Aerial view of Sun Prairie Water Pollution Control Facility

53rd Annual W.W.O.A. Conference
October 8-11
KI Convention Center, Green Bay
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The Clarifier is the publication of the Wisconsin Wastewater Operators’ Association and is intended to inform and educate the membership on issues related to the treatment and control of wastewater. The Clarifier is produced five (5) times each year: February, April, June, September, and December. All members are encouraged to contribute to the mission of the Clarifier.

The Wisconsin Wastewater Operators’ Association is a non-profit organization dedicated to educating, informing, and advancing the wastewater profession. WWOA has approximately 2,000 members divided throughout six regions: Southeast, Southern, Lake Michigan, North Central, Northwest, and West Central.
Presidents message: Be an everyday hero!

When you think of a hero, what comes to mind? Soldiers, police, firefighters, those who put their lives on the line each day to protect our freedoms and possessions? Yes, these are heroes!

We also hear about ordinary people in the news who react out of impulse in an emergency to help someone, save a life or avoid a dangerous situation that could have ended in disaster.

Our world has changed a lot over the past 25 years. We operate at an accelerated pace with technology leading this change. We expect the tasks and duties of everyday life to be done faster and without interference. We get upset quickly when things don’t go as planned. Consequently, we are under a great deal of stress. We tend to look inward instead of outward.

So, how can we be “everyday heroes”? Look outside of ourselves to the people we come in contact with each day. Ask them simply how their day is going. Then, listen. Maybe we can help with a problem or just lift them up and let them know they are doing a good job.

I am reminded of a story my pastor told us at church one Sunday about a high school boy who came to a new town. He had a hard time fitting in, and one Friday as he was walking home with a stack of books, some bullies laughed at him and knocked the books out of his hands all over the sidewalk. One student noticed and came to help him out.

After introducing himself, he explained that not all students were like that and invited him to come over and play ball. That act of kindness gave the new guy hope and he went on to acclimate to school, become a star athlete and very popular.

In his commencement speech as valedictorian, the student explained that on that Friday long ago, he had devised a plan to commit suicide. He had been carrying all of his books so that after he was gone, his parents wouldn’t have to go back and clean out his locker. Had it not been for the kindness of the “everyday hero” reaching out on that Friday, the story could have ended in tragedy.

We just never know what others are going through or how we can help.

Our challenge? Be an “everyday hero” today. You might be amazed at how good it makes you feel.

Sincerely,
Jeff (Juice) Simpson

I would like to sincerely thank all of the great vendors that attended the 2018 WWOA Conference and made the Packer Ticket and Lodge Kohler grand prize possible. Although the Packers suffered a 31-0 loss to Detroit, the experience was surely memorable. Thanks to you, my husband and I got to enjoy a weekend away spending it in the absolute best way known to a Cheesehead!

With appreciation,
Brooke Klingbeil, Laboratory Director
Medford Wastewater Treatment Plant
City of Sun Prairie Water Pollution Control Facility

Background
The City of Sun Prairie has provided some form of wastewater treatment since 1916. Many upgrades have occurred since that time with the first major upgrade completed in 1982. It was at this time, that the plant was moved to its current location at 3040 Bailey Road and was renamed the Water Pollution Control Facility where it continues to discharge to Koshkonong Creek. Upgrades included a new influent pumping station, grit removal, comminitor, primary and secondary clarifiers, RBCs, sand filters, chlorine disinfection, primary and secondary digesters, and sludge storage lagoons. One minor upgrade occurred in 2002 where screening and chemical phosphorus removal processes were added.

The rapid growth of the City along with more stringent Department of Natural Resources (DNR) effluent limits had the City planning for another major upgrade in 2001. This upgrade replaced the RBCs with an activated sludge treatment process with biological phosphorus removal and UV disinfection. Construction started in 2005 and was completed in 2007.

The Process
A 42-inch diameter gravity interceptor collects and conveys wastewater to the influent pump station where two - 40 HP and two - 75 HP variable speed pumps lift the wastewater 35 feet to begin the treatment process.

The wastewater then moves through a channel to a mechanically cleaned screen. The screen removes rags, plastics and other debris larger than 1/4 inch to minimize maintenance problems downstream and to prevent this material from entering the biosolids that are applied to agricultural sites.

Step screen

continued on page 6
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From the screening process, the wastewater flows through a vortex-type grit chamber where grit, sand, and other inorganic material is removed. This material is washed and dewatered in the grit washer to reduce odors when trucked to the landfill for disposal. The flow continues to two rectangular primary clarifiers where grease and biosolids are removed and pumped to the primary digesters for further treatment. As an aid to the ensuring Bio-P removal, primary sludge is held longer in the clarifiers in the form of higher blanket levels. The ensuing fermentation process increases the levels of volatile fatty acids (VFAs) heading to the nutrient selector basin.

Effluent from the primary clarifiers flows to the biological nutrient removal (BNR) selector basin. The primary effluent is seeded with the BNR basin effluent and kept in a temporary anoxic state to promote the growth of specifically formed bacteria to encourage the release of Nitrogen in the form of N2 gas and to utilize phosphorus compounds releasing phosphorus into the waste stream to be utilized later.

