this, including reducing chemical and power usage, as well as chlorine residual. Sizing of facilities for contact time can also be optimized relative to chemical costs. To meet receiving water quality standards, NaOCl disinfection is usually followed by dechlorination.

NaOCl is corrosive and materials selection is a key component in the design of storage and feed systems. The Chlorine Institute's Pamphlet 96 Sodium Hypochlorite Manual is an excellent

Positive displacement pumps (left) are typically used for feeding NaOCl. However, larger capacity feed and transfer systems typically use magnetic drive centrifugal pumps (middle). Fiberglass tanks are most commonly used to store NaOCl (shown right). Rubber lined steel tanks are also used for certain applications.

Tanker trucks are utilized to make bulk deliveries of NaOCl. Each truck carries around 5,000 gallons.

guide on all things NaOCl and includes compatible materials of construction for tanks, pumps and piping. On-site NaOCl generation systems are becoming more commonplace, but do not have adequate capacity for disinfection of wet weather, therefore bulk storage systems are still necessary. Stored NaOCl can last 6 months or more, but strength can degrade quickly under certain conditions. Special care must be taken to keep the solution cool and out of direct sunlight. Additionally, the purity of the solution and its initial strength affect how quickly its strength degrades. The design strength affects required storage volume and chemical feed rate. If the strength is not adequate at the time of the event, the system will not be able to feed enough chemical or the chemical will run out before the event is over.

NaOCl is relatively inexpensive compared to other disinfection alternatives. One Midwest utility pays $0.70 per gallon of 12.5% NaOCl. Assuming an average dose of 5 mg/L, this equates to $30 per million gallons treated. Other advantages and disadvantages are identified as follows:

Advantages/Disadvantages

The main advantages of NaOCl disinfection for wet weather applications are:

- Inexpensive compared to other disinfects discussed here;
- Readily available in bulk quantities throughout the U.S.;
- Materials compatibility is well established and products are specifically manufactured for use with NaOCl.

Cincinnati MSD's SSO 700 uses a high-rate physical chemical treatment process for clarification followed by UV disinfection.

The principle disadvantages of application of NaOCl for wet weather application are:

- Shortest shelf life of any of the disinfectants discussed in this article;
- Disinfection byproducts raise toxicity concerns; and
- Dechlorination systems are usually required to minimize chlorine residual.

ULTRAVIOLET IRRADIATION

Disinfecting with UV involves exposing the waste stream to ultraviolet light, which alters genetic material in microbial cells and prevents them from reproducing. Through exposure to UV, pathogens and indicator bacteria are inactivated and UV does not contribute to the formation of toxic disinfection byproducts.

Factors that influence the level of radiation emitted from UV lamps include mercury vapor pressure, chemical composition of the quartz sleeve, and electrical power input. The electromagnetic spectrum in which UV radiation occurs is between 100 and 400 nanometers (nm), and the most effective UV wavelength is 254 nm.

Both open and closed-vessel systems are available as well as three different types of UV lamp styles: low-pressure low intensity, low-pressure high intensity, and medium-pressure high intensity. Open channel systems use mostly low pressure, low or high-intensity UV lamps while closed-channel UV systems generally use low and medium-pressure high intensity lamps.

Because of their wavelength (254 nm), low-pressure high-intensity lamps, also known as low pressure high out (LPHO), are the most applicable to wastewater disinfection. Quartz sleeves are used to isolate the UV lamps from direct water contact and to control the lamp wall temperature for uniform lamp output. The useful life of LPHO UV lamps vary from 9,000 hours to 13,000 hours depending on the number of on-off cycles per day. The useful life of a quartz sleeve is about 4 to 8 years.

Medium-pressure high-intensity lamps are becoming more widely available and have been shown to be more effective on lower-quality wastewaters, which make them a viable alternative for CSO disinfection applications. They generate polychromatic radiation such that only 7 to 15 percent of their output is near 254 nm. However, since they are higher intensity, fewer lamps are required and contact time is reduced.

Anything that prevents UV light from reaching the microorganism will decrease the disinfection efficiency. UV disinfection systems generally require a total suspended solids (TSS) concentration of less than of 30 mg/l to operate effectively, requiring upstream clarification. Factors that affect disinfection efficiency include:

- Chemical and biological films that develop on the surface of UV lamps;
- Dissolved organics and inorganics in the wastewater, especially iron;
- Clumping or aggregation of microorganisms;
- Turbidity;

continued on page 50

- Color; and,
- Incomplete exposure of wastewater to UV light.

The cost of UV equipment is high relative to the storage and handling equipment for chemical disinfectants. Additionally, UV systems use a large amount of energy. When evaluating alternatives for one Midwest utility, electrical costs alone were between $21 and $57 per million gallons treated. This cannot be compared directly with the chemical costs because other consumables like lamps, ballasts, and quartz sleeves are not included. Because peak wet weather flows can be many times larger than average flows, it is often cost prohibitive to install a UV system to treat peak wet weather flows. Where, for example, the concern about disinfection byproducts are driving the selection of a UV system, a secondary system, like NaOCl can be provided to handle less frequent peak wet weather flows. Other advantages and disadvantages are highlighted below.

Advantages/Disadvantages

The main advantages of UV disinfection for wet weather applications are:

- Shorter detention times than chemical methods, leading to a smaller required system footprint;
- No chemical to transport, handle or store; and,
- There is no known potential toxic byproduct or any toxic residual.

The principle disadvantages of application of UV for wet weather application are:

- Sensitivity to wastewater quality, specifically TSS and turbidity;
- Quartz sleeves and lamps need to be protected from large objects that are frequently found in combined sewerage;
- Affected by turbulence and higher than design water level; and
- Build up of mineral deposits and bacterial growth on the sleeves reduces its effectiveness.