Downstream of the selector basin are the 3 aeration basins. Once in an aerobic environment, bacteria stabilize the waste and take a “Luxury” uptake of phosphorus removing it from the waste stream. Each aeration basin has three passes where the dissolved oxygen (DO) is monitored and

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Primary clarifiers

Activated sludge basins

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adjusted to DO set points through a blower and automatic air valve actuator system. To ensure that both nitrification and phosphorus limits are met, we use graduated set points between the three passes. 1.0 mg/l for pass 1, 1.5 mg/l for pass 2, and 1.75 mg/l for pass 3.

Secondary clarification begins with equal flow distribution to each of the secondary clarifiers via the secondary clarifier splitter box. Mixed liquor flow is divided between the two clarifiers through four gates that are located in the splitter box. Stamford baffles are located around the clarifier perimeter, just below the weir troughs, to prevent short circuiting of flow up the clarifier wall and over the weirs. Return activated sludge (RAS) is pumped off the bottom of the clarifiers and is sent back to the selector basin. Waste activated sludge (WAS) is pumped daily to the aerated WAS basin where it is gradually pumped to the gravity belt thickener (GBT). The GBT thickens the WAS from around 1/2 percent to about 5 percent before it’s pumped to the primary digesters.

Secondary clarification is followed by a polishing process using traveling bridge sand filtration. Fine solid particles are removed along with associated BOD and phosphorus.
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Once the wastewater passes through the sand filters, it then passes through the UV disinfection system before heading down a cascade and discharging to the Koshkonong Creek.

Primary digestion continues for an average of 50 days at a set point of 94 degrees. The digesters are heated by two heat exchangers using the methane gas generated during digestion. Excess heat from the digester boilers is distributed via a plant heating loop to various plant buildings. On average, this excess heat generated can supply about 60 percent of the plant’s heating needs on an annual basis.
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A belt filter press (BFP) is used to increase the biosolids concentration from about 2 percent to about 13 percent.

The biosolids are then hauled to the storage building where it is kept until it can be spread on agricultural sites by the City’s contractor.

**SCADA Controls**

A majority of the equipment at the treatment plant is tied into the Supervisory Control and Data Acquisition (SCADA) System. The main computer station is located in the Administration Building that provides monitoring and control of plant equipment.

This system can also be accessed from two other workstations located in the plant. Alarms come into the computer stations alerting staff of the alarm condition and location. After hours, alarms go to the Sun Prairie Police Department Dispatch Center where staff on call are contacted.

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**Belt press**

**Biosolids storage building**
MAJOR ANNOUNCEMENT!

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Process Design Parameters

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WPDES Permit

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<tr>
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*Continue to meet Permit requirements

Plant Upgrades

The City is currently working on its third major plant upgrade at the Bailey Road site. This upgrade is needed to meet the new monthly average phosphorus limit of 0.225 mg/l with six month average of 0.075 mg/l that goes into effect on October 1, 2022. With the current population of 33,514, the upgrade will also include adding additional capacity to handle a projected population of 44,480 in 2038 with average flows projected to increase from 3.7 mgd to 4.6 mgd over this same time period.

Staff worked closely with the consultant team of MSA and Donohue and came up with three different implementation packages ranging in cost from $15,130,000 to $20,120,000. The City accepted the recommendation for package two at a cost of $17,710,000.

The following are major items included in plant upgrade:
- Replace two raw wastewater pumps with higher capacity pumps.
- Add a second mechanic fine screen.
- Add a third primary clarifier.
- Add a new primary sludge gravity thickener/fermenter.
- Increase the size of the existing biological nutrient removal selector basins.
- Replace two existing aeration blowers with higher efficiency units.
- Add two secondary clarifiers.
- Replace the existing tertiary filtration system to provide low-level phosphorus removal.
- Add a sludge conditioning system and construct a second biosolids cake storage building.
- Add a side stream pump station

We anticipate that the plans and specifications will be completed by the end of Sept. with bid opening scheduled for mid-Nov. 2019 and construction to start by mid-April 2020. Final completion of the upgrades is projected to be around the end of Nov. 2021 with the City meeting its new phosphorus limit by Oct. 1, 2022.

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Oshkosh WWTP hosts Lake Michigan meeting in February

The February 14th Lake Michigan District meeting at the Oshkosh WWTP was another great meeting with over 60 operators, along with 12 equipment and process vendors. A special thanks to LW Allen for sponsoring the treats during the breaks.

The first presentation of the day was given by Rick Bartelt of LW Allen, who spoke on Rags to Riches, Pumps that Handle Rags. Rick explained the growing problem of wipes on sanitary sewer systems and mentioned that are two main options with dealing with the wipes. Option No. 1 is to pump the problem to the WWTP with solids handling pumps, chopper pumps, or with the use of a grinder before the lift station pumps. Option No. 2 is to install a screen at the troublesome lift stations. Rick then went on to describe how a vortex pump works. Next, Rick gave an overview of a new style chopper pump that has removable cutter blades that do not require the replacement of the impeller. Lastly, Rick explained how grinders and screens work in a lift station.

Next on the agenda was Chris Kincaid of Enviro-Care. Chris's presentation was titled Selecting the Right Screen for Your Headworks and Septage Receiving. Chris began the presentation by discussing the benefits of screening, which removes inorganic material from the process stream. Chris then went on to explain the results of poor or non-existent screening systems, which cause problems for downstream pumps, grit removal systems, clarifiers, aeration systems, and sludge dewatering systems. After

continued on page 18
that, Chris walked through the differences between slotted and perforated screens. Chris finished his presentation by discussing the best uses, pros, and cons of the different styles of screens.

Holly Blazer called the WWOA-LMD business meeting to order. Last quarter’s minutes and treasurer’s report were approved. The next item on the agenda was the WDNR update by Roy Van Gheem. First off, for the DNR update, scores from the February 6th Operator Certification exams are in the process of being sent out, and the scores should be received by the end of February. The second item was that applications for the May 1st Operator Certification exams should be available by the end of February and can be downloaded from the DNR website. The deadline to apply is April 3rd. The third item is that there have been recent staffing changes within the DNR. Lisa Lumley has started her role as a WPDES wastewater permit drainer in the wastewater program. Lisa will be filling the position, previously held by Dick Sachs, and will be working out of the Green Bay office. The fourth item is that public comments were accepted on the draft TMDL for the Upper Fox and Wolf River Basins through January 18, 2019. The DNR is currently reviewing the comments received and will be submitting the TMDL to the EPA for approval. The draft TMDL Report and supporting documents are available for review on the DNR Upper Fox Wolf TMDL webpage. The fifth DNR update item provided updates for the Northeast Lakeshore TMDL. In October 2018, Kim Oldenborg was hired as the DNR Project Coordinator for the Northeast Lakeshore TMDL. Surface water monitoring was initiated in 2017 and continues through November 2019. Cadmus received a 2-year EPA contract in November 2018 to assist with the watershed modeling (SWAT). A website for the Northeast Lakeshore TDML has recently gone live and provides a map of the study area and more detail on the scope of work for the study. The sixth item is that for the Lower Fox TMDL implementation continues for ag, MS4s, and point sources. The seventh and last DNR update item is on adaptive management, water quality trading, and the multi discharger variance. The alternative compliance options for wastewater dischargers continue to receive lots of interest. These tools provide options for permittees to consider, as they work to meet effluent limits. Following the DNR update, Josh Voigt gave the WWOA Board of Director’s update.

The third presentation of the day was by Nick Janous of Nexom. Nick’s presentation was titled Reviewing Options for Achieving <0.075 mg/l Phosphorus. Nick explained that as phosphorus discharge limits are lowered, the amount of products that can also meet the lower limits is also reduced. For meeting a 1 mg/l limit, Nick listed 9 different methods or processes that can consistently meet the limit. Nick then went into describing the pros and cons of treatment methods than can meet a 0.1 – 1 mg/l limit, which are disk filters, sand filters, and a ballasted floc process. Next, Nick listed the four methods or processes that are capable of meeting a <0.1 mg/l limit, which are reactive filtration, algae systems, MBR, and disk filters. Nick ended his presentation by explaining the pros and cons of each of these four methods.

The last presentation of the day was by Annie Weidert of BioGill. Annie’s presentation was titled A Solution for On-site Pretreatment of Low Flow, High BOD Food, and Beverage Wastewater. Annie started off by talking about the growing challenges on the municipal WWTPs of the

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high strength waste, produced by the food and beverage industries. Annie then went on to discuss how the BioGill product works, which is a non-submerged attached growth treatment technology, using nanoceramic media. Annie explained the key advantages and benefits with using this new attached growth treatment technology. Lastly, Annie finished the presentation by going through the successful results of some recent case studies.

Kevin Sorge, the Wastewater Plant Manager, gave an introduction of the WWTP by describing the flows, loadings, and treatment processes. A guided plant tour followed the plant introduction.

The next meeting date has been recently changed to May 23, 2019, but the location will still remain at the NEW Water facility. Special thanks to City of Oshkosh’s WWTP Staff for hosting the meeting.

Minutes submitted by Josh Steffeck
Lake Michigan District Secretary/Treasurer

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Delta 3 Engineering seeks civil engineer

Delta 3 Engineering, Inc., a Professional Engineering firm located in Platteville, Wisconsin is currently seeking a Civil/Municipal Engineer. The applicant must possess a Bachelor of Science degree in Civil Engineering with a Wastewater, Municipal, and/or Transportation emphasis or similar educational background. Working experience in the civil/municipal engineering field and knowledge of Civil 3D design software is a plus.

Our firm is an EOE and offers a full benefit package. Salary is dependent upon qualifications. Please submit your resume with references and salary requirements to:

Delta 3 Engineering, Inc.
Attn.: Mr. Bart Nies, P.E.
875 S. Chestnut Street
Platteville, WI 53818
bart@delta3eng.biz
www.delta3eng.biz

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WWOA Board hires new account manager

WWOA Members, Colleagues and Friends,

Last October at the Annual meeting, I had the task of telling you that our computer system had been hacked, and we fell victim to a computer scam. Having few details to work with and at the advice of our attorney, the Executive Secretary was put on paid leave until everything could be figured out. During this time I – with the help of many, many others – pulled WWOA together, and we had a successful conference. Since then I have been filling in and keeping up with the books, records, and registrations. Thank you to everyone for their help and understanding the past five months.