PERACETIC ACID (PAA)

PAA is an emerging disinfectant being evaluated by a number of utilities for use as a disinfectant both at the POTW and specifically for wet weather (CSOs). Currently there are no known full scale operations, although the City of Frankfort, Kentucky used PAA to disinfect their wastewater for seven months while they replaced their ozone reactor. PAA residual (as PAA) has similar toxicity to other disinfectants; but it quickly degrades to acetic acid (vinegar), water, carbon, and oxygen through a series of reactions. It does not form harmful byproducts after reacting with wastewater. However, acetic acid will exert an oxygen demand, which may be problematic with some receiving waters if overdosed in the treatment system.

There are several chemical manufacturing companies that manufacture PAA. However, only one, Solvay Chemicals, Inc., has a product with an EPA registration for disinfecting wastewater. With that registration there is a dose limit of 10 ppm and a residual in the discharged effluent of 1 ppm PAA. Because of this, utilities that have tested PAA for wet weather flows have had to get a special exemption from the permitting authority. Another possible issue in developing a full scale application for disinfecting wet weather is that the product is currently only delivered in totes. Bulk transfer in tankers may be necessary for high demand applications like CSO disinfection.

As with NaOCl, materials selection is important. Bench and pilot scale systems can use inexpensive non-metallic materials, but for a permanent system the materials selections are different. For example, plastic piping isn't recommended for other than a temporary pilot system, nor is titanium, which is used in certain applications with NaOCl. Instead, stainless steel piping is recommended for a permanent system and needs to be passivised, rendering the piping surface non-reactive to the chemical. As interest increases in PAA, more and longer duration chemical compatibility tests are occurring.

Some other observations based on literature reviews and testing being conducted by numerous utilities:

- PAA is an effective disinfectant for fecal coliform, total coliform and E. coli.
- Inactivation is a function of dose as well as contact time (i.e., the typical concentration times contact time (CT) concept as applied to other chemical disinfectants, such as chlorine, is valid). Disinfection kinetics are not well established, but current research indicates that Homs law, a derivation of Chick's law, can be used which takes into account the reduction in residual over time. Bench scale or better yet, pilot scale testing should be used to confirm the design.
- Required concentrations and contact times are for PAA disinfection are similar to NaOCl, with efficiency increasing with CTs up to 500 mg-min./L; actual dose is likely being below 10 mg/L most of the time but will likely exceed that during peak flows.
- At the concentrations commercially available for wastewater disinfection, storage, feed and mixing requirements are similar to NaOCl, except materials selection is different as noted above. However, some additional safety measures may be necessary.
- There is an exothermic reaction particularly during manufacturing and an associated explosion hazard at high concentrations. To mitigate this risk, the stock concentration of the commercially available product for wastewater disinfection is12 percent, but fire protection may still be necessary in storage and handling areas. Pressure relief on system components is also very important.
- PAA is more stable than NaOCl and degradation during storage is only a problem at lower strengths than what is commercially available.
- Recent price quotes for PAA in the Midwest was around $1.00 per pound. Reportedly operating costs for the Frankfort Kentucky operation were between $40 and $55 per million gallons treated.

Other advantages and disadvantages are identified as follows.

Advantages/Disadvantages

The main advantages of PAA disinfection for wet weather applications are:

- Similar operation to NaOCl;
- Longer shelf life than NaOCl;
- Reaction by products are non-toxic; and,
- Degrades quickly in effluent eliminating the need for a quenching system.

The principle disadvantages of application of PAA for wet weather application are:

- Only one temporary full scale operation in the U.S., and no full scale experience with disinfection of high wet weather flows;
- Only one commercially available product registered for wastewater disinfection;
- May require special permit for dose required to treat wet weather; and
- Bulk production, transport, and storage are currently not available.

BROMOCHLORODIMETHYLHYDANTOIN (BCDMH)

BCDMH is not currently in full-scale use in the United States, but has been used on CSOs in Japan and pilot tested at several locations in the United States, including Akron. It is stored in a powdered form and delivered from a hopper. Ebara of Tokyo Japan makes a single unit that stores the chemical, mixes it with water, and injects it into the waste stream. In wastewater, BCDMH breaks down to Dimethyl hydantoin (DMH), hypochlorous acid (HOCl), Hypobromous acid (HOBr), and dibromamine. Bromine disinfection produces similar disinfection byproducts as chlorine compounds like NaOCl, but they are reportedly less toxic, possibly due to faster decomposition times.

The hopper system provides both storage and feed in one equipment package and therefore BCDMH dosing systems are compact. Being a solid, BCDMH has a much longer shelf life than the NaOCl and PAA solutions, and can last over a year. For satellite facilities at locations that overflow infrequently, this would be a major advantage. Also, based on published testing results BCDMH is at least as effective as NaOCl, although pilot scale testing should be used to confirm this prior to design. Costs appear to be very high; recently estimated by Akron, OH at approximately $266 to $294 per million gallons treated. Other advantages and disadvantages are identified below.

Advantages/Disadvantages

The main advantages of BCDMH disinfection for wet weather applications are:

- Longest shelf life of any of the chemical disinfectants;
- Reaction by products are non-toxic; and,
- Degrades quickly in effluent eliminating the need for a quenching system.

The principle disadvantages of application of BCDMH for wet weather application are:

- Only a few pilot scale tests completed in the U.S., and no full scale experience;

Results from the City of Akron's pilot test at the Akron Water Pollution Control Station showed that BCDMH is an effective disinfectant.

- Costs per million gallons treated are higher than other chemicals;
- Reaction by products are more toxic than PAA and UV; and
- Only commercially available product currently manufactured in Japan.