The Board of Directors (Board) hired an attorney from Stafford and Rosenbaum, specializing in cybercrime. Knowing Stafford and Rosenbaum’s long-standing relationship with many in our organization, we felt this was the right choice. As the month of November came and went, we still had no final word from the State Cyber Crime Investigation Task Force about our case; however, no wrong-doing was found. The Board of Directors faced a challenging question: How long do we wait for the investigation to be complete and not have an Executive Secretary? As of the writing of this, the investigation is still not complete. After many discussions and hours of deliberation, the decision was made to not renew the Executive Secretary’s contract at the end of 2018.

With the decision made to find a new Executive Secretary, the Board moved forward to fill the position. The Board looked at filling the position through an individual hire, as well as through a company that can assume the duties of an Account Manager.

We had many applicants for the position. After reviews and interviews, the Board decided to hire Association Executives Group (AEG) in Oak Creek, Wisconsin. AEG has personnel on staff with knowledge and experience in finances, membership retainage, conference planning, publishing, and website/IT work. They can do everything we need under one roof.

The Board signed a contract for two years with AEG in late January 2019. In February files and computer data were moved to AEG. I have met with Caley Mutrie, our Association Manager, multiple times and am very impressed with her skill set. She has experience managing conferences and very quickly picked up on how our organization works. The Board met with AEG on March 18, 2019, to officially turn all duties of the past Executive Secretary over to them. Caley will attend the April Board Meeting and begin work to get the 2019 Annual Conference Program completed.

Please note the new phone numbers, address, and Account Manager contact below for our organization.

Thank you to each and every one of you for your patience and understanding as we moved through this transition. The Board – with the help of many in our membership – have pulled WWOA out of what could have been a disaster, and into a strong beginning of our continued future. I am constantly reminded that we are here to put on an Annual Conference and provide training opportunities to our members. The Board stands ready to continue this task along with many more things to come in the years ahead.

Sincerely,

Jeff Bratz, Past President

WISCONSIN WASTEWATER OPERATORS’ ASSOCIATION
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WWOA Account Manager: Caley Mutrie, CAE
Green Lake Sanitary District hosts January southern meeting

Southern District Regional Operator’s Meeting January 31, 2019. Hosted by Green Lake Sanitary District. Location: Green Lake Conference Center W2511 State Road 23 Green Lake, WI

The meeting began with Jerry Specht, President of the Green Lake Sanitary District, welcoming everyone and talking about the importance of phosphorus removal. Sewer only constitutes half of the Sanitary District’s duties; the protection of Big Green Lake is the other half. The Sanitary District is involved with indigenous plant growth in marshes, working with farmers for BMPs, and they also harvest carp in Big Green Lake in addition to managing approximately 15 conservation locations.

Dave Sauer gave the first presentation of the day. Since 2012, the Cedar Corporation has worked with multiple communities on non-point source trading of phosphorus. Their efforts to date include over 100 phosphorus reduction projects since 2012 with 4,244 pounds per year reduction. Various types of projects include: grass waterways, grade stabilization structures, streambank stabilization, and annual cover crops. The greatest success comes from methodologies including: community support, the identification of specific projects, involvement and support of NRCS, early involvement of DNR, and hiring experienced construction contractors to name a few. They also found that land owners must be engaged in maintenance or upfront cost (get them invested in the process) for long term success.

Tom Eddy from the Green Lake Conservancy followed with a talk about land trusts and their connection to reducing continued on page 22
Continued from page 21

phosphorus. The Conservancy manages one of about 50 land trusts in the state of WI, and it partners with the WDNR and the Green Lake Sanitary District. Most of the watershed (about 60%) is found in Green Lake County, and the rest is located in FDL County. The total acreage of the watershed is 57,000 with the water sources coming from rain (51%), runoff (41%), and springs (8%). Agriculture makes up the majority of the land use while the next largest is surface waters. The Conservancy has partnered with the late Charlie Marks and the GLSD in the past to complete restoration projects, and the trust inspects locations on an annual basis to ensure maintenance and no encroachment on water ways occurs. The goal is to conserve the land that protects the lake.

The next talk by Nick Janous of Nexom reviewed the effectiveness of tertiary treatment technologies for wastewater plants trying to achieve low level phosphorus limits. Methods of phosphorus removal besides chemical include: Cloth disk filters, gortex style disk filters, sand filters, ballasted floc, algae systems, MBR systems, and reactive filtration. The advantages and disadvantages of the various methodologies were explained.