SUMMARY

Wet weather disinfection has traditionally been accomplished using chlorine based disinfectants, most recently NaOCl. NaOCl is effective, is readily available, and is relatively inexpensive. However, shelf life can become an issue, especially at remote CSOs where infrequent overflows occur, and concerns over residual toxicity are driving utilities to look for alternatives. Some of the alternatives like UV are proven as well, but can be energy intensive and cost prohibitive. Emerging disinfectants like PAA and BCDMH are promising and provide alternatives to the limitations in the existing technologies. For example, use of PAA would address the toxicity issues of NaOCl, while BCDMH has a much longer shelf life providing assurance that effective disinfection can occur, even during infrequent and sporadic use. Additionally, both PAA and BCDMH offer a lower cost alternative and are a less energy intensive alternative to UV. Consideration of any of these newer alternatives should include bench and pilot scale testing to confirm system sizing and effectiveness. In addition, supply chain limitations should be carefully considered.

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Sources

1. *White, George Clifford. White's Handbook of Chlorination and Alternative Disinfectants. Hoboken, NJ: Wiley, 2010. Print.*
2. *Courter, Curtis D., and Moffa, Peter E. "The Challenges of Abating a Very Large Combined Sewer Overflow (CSO) Conner Creek, Detroit, MI." WEF Collection Systems 2006 Proceedings (2006). Print.*
3. *Hazen and Sawyer, P.C. Baldwins Run (C32) CSO Outfall Disinfection Feasibility Study. Rep. April 1, 2007. Print.*
4. *EPA 832-R-06-006. Emerging Technologies for Wastewater Treatment and In-Plant Wet Weather Management. Prepared by Parsons Corporation. February 2008. Print.*
5. *Hatch Mott MacDonald, and Brown and Caldwell. City of Akron BCDMH Pilot Disinfection Test. Rep. April 2006. Print.*
6. *Moffa, Peter E., et al. "Alternate Disinfection Technology Demonstrates Advantages for Wet Weather Application - A Pilot Study of Powdered Bromine Technology." WEFTEC 2006 Proceedings (2006). Print.*
7. *Molloy, Lawrence T., and Ayaka Kudo. "CSO Disinfection In Tokyo, Japan: Confined Space Solutions Using A Small Footprint, Energy Efficient, High Rate Disinfection System Utilizing a Bromine Based Biocide." WEFTEC 2006 Proceedings (2006). Print.*

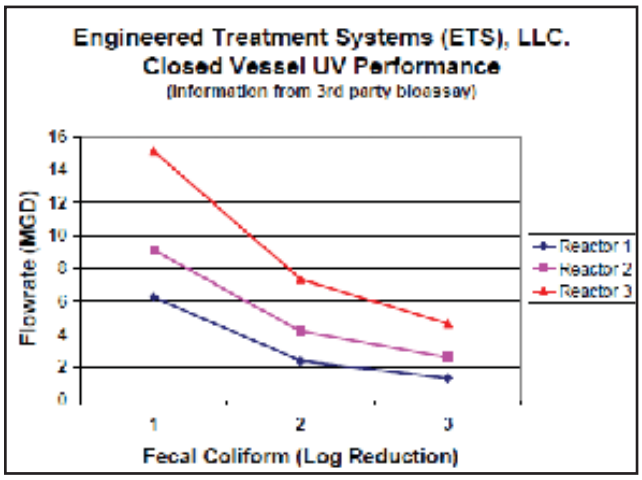
CLOSED VESSEL ULTRAVIOLET (UV) TECHNOLOGY FOR MUNICIPAL WASTEWATER

by Jon McClean and Patrick Bollman, P.E.

Ultraviolet (UV) disinfection is now a standard feature in many wastewater utilities. UV has also been adopted by the drinking water community as a barrier against chlorine tolerant species such as Cryptosporidium and Giardia. The technology is widely favored due to its non-chemical nature, the fact that no subsequent de-chlorination process is required, and its ability to be unselective in disinfection performance.

UV Science and Validating Performance

UV light works by causing permanent damage to the DNA found in all living species. Once the DNA becomes damaged, or dimerized, the organism is unable to carry out the routine cell functions of respiration, the assimilation of food, and replication. Once the cell is rendered non-viable the organism quickly dies. The difference in efficiency of UV systems from different UV manufacturers was made transparent with the advent of UV system validation using bioassay techniques.



A bioassay involves the introduction of a non-pathogenic organism (biodosimeter) into the fluid stream before the UV system. Examples of biodosimeters include: MS2, T1, and T7. The entire procedure is performed under controlled conditions, and each of the system variables: flow, transmittance, power loads and lamp intensity are carefully recorded, as samples are taken pre and post the UV system. Once the sample data is returned from the analyzing laboratory the actual system ability to disinfect can be compared to the manufacturer's claims. Of course bioassays should be carried out under the auspices of a credible third party.

As bioassay validations became more the norm, engineers started to notice that the water hydraulics play a vital and often overlooked role in system performance. In essence, if a UV system design allows short circuits or poor flow paths, then the water will receive differing degrees of UV dose. In extreme cases, the water can short circuit straight through a UV system, rendering it grossly inefficient. Most UV systems need to cope with a variety of flow rates, and usually an operating flow range is considered when designing the UV system.

Closed Vessel UV Systems Advances

The standard in the municipal wastewater industry is to put UV lamps in an open channel configuration. The industry went with this original configuration because early municipal adopters of UV disinfection retrofitted their chlorine contact basins. Even today when new plants are constructed, the norm is to install an open channel UV system because of familiarity. However, there are alternatives available for UV disinfection including closed vessel reactors with high powered amalgam or medium pressure lamps.