Continuing with theme of watershed improvement and adaptive management, John Koepke of Farmers for Lake Country and Koepke farms gave a talk about the initiatives taken up by the agriculture community to improve soil and water quality in the Oconomowoc River Watershed. A by-product of the OWPP (Oconomowoc Watershed Protection Program) is the Farmers for Lake Country organization. It's a producer-led organization leading way to better soil and water quality through education, demonstration, and incentives to test new farming techniques to protect the waterways. About half of the land base in the watershed is agriculture related, and the farmers are invested in community which influenced their decision to get involved. A variety of conservation tools are used including: nutrient management plans, no-till, cover crops, contour planting, grass waterways, maintaining ground cover, and monitoring the results. The major focus of these methods are no till and cover crops which help to prevent wind and water erosion in addition to improving the soil quality.

The Southern District Business meeting was called to order at 13:18 pm, and began with a review and approval of the minutes from the meeting on 8/29/18 in Whitewater. The treasurer's report passed with the addition to pay an extra $175 on top of the $100 per person for the winning team for ops challenge. The 2020 Southern District secretary will be Alex Krause of the Fond du Lac WWTF. If you know of anyone interested please let us know. We are still looking for a winter 2020 host community. Please submit nominees for the annual conference awards.

We are also looking for competition teams for the 2019 Operator Challenge. Teams will be asked to submit a nomination for Operator of the Year. The conference will take place on October 8-11 in Green Bay. More future dates to know are posted on the WWOA website.

The Southern District is hosting a Collection System Training Seminar in Fond du Lac on April 22. The Southern District also offers two $250 scholarships for continuing education. The information is on the WWOA website. The spring meeting will be in Lake Mills May 21 at the community center.

No WDNR update.

Matt Claucherty of the DNR followed with a talk about how to get started with watershed-based compliance. The goals of the phosphorus implementation coordinator is to make it as easy as possible for facilities to engage in watershed-based programs and get into compliance with the phosphorus limits. Matt explained where the limits in the code come from and the 7-9 year compliance schedule for phosphorus planning. This was followed by a discussion on water quality trading and adaptive management methods that could help reduce phosphorus loading into the watershed. Matt’s presentation ended with a review of the timing of planning and plan submittal with the DNR.

Paul Tollard of the Fond du Lac County Land and Water Conservation Department was the next speaker. He explained how the conservation department provides technical and financial assistance to landowners and farmers to initiate conservation practices that reduce runoff. The program utilizes funding from multiple locations, but they are primarily funded by Fond du Lac County.

Paul discussed the services offered to farmers to help reduce farm nutrient loading into watersheds. Promoting rotational grazing plans, complete stream bank restorations, watershed and sediment control basins, and buffer zones are a few of the methods utilized to reduce runoff in agriculture lands. He then demonstrated how the county-wide efforts are benefitting a specific watershed. Only 7 counties in the state have 75% or more of cropland covered by nutrient management plans, and Fond du Lac County is one of them.

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The meeting was adjourned and Dallas Lewallen of the Green Lake Sanitary District Fish Rearing Facility gave an overview presentation of the facility rather than a tour due to the cold temperatures. A big thank you goes out to the Green Lake Sanitary District for all the work they put in to help make sure this meeting could happen as well as the late Charlie Marks for his dedication towards water quality improvement and his help in organizing this meeting.

Thank you to Donohue and Associates for sponsoring the refreshments, the Exhibitors for providing the raffle prizes, and to all who braved the extreme cold to attend the meeting.

Submitted by McKala Kiessling, Southern District Secretary.

Southern District Chair Cody Schoepke presents former Chair Josh Voigt with a plaque to thank him for his service to Southern District.

Mike Penkwitz and the Plymouth Utilities uncovered the above in a mat of rags and ironically, the operator was conscious of them and then it appeared.

---

**MEETing**

**West Central WWOA**

**Tuesday, May 7**

Skyline Golf Course, Black River Falls

Host: Black River Falls

Register at www.wwoa.org/calendar/

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A good reminder for operators

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Troubleshooting Corner Volume X: Summary of the role of higher life form organisms in wastewater biomass

By: Ryan Hennessy of Midwest Contract Operations, WWOA board member rhennessy@mco-us.com

When it comes to wastewater microbiology and what we see under the microscope the most popular viewing is typically the higher life form organisms. These can be entertaining to watch as many of them are relatively large, easy to recognize, and motile. An operator could spend hours of time enjoying free entertainment trying to keep a fast moving free swimming ciliate visible on a camera screen (similar to a video game….Note that this is not recommended as it could reduce productivity!) In this edition's column we want to summarize the role of higher life form organisms, their value to wastewater treatment, and help clear up any potential misconceptions as to their significance.

Most higher life form organisms are aerobic and feed on bacteria. There are a few exceptions to this including anaerobic flagellate species, flagellates that eat organic matter, and carnivorous ciliate species (such as Suctorians). Higher life form organisms (protozoa, metazoan, and intervertibrates) are believed to make up approximately 5% of the MLSS by weight. (Curds, 1973). Note that this is a relatively small portion of the total biomass.

From a conceptual standpoint we recommend thinking of the higher life form organisms as the “polishers” and the different types of bacteria present as being responsible for the majority of treatment.