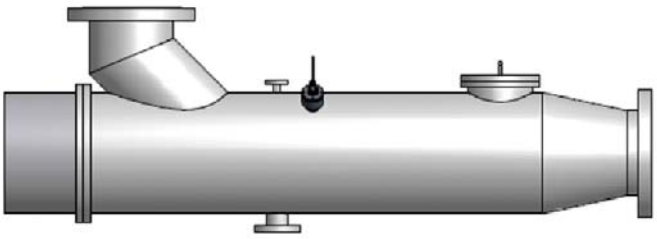
Early closed vessel reactors received poor grades because they were fitted with large amounts of low pressure lamps and did not have an automatic wiping mechanism. Today's closed vessel UV chambers are much different than the early systems as they are fitted with high powered amalgam or medium pressure lamps, automatic wiping mechanisms, air release valves, and hatches to gain access to the interior of the chamber. In fact, municipal wastewater applications are the only primary users of open channel UV systems. Municipal water, industrial process water, swimming pools and water parks, and ballast water (just to name a few) all utilize closed vessel UV systems.

There are many benefits for treatment plant operators and consulting engineers in designing and operating a closed vessel UV systems.

Installation

- Lower installation costs and easier and quicker installation.

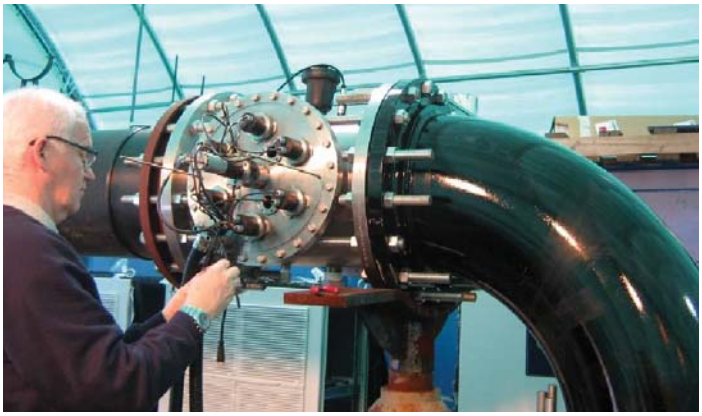
  Closed vessel systems can be thought of as a spool piece in a pipe. The systems are fitted with ANSI flanges and can be installed as a contractor would install plant piping. There is no need for pipe support directly under the chamber as pipe supports can be added to influent and effluent piping. Closed vessel chambers eliminate the need of precision alignment of poured concrete walls and floors. Some estimates are that closed vessel UV systems can reduce contractor installation costs by up to 80% for UV installation.
- Chambers can be installed in horizontal or vertical pipe runs.



ETS amalgam UV chamber

Medium pressure UV chamber

Vertical installation



Lamp connections and external wiper motor

Allows consulting engineers greater flexibility when designing a new or retrofitting an existing treatment plant. Vertical installations lead to a smaller footprint and no air entrapment, but will require additional headroom for gravity fed systems.

Maintenance

- Wiping mechanism is external to water.

  Systems are typically fitted with a fractional horespowered motor external to the chamber and water. The motor is coupled to an internal threaded screw which turns and drives the wiping carriage across the quartz sleeves and UV intensity monitor. It is critical to keep all optical paths free from fouling to ensure optimum disinfection.

- Wiper rings can be replaced without removing wiping carriage from chamber.

  Systems with access hatches allow operators to replace wiper rings without ever having to remove the complete wiper assembly.

- Individual lamp and sleeve replacement.

  Design allows for operators to replace lamps without draining the chamber and allows replacement of individual lamps with relative ease. The lamps are removed without any contact to effluent thus reducing the chances of disease or infection. Though to replace the quartz sleeves, the chamber will need to be drained. However, each sleeve can be replaced individually without having to handle multiple at one time.

Safety

- No open water surfaces.

  Open water surfaces can lead to fly and mosquito nuisance, as well as cause corrosion of electrical components due to elevated humidity. Operators can lose tools, cell phones, etc. that get dropped into the water. Sunlight causes algae to grow, and also stimulates an enzyme that can repair (photorepair) DNA damage caused by the UV system. Inhalation risk for operators from aerosols containing pathogenic organisms is poorly understood but can have long term health concerns.

- Reduced UV exposure.

  UV light will burn exposed skin in seconds, causing erythema (sunburn). Burns to the inside of the eyeball, sometimes called arc eye or welding flash are extremely painful and can lead to retinal lesions, cataracts, and yellowing of the lens on prolonged exposure. Closed vessel UV systems are designed to keep this damaging light internal to the chamber, thus reducing the chance for exposure.

IN SUMMARY

A persuasive case can be made to put the UV system for wastewater disinfection into a closed pipe like every other application that uses UV. This ensures optimized hydraulics and keeps the operators from exposure to UV and wastewater. Companies such as ETS have reactors up to 30 inches in diameter designed specifically for wastewater disinfection.

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FUNDING SMALL SYSTEMS

by Ken J. Heigel, P.E., Ohio Water Development Authority and Fred Smith, P.E., ms consultants, inc

Small wastewater systems in the State of Ohio have not been forgotten by the funding agencies. Since 1968, when the Ohio Water Development Authority (OWDA) was established, the OWDA and the Ohio Environmental Protection Agency (OEPA) have funded over 830 wastewater projects to over 350 small systems totaling over $735,000,000. This dedication to small systems still continues today. Ohio funding programs dedicated to small systems include OWDA's Community Assistance program, the Ohio Public Works Commission (OPWC) Small Government program, and the OEPA's Water Pollution Control Loan Fund's (WPCLF) Small Community Interest Rate program.