From a taxonomic classification standpoint the six basic groups of higher life forms observed in activated sludge are flagellates, amoeba, ciliates, rotifers, and a few other intervertibrates. From a practical standpoint identification of individual species is not necessary (for example a free swimming ciliate can be identified as such rather than a Paramecium etc.)

Satisfactory treatment performance typically includes a balance of free-swimming ciliates, attached ciliates, and rotifers. (Jenkins, 2004).

Higher life form organisms primarily compete due to the prey density of dispersed bacteria present. Faster and more mobile species such as flagellate species tend to compete well at high dispersed bacteria densities while more advanced higher life form organisms (such as stalked ciliates) have more efficient means of gathering food such as filtering and funneling which enables them to compete when there is less dispersed prey. Due to lower growth rates of higher intervertibrates, these are typically found in systems with longer sludge retention times.

The mix of higher life form organisms can change quickly depending on their available prey. The longest it takes protozoa to reproduce is 1 day at 20 degrees C (Curds, 1975) so sludge retention time rarely limits their competition. Certain species of rotifers can grow in sludge ages of less than even 4 days (Richard, 2018).

In short, there is no proven correlation between higher life form organisms and sludge age, and because there are many other factors besides organic loading that can contribute to changes in sludge condition, basing process control decisions solely on higher life form organisms is not recommended. (Jenkins, 2004)

From a stress perspective, free swimming and stalked ciliate species are typically the most sensitive to stresses and toxicity while testate amoeba and rotifers can compete well in tougher environments. Note that not all potential stresses are equal and depending on what type of stress is present these can have varying, and sometimes unusual impacts

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on the microbiology. In most instances the higher life form organisms are the first to be impacted when there is stress or toxicity.

In summary, there is value in looking at the higher life form organisms but is also important to put their emphasis in perspective as they only represent a “piece of the puzzle”. When higher life form organisms are ranked and included along with characteristics such as floc strength, filamentous bacteria abundance, and rank and types of filaments and other indicator organisms present, an accurate assessment of what’s occurring in the plant is possible.

Baxter & Woodman appoints transportation manager

Baxter & Woodman, Inc. is pleased to announce the appointment of Mr. Scott Ahles, PE to the position of Wisconsin Transportation Department Manager. Mr. Ahles joined Baxter & Woodman in 2015, and has played a key role in the business development efforts throughout the greater Milwaukee area.

Mr. Ahles is a licensed Professional Engineer. He earned his B.S. in Civil Engineering from Marquette University.

Mr. Ahles has over 25 years of experience with transportation project design, management, and client service. As a former employee of the Wisconsin Department of Transportation, he assisted in the management of the Local Roads Program, and provided design guidance to State, County and Local agencies on road improvement projects.

“Scott’s extensive transportation background and strong commitment to client service make him the ideal person to lead our Wisconsin Transportation Department,” said Louis D. Haussmann, PE, Baxter & Woodman Executive Vice President and Chief Operating Officer.

Mr. Ahles is based out of the firm’s Milwaukee, WI office location.

A warm greeting

Caley Mutrie, CAE, WWOA Association Manager

WWOA President, Jeff Simpson, has already shared with you the news that WWOA has engaged the association management services of Association Executives Group (AEG). As a member of the AEG staff team, I am the individual fortunate to have been appointed to serve as the new Association Manager for WWOA. I could not be more thrilled and excited.

My professional background has been focused on association and general nonprofit association work for over 20 years now, working with both association management companies and standalone organizations at the state, national and international level. I love taking part in the work of associations; being engaged with the board and members, and supporting all of the activities of the organization.

I am excited at the opportunity to be doing what I love in service to WWOA and the wastewater management industry and all of you engaged in this work.

Originally from Canada, I was born and raised in Port Dover, Ontario, a small fishing town located on the shores of Lake Erie. I’m a graduate of the University of Guelph (also located in Ontario), where I earned a Bachelor of Arts, with a focus in the arguably unusual combination of biochemistry and psychology. In 1995, the US beckoned and I have lived and worked in Wisconsin ever since. My partner, Mark, and I currently make our home in Muskego, WI. When it comes to fun and relaxation, you’ll find me on a hiking or biking trail somewhere in the state, puttering around in my garden at home, or with my nose deeply buried in a good book!

I look forward to meeting as many of you as possible in the weeks and months to come. And I encourage you to reach out to me any time with your questions and service needs, and to say hello!

The WWOA office is located at 7044 S 13th Street, Oak Creek, WI, (tel: 414-908-4950), and open Monday-Thursday, 8:00am-4:30pm, and on Friday, 8:00am-3:30pm. Please call or send me an email (c.mutrie@wwoa.org) any time!
Nominate someone today for the annual conference awards

It is time to start filling out the nomination papers for the Annual Conference Awards. There are many people in our industry that are deserving of these awards. We are looking for nominees for the following awards:

1) **George F. Bernauer Award**: Criteria include successful plant performance, and/or successful solution of important or complicated operational problems, and/or outstanding contributions in the field of wastewater technology in the State of Wisconsin. The nominee may be a municipal, industrial, or institutional operator, administrator, or educator in Wisconsin. It is not limited to WWOA members.