OWDA Community Assistance Program

Established in 1997, OWDA's Community Assistance Program provides loans with an interest rate of 2% for communities with a population less than 5000 or with fewer than 2000 customers. The 2% loan can be discounted if the applicant is regionalizing or if the applicant is under Findings and Orders from OEPA. To date OWDA has provided loans for over 100 wastewater projects totaling over $78,300,000.

OPWC Small Government Program

OPWC recently awarded its Program Year 25 projects to 51 small governments. 16 of the 51 projects were related to wastewater, totaling an award amount of $8,223,804. This total award included both grants and loans. Projects to this program are recommended by each district's Integrating Committee and scored by the staff of OPWC. Projects are awarded by the Small Government Capital Improvement Commission of the Ohio Public Works Commission.

OEPA's WPCLF Small Community Interest Rate Program

Communities with a population less than 5,000 or a project service population of 5,000 or less and that charges the entire debt for the project solely to the project service population can qualify for OEPA's WPCLF Small Community Interest Rate Program. The interest rate for this program is 0.50% less than the interest rate for the standard WPCLF loan program. Communities with a service population less than 2,500 and a medium household income of $45,000 or less can qualify for 0% interest rate.

Federal funding agencies also offer financing to small systems. These include the USDA Rural Development, Ohio Department of Development (CDBG Water and Sanitary Sewer program), Appalachian Regional Commission (ARC), U.S. Army Corps of Engineers, and USEPA (State and Tribal Assistance Grant program).

KEY COMPONENTS TO A SUCCESSFUL FINANCIING PACKAGE

Wastewater projects can be complicated and a challenge to fund, especially in small systems. The cost for small systems is generally higher per resident because there are fewer residents to pay the bill. This makes finding all available funding critical to reduce the cost users must pay each month for the project. Communities that have funded successful wastewater projects have three things in common:

- Early and constant communication with state and local agencies;
- Contact with funding sources as soon as the project needs are identified; and
- Coordinated long-term public involvement.

After your community has identified the need for a project, it is important to contact state and local agencies to begin to build a consensus of the need for the project. Some important agencies to contact at the state level include the OEPA Division of Environmental and Financial Assistance and the Ohio Rural Community Assistance Program. Both of these agencies can help you navigate all of the funding programs available for your project. Some important agencies to contact at the local level include your County Commissioners, your local community's regional planning commission and Appalachian local development district office, and your local health department. These agencies can help you build local support for the project, look at options for regionalization of services to reduce user cost, and help you evaluate funding options. You should also contact your representatives at the state and federal level. Let them know about your project and needs. These individuals can also help you secure funding for your project.

The local community will be responsible for repaying project loans. Since there are several funding options, it is important to create a funding package that will meet your project and community's needs. You must consider application deadlines, loan requirements, and loan terms when making decisions. The more you know, the better chance you have of saving your community money. Local and state government agencies will typically only be able to discuss the funding programs available from their agency. It is important that your design engineer has a funding specialist who has worked with all of the funding programs to maximize the amount of grants and minimize the amount of project loans. Outside the box funding can include public private partnerships to create jobs. Job creation can provide additional grant funding for projects. Funding specialists can also be able to tailor your funding applications to maximize the amount of grant funds and lower interest loans. Each funding agency has different requirements. Applications can be tailored to meet the scoring requirements of the individual agency.

Public involvement throughout a project will give the community ownership of the project. An informed public can become a great ally, and communities that understand their public's needs are more likely to gain acceptance of the project and support for new or increased user fees to pay for the project. You should consider forming a project team that considers members of your community and state and local government agencies. The team can help you establish an action plan and identify ways to save money by providing services, such as organizing public meetings. The team can also help you build trust with the public, educate the community on the project, identify key stakeholders such as landowners, business owners, clergy, and educators, and encourage attendance at the public meetings.

The continued reduction in the availability of grant funding at the federal and state level has required small communities to fund their projects with user fees. This continues to reduce the viability for successful, affordable projects. Communities need to look for ways to build consensus and support for their projects to increase this funding. This requires communities to work together with state and

local agencies, and to find engineers with experience in funding projects for small communities.

RECENT SUCCESS STORIES

Amesville obtains 64% of the total project cost from grants

Over a six year period, the Village of Amesville, located in Athens County with a population of 147, completed a wastewater collection and treatment system to replace failing septic systems. By acquiring grant funds in the amount of $910,000, for a total project cost of $1,415,000, the village was able to maintain monthly user rates to below $40 per household. The village also selected a decentralized system to minimize the monthly operation and maintenance cost.

The village received a $600,000 Community Development Block Grant, $60,000 OPWC Small Governments grant, and a $250,000 Appalachia Regional Commission grant. The village received a $450,000 OEPA WPCLF loan at an interest rate of 0% for 20 years and a $90,000 OPWC Small Governments loan at an interest rate of 0% for 20 years.,

The success of obtaining over 64% grant funds was attributed to working with the decentralized wastewater workgroup and the financial workgroup of the Small Community Environmental Infrastructure group (SCEIG). The SCEIG is a group of state and federal agencies and non-profit organizations to provide non-technical information, advice, and education to build the capacity of existing small, rural communities.

Blanchester receives ARRA funds to construct EQ basin

The Village of Blanchester, located in Clinton County with a population of 4243, recently completed the construction of a 1-million gallon storm water equalization basin, a wet weather pump station, and appurtenances at its wastewater treatment plant. The basin and pump station are part of Phase I of their 2007 master plan.