2) **Koby Crabtree Award**: Presented to a WWOA member for excellence in technical support provided to others in the field of wastewater treatment. The individual should be a recognized authority in wastewater, share knowledge through presentation, contribute to problem solving, and provide service regardless of compensation.

3) **Service Award**: Presented to a person who has made an outstanding contribution to the WWOA in the areas of promotion, operation, management, program participation, or education. The nominee must be an active member of WWOA for a period of ten years.

4) **Newcomer of the Year Award**: Recognizes an operator, support staffer, or environmental technician with less than three years of experience as of August 1st of the year nominated. The nominee should demonstrate higher than average growth in their place of employment, a willingness to learn, innovation on the job, and exceptional enthusiasm for their profession. The nominator should be a supervisor, manager, peer, co-worker, or DNR personnel familiar with the day-to-day efforts of the nominee. WWOA membership is not required, and a two year membership or renewal is included in the award.

5) **Regional Operator of the Year Awards**: Given to someone who has demonstrated excellent plant performance, and/or successful solution to a problem, and/or contributions to the wastewater field. It is open to Wisconsin Certified operators of municipal, industrial, or institutional wastewater treatment facilities. The nominee must be a five year member of WWOA.

The nomination form and instructions for all the awards can be found on the WWOA website or by contacting Jeff Smudde, Awards Committee Chair, at (920) 438-1040 or email at awards@wwoa.org. Please note, the Regional Operator of the Year Award nominations should be submitted to the Regional officers listed on the nomination form by July 5, 2019.

All other awards need to be submitted to Jeff Smudde by August 1, 2017 for consideration.

Feel free to contact me if you would like any further information on the awards, the nomination procedure, or if you have a question if a potential nominee meets specific award criteria.

Thank you in advance for taking the time and effort to nominate individuals and allowing WWOA to recognize these deserving recipients!

Sincerely,
Jeff Smudde, Award Committee Chair
Delta 3 Engineering seeks wastewater engineer

Delta 3 Engineering, Inc., located in Platteville, WI, is seeking a motivated person for a full-time position with the firm as a Wastewater Engineer. The applicant must possess a Bachelor of Science degree in Civil, Environmental, or Chemical Engineering with a Wastewater/Water background or similar educational qualifications and the ability to obtain a Professional Engineer (P.E.) License in the State of Wisconsin or Iowa. Practical work experience as a water/wastewater process engineer is a plus. Job duties to include: comprehensive engineering planning, design, analysis and operational studies of water and wastewater process and treatment systems; and oversee and review construction of wastewater and water projects.

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Delta 3 Engineering seeks wastewater engineer

Thursday, May 16
Lakeland University, Plymouth
Host: Lakeland University

Register at www.wwoa.org/calendar/

Wisconsin Wastewater Operators Association Annual Conference, October 8 - 11, 2019
Hyatt on Main/KI Center
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* Hyatt On Main is the host hotel directly connected to the KI Center
# Hampton Inn & Suites is also attached to the KI Center

Delta 3 Engineering seeks wastewater engineer

Thursday, May 16
Lakeland University, Plymouth
Host: Lakeland University

Register at www.wwoa.org/calendar/
Baxter & Woodman appoints marketing manager

Baxter & Woodman, Inc. is pleased to announce the appointment of Joanna MacCallum, CPSM to the position of Marketing Manager. MacCallum will be responsible for overseeing the firm's marketing programs and policies. She will manage the marketing team's proposal efforts and workflow, ensuring that the team achieves both short and long-term objectives.

MacCallum has 6 years of experience collaborating with engineering technical experts to develop and distribute persuasive marketing proposals to public agencies. She has also managed public relations efforts for several of the firm's large-scale projects.

MacCallum holds a Bachelor of Arts in Communication from Concordia University Chicago and joined Baxter & Woodman in 2013. She recently earned her Certified Professional Services Marketer® Certification from the Society for Marketing Professional Services.

"Joanna's strong background and extensive experience will elevate our efforts promoting the benefits that Baxter & Woodman has to offer to the next level," said Deborah Finn, Executive Vice President and Chief Marketing Officer.

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Allenton WWTP hosts March southeast regional meeting

The meeting of the Southeast Region of Wisconsin Wastewater Operators’ Association (WWOA) was held on March 5, 2019 at the Addison Town Hall 127 First Street, WI, with the Allenton Wastewater Treatment Plant (WWTP) hosting the meeting. The meeting was rescheduled from February 12 due to a snow storm. There were 75 members, 20 non-members, and 9 exhibitors in attendance.

Brandon Kaufmann, from Midwest Contract Operations, was the welcome guest. Midwest Contract Operations runs the water and wastewater treatment facilities for Allenton. Brandon gave a brief history about the operations in Allenton and how Midwest Contract Operations recently started running the water and wastewater treatment facilities for Allenton in the last few years.