The Village utilized three funding sources and was the recipient of federal grant funds through the American Recovery and Reinvestment Act (ARRA). For planning and design, OEPA awarded the village a 0% loan through their WPCLF loan program. For construction, the OPWC awarded the Village a $400,000 grant and an $800,000 loan at an interest rate of 0% for 30 years.

Originally, OEPA awarded the Village a loan for $959,717 at an interest rate of 0% for 20-years. But due to the readiness to proceed, the Village was awarded ARRA funds in the amount of $909,791.35. Many communities in Ohio were able to take advantage of the one-time ARRA program. Thru the ARRA program, Ohio EPA was awarded $280 million for both water and wastewater projects.

Harrisville receives 0% planning loan from OWDA and principal forgiveness from OEPA

The Village of Harrisville, located in Harrison County with a population of 235, has failing on-lot septic tanks. In October 2009, OWDA awarded the village a planning and design loan in the amount of $200,500 at an interest rate of 0%. During a short period in 2008 and 2009, OWDA awarded planning loans with an interest rate of 0% to unsewered communities. The purpose of the program was to encourage communities to begin projects to take advantage of possible grant funding through the American Recovery and Reinvestment Act of 2009. OWDA awarded over 30 loans totaling $6.5 million to un-sewered communities. To date 4 projects have been constructed and 12 others are on the current Intended Project List of OEPA's WPCLF program.

Harrisville's has been nominated for 75% principal forgiveness from the WPCLF program. The village will also seek funding from ARC, OPWC, and CDBG for their $2.7 million decentralized wastewater collection and treatment project.

Harrisville, along with 5 other un-sewered communities, will be receiving principal forgiveness from the WPCLF loan program. OEPA included principal forgiveness for the first time since the WPCLF loan program was established. At this time the future of principal forgiveness as part of the WPCLF program is unknown. The anticipated federal funding level of the Clean Water State Revolving Loan Fund will be lower for fiscal year 2012 than fiscal year 2011. This being the case, the possibility of Ohio EPA to continue to provide principal forgiveness at the same funding level is slim.

THE FUTURE

In the last few years small communities in Ohio have benefited from new grant dollars through the ARRA and the WPCLF principal forgiveness programs. While we do not predict any additional grant funds through a federal stimulus program, time will tell if OEPA decides to continue with the principal forgiveness program.

A cording to Steve Grossman, Executive Director of OWDA, *"For now small systems will need to focus on cost savings measures by considering consolidation with other systems. Funders will need to coordinate project approvals to award the reduced amount of available grant funds to the systems in the most financial need."*

RESOURCES FOR FINANCING SMALL SYSTEMS

Ohio Rural Community Assistance Program *(www.glrcap.org/ohio)*

Small Communities Environmental Infrastructure Group *(www.sceig.org)*

continued on page 56

Appalachian Ohio Local Development Districts

Buckeye Hills – Hocking Valley Regional Development District *(www.buckeyehills.org)* serving the counties of Athens, Hocking, Meigs, Monroe, Morgan, Noble, Perry and Washington

Ohio Mid-Eastern Governments Association *(www.omegadistrict.org)* serving the counties of Belmont, Carroll, Columbiana, Coshocton, Guernsey, Harrison, Holmes, Jefferson, Muskingum and Tuscarawas

Ohio Valley Regional Development Commission *(www.ovrdc.org)* serving the counties of Adams, Brown, Clermont, Fayette, Gallia, Highland, Jackson, Lawrence, Pike, Ross, Scioto and Vinton

Regional Planning Commissions

Toledo Metropolitan Area of Council of Governments *(www.tmacog.org)* serving the counties of Fulton, Lucas, Ottawa, Sandusky, and Wood

Miami Valley Regional Planning Commission *(www.mvrpc.org)* serving the counties of Greene, Miami, and Montgomery

Bel-O-Mar Regional Council *(www.belomar.org)* serving Belmont County.

Brooke-Hancock-Jefferson Metropolitan Planning Commission *(www.bhjmpc.org)* serving Jefferson County

Eastgate Regional Council of Governments *(www.eastgatecog.org)* serving Mahoning and Trumbull County.

Northeast Ohio Areawide Coordinating Agency *(www.noaca.org)* serving the counties of Cuyahoga, Geauga, Lake, Lorain, and Medina.

Northeast Ohio Four County Regional Planning and Development Organization (330-252-0337) serving the counties of Portage, Stark, Summit, and Wayne.

Ohio-Kentucky-Indiana Regional Council of Governments *(www.oki.org)* serving the counties of Butler, Clermont, Hamilton, and Warren

Mid-Ohio Regional Planning Commission *(www.morpc.org)* serving the counties of Delaware, Franklin, Pickaway, and Ross

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STORM WATER BMPS FOR WASTE WATER TREATMENT PLANTS

by Elizabeth Wick, P.E.
Ohio EPA, Division of Surface Water Northwest District Office

Recently, the Industrial Storm Water General Permit (IGP) expired. Ohio EPA is in the process of adopting a general permit that is similar to U.S. EPA's Multi-sector General Permit (MSGP). This permit covers eleven categories of industrial activities. One of those categories is Treatment Works. A treatment works is required to obtain coverage under the MSGP if any of the following conditions apply:

- *Has a design flow of 1.0 MGD or more*
- *Has an approved Pretreatment Program*

Some wastewater treatment plants (WWTPs) are covered under the current Industrial General Permit. While the current version of the permit has expired, coverage remains in effect until Ohio EPA issues a new general permit. Once the general permit is renewed, Ohio EPA will send an application packet to all permittees instructing them on how to renew coverage. You will have 90 days from receipt of these instructions to renew permit coverage. If there have been staffing changes at the plant, now would be a good time to make sure your facility's contact information is up to date with the Agency. A current list of facilities with IGP coverage can be found at: *http://www.epa.ohio.gov/dsw/permits/gplist.aspx*.

Other WWTPs have storm water language incorporated into the same individual NPDES permit that covers the plant's effluent. The storm water language can be found in Parts IV, V, and VI of the individual permit. This language is almost identical to the current IGP. Once Ohio EPA adopts the MSGP, we anticipate modifying Parts IV, V, and VI to be consistent with the MSGP. Permit language would be modified during renewal of the individual NPDES permit.

Storm Water regulations allow a conditional exclusion from NPDES permit coverage. This is called a No Exposure certification (NOE). "No Exposure" is defined as all industrial materials and activities being protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. Industrial materials or activities include, but are not limited to, material handling equipment or activities, industrial machinery, raw materials, intermediate products, by-products, final products, or waste products. Some WWTPs have submitted NOEs. They are obligated to maintain the condition of No Exposure and to resubmit the NOE certification once every five years. To make sure the latter occurs, Ohio EPA recommends that those WWTPs who have submitted NOEs note the date of submittal in any compliance or routine maintenance tracking software that they use. A copy of the NOE form and related guidance can be found at *http://www.epa.ohio.gov/dsw/storm/stormform.aspx#no_exposure_certification*.

If all of the storm drains within the confines of the plant discharge to the head of the treatment plant, no action is required. There is no requirement to apply for the MSGP or file a No Exposure certification.

The MSGP requires development of a written Storm Water Pollution Prevention Plan (SWPPP) and implementation of control measures. The SWPPP is a written assessment of the potential sources of pollutants in storm water runoff and the control measures that will be implemented at the facility to minimize the discharge of pollutants in runoff from the site. These control measures include site-specific best management practices (BMPs), maintenance plans, inspections, employee training, and reporting. The procedures documented in the SWPPP must be implemented by the facility and updated as necessary. The MSGP also requires sampling and analysis to determine the effectiveness of the BMPs.

There are a variety of BMPs that will eliminate or minimize pollutants in the storm water discharges from waste water treatment plants (WWTPs). Most likely, a combination of several BMPs will have to be used. First consideration should be given to pollution prevention BMPs which are designed to prevent pollutants from entering storm water runoff and/or reduce the volume of storm water requiring management. Pollution prevention BMPs may include regular clean up, collection and containment of debris in storage areas and other housekeeping practices, spill control, and employee training.

It may also be necessary to implement treatment BMPs which are engineered structures intended to treat storm water runoff and/or mitigate the effects of increased storm water runoff peak rates, volume, and velocity. Treatment BMPs are generally more expensive to install and maintain and can include oil/water separators, wet ponds, and proprietary filter devices.

A poorly placed sludge storage pile.

Effects of a sediment laden discharge on the receiving stream.

A combination of preventive and treatment BMPs will yield the most effective storm water management for minimizing the offsite discharge of pollutants via storm water runoff. Keep in mind that all BMPs require regular maintenance to function as intended. Some management measures have simple maintenance requirements, others are more involved. All BMPs must be inspected regularly to ensure they are operating properly. If a problem is found, it must be fixed.

BMPs must be selected and implemented to address the following:

- **Good Housekeeping Practices**
  Good housekeeping is a practical, cost-effective way to maintain a clean and orderly facility to prevent potential pollutant sources from coming into contact with storm water runoff. Common areas where good housekeeping practices should be followed include trash containers and adjacent areas, material storage areas, vehicle and equipment maintenance areas, and loading docks.
- **Minimizing Exposure**
  Where feasible, minimizing exposure of potential pollutant sources to precipitation is an important control option. Minimizing exposure prevents pollutants from coming in contact with precipitation and can reduce the need for BMPs to treat contaminated storm water runoff. Examples of BMPs for exposure minimization include covering materials or activities with temporary structures like tarps when wet weather is expected or moving materials or activities to buildings or silos.
- **Erosion and Sediment Control**
  BMPs must be selected and implemented to limit erosion on areas of the treatment works that are likely to experience erosion due to topography, activities, soils, or other conditions. Erosion controls such as seeding, mulching, and sodding prevent soil from eroding and should be considered first. Sediment controls such as silt fence, sediment ponds, and stabilized entrances trap sediment after it has eroded.
- **Runoff Management**
  Your SWPPP must contain a narrative evaluation of the appropriateness of storm water management practices that divert, infiltrate, reuse, or otherwise manage storm water runoff to reduce the discharge of pollutants. These measures are site specific, but can include vegetative swales, collection and reuse of storm water, inlet controls, snow management, and wet retention measures.

The table below and on page 60 lists some BMPs for the control of pollutants at treatment works to minimize and prevent the discharge of pollutants in storm water. Identifying weaknesses in current facility practices will aid in determining the appropriate BMPs for your plant. Keep in mind that this is not a complete list of ideas. Your district office storm water representative or consulting engineer can help you determine the best solution for your plant.

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Best Management Practices (BMPs) for Potential Pollutant Sources at Treatment Works

Pollutant Source	BMPs
Preparation of chemical, biological, and physical treatment process	• Store process chemicals inside buildings • Use drip pans under drums and equipment where feasible. Inspect regularly for filled drip pans. • Train employees on procedures for storing and inspecting chemicals.
Soil amending and grass fertilizing	• Use the appropriate amount of fertilizer. • Train employees in timing and quantity to avoid over application.
Liquid storage in above ground storage tanks	• Cover and/or enclose chemical storage areas. • Provide secondary containment. • If containment structures have drains, ensure that the drains have valves, and that valves are maintained in the closed position. Institute protocols for checking/testing storm water in containment prior to discharge. • Use double-walled tanks with overflow protection • Locate storage areas away from high traffic areas and surface waters. • Inspect storage tanks and piping systems for failures or leaks and perform preventive maintenance. • Maintain an inventory of fluids to identify leakage. • Provide fluid level indicators. • Properly dispose of chemicals that are no longer in use. • Store and handle reactive, ignitable, or flammable liquids in compliance with applicable local fire codes, zoning codes and National Electric Code. • Provide drip pans/pads where chemicals are transferred from one container to another to allow for recycling of spills and leaks. • Develop and implement spill plans or spill prevention, containment, and countermeasure (SPCC) plans, if required for your facility. • Train employees on proper storage and transfer procedures.
Sludge drying beds	• Ensure drying beds are draining properly (e.g. check for clogging). • Avoid overfilling drying beds. • Grade the land to divert surface flow around drying beds. • Berm, dike, or curb drying bed area. • Cover drying beds.

Pollutant Source	BMPs
Equipment/vehicle maintenance and storage	**Good Housekeeping** • Eliminate floor drains that are connected to the storm sewer. • Do all cleaning at a centralized station so the solvents stay in one area. • Use drip pans, drain boards, and drying racks to direct drips back into a fluid holding tank for reuse. • Promptly transfer used fluids to the proper container. Do not leave full drip pans or other open containers around the shop. • Clean up leaks, drips and spills without using large amounts of water. Use absorbents for dry cleanup whenever possible. • Prohibit the practice of hosing down an area where the practice would result in the discharge of pollutants to a storm water system. • Eliminate or reduce the number and amount of hazardous materials and waste by substituting nonhazardous or less hazardous materials. • Store batteries and other significant materials inside. **Minimizing Exposure** • Perform all cleaning operations indoors or under covering when possible. Conduct the cleaning in an area with a concrete floor with no floor drains other than those connected to the sanitary sewer or treatment facilities. • Park vehicles and equipment indoors or under a roof whenever possible and maintain control of oil leaks/spills. **Management of Runoff** • Use berms, curbs, grassed swales, or other diversion methods to ensure that storm water runoff from other parts of the facility does not flow over the maintenance area. • Discharge vehicle wash or rinse water to the treatment works, a land application site, or recycle on-site. Do not discharge wash water to a storm drain or to surface water. **Inspections and Training** • Inspect the maintenance area regularly to ensure BMPs are implemented. • Train employees in waste control and disposal procedures.
Miscellaneous	• Dispose of grit/scum at a licensed landfill. • Dispose of screenings on a daily basis. • Maximize vegetative cover to stabilize soil and reduce erosion. • Route storm water to the treatment works. • Cover compost piles. • Cover exposed materials at septage or hauled waste receiving station.

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

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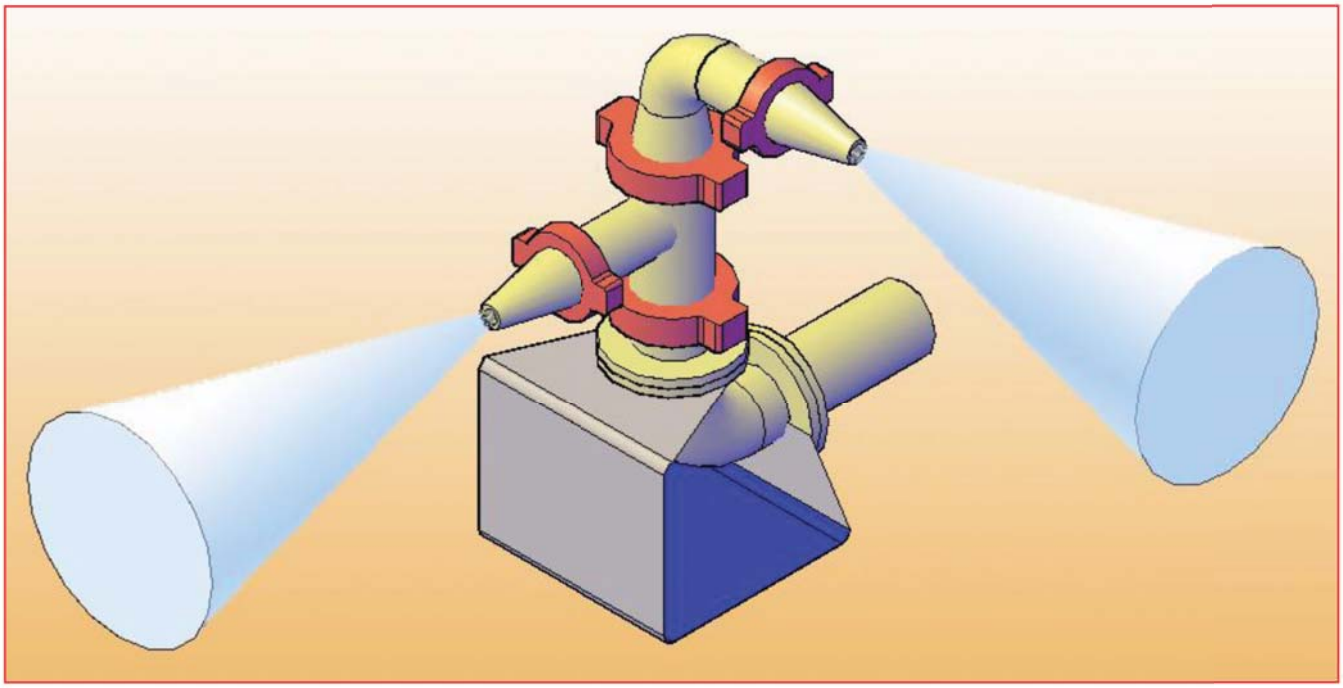

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