Jay Koenitzer, from Helwig Carbon, gave the first presentation titled “The Bearing Protector.” Jay covered the essentials of protecting the bearings of electric motors and pumps used with Variable Frequency Drives (VFDs). VFDs help save energy, but they also leave a parasitic current on the motor shaft. This current generally passes through the motor’s bearings causing frosting, fluting, and eventual bearing failure. He offered a live demonstration of common mode currents on a motor shaft, and showed how a shaft grounding kit can prevent damage to the motor bearings.

Rusty Schroedel, from AECOM gave the second presentation humorously called “Grit – It’s Not Just for Breakfast Anymore.” He first gave a detailed description of what grit is, noting it is not just sand or sand like solids but several particles that are heavier and more settleable than other solids in the wastewater. He also noted that these particles can be coated with substances like grease which can impact their ability to be removed with typical grit removal equipment. Rusty then described why operators and design engineers should care about the efficiency of their grit removal systems and reviewed the characteristics of several different types of grit removal equipment. He then reviewed some project case histories. Lastly, Rusty offered some considerations, conclusions, and recommendations for understanding grit removal, identifying potential improvements to existing systems, and potential approaches for installing new grit removal systems.

The third presentation was given by Scott Fischer, from U.S. Water. His presentation was on “WET Testing, How and Why.” He explained that Whole Effluent Toxicity (WET) testing began to be a part of WPDES permits about 20 years ago and its purpose is to guide the DNR on whether an effluent from a wastewater discharger is toxic to the receiving water. Most of the failed tests occur in the private sector versus the municipal side, though that may not prevent municipalities from feeling comfortable when collecting and having their final effluent run through this series of tests. In the WET Analysis, water fleas or C. Dubia are exposed to a mixture of your receiving water and your final effluent for a 48 to 96-hour period (Acute Toxicity) and if 50% of them die you have failed that portion of the analysis. This is quantified as the LC 50 and it represents the percentage that die in 100% of effluent. The reproductive rate of fathead minnows (Chronic Toxicity) in a comparable mixture of final effluent and receiving water for a seven-day period is another measure of the toxicity in the final effluent. This is termed the IC 50 or Inhibited Concentration. That lack of reproduction will constitute a failure, too. If you fail the WET test you receive two consecutive trials to pass it. He also explained some bad actors in your effluent that contribute to failed tests and they include: pesticides, ammonia, lack of hardness, pH, Organic halides, residual halogens, chlorides, COD, polymers, metals, temperature and TDS.

Before taking a break for lunch we had our business meeting. We did have to reschedule the meeting from Feb 12 due to winter storm. Previous meeting minutes and treasure’s report were approved. The DNR was unable to attend due to the meeting being rescheduled, but did supply an informative hand out “Tips and Tricks” related to forms we fill out. Don Lintner, WWOA Vice President, then updated the group on the WWOA State Level. Josh Voigt, WWOA Director, talked about offering a cash prize for the top three teams in the operator’s competition at the WWOA conference. The State Board is asking for all regions to contribute to this cause. No action was taken at that time and will be discussed at the next meeting. An update on
the Tuition Aid Program was brought forward to the group and a vote on it may occur May 16 at the Lakeland meeting. We recognized Dan Hass, Allenton WWTP for hosting the meeting. A reminder was given to check out the web calendar for future meetings in your area.

After lunch we resumed the meeting with Robyn Vaupel, from Trestor Hoist and Safety. She gave us an informative presentation on “Crane and Hoist Safety for Operators.” Robyn reminded us all to stay safe when operating our hoists and cranes. Her talk included a pre-operational checklist and tips on how to safely use our hoists and slings.

Although much of this information was a refresher it was a great opportunity to be reminded of the importance of keeping ourselves and our co-workers safe. She finished her presentation off by highlighting the importance of having an OSHA Periodic Inspection done annually on our equipment.

Our last presenter for the day was Soren Rasmussen, from Landia Inc. Soren came all the way from Canada to give us a presentation on “The Nitty-Gritty of Chopper Pumps.” He gave us a brief history on how Christian Olgaard invented the pump to macerate and pump manure. Chopper pumps consist of a pump with a knife cutting attachment. This allows liquids with high solids to be pumped without constantly clogging the pump. He also talked about popular applications and a few include: liftstations, scum pits, anaerobic digesters, and sludge holding tanks to name a few. He finished by saying that chopper pumps are not the most efficient pumps for pumping, but definitely serve their purpose in the right applications.

The meeting was adjourned and the day ended with a plant tour of the Allenton Wastewater Treatment Plant. A big thank you to Allenton for hosting the day, and to USA Bluebook for sponsoring the morning breakfast.

Submitted by Wayne Castle, Southeast Region Secretary.
DNR tips and tricks sheet handed out at Allenton SE meeting

New Permit
- Read through new monitoring requirements, note 4th year sampling
- Read through standard requirements, these have been updated in recent years

Permit Applications
- Due 180 days prior to permit expiration
- Sample point description: make sure is updated and clear where the samples are being taken
- Sample Type: make sure is updated and clear what sample type is, 24-hr composite vs. 24-hr flow prop composite
- Monitoring Data: verify what sampling needs to occur prior to application submittal. Example, copper data (12 samples, 3 days in-between)

NR 101 Fees
- Summary Report sent out first week in March
- Return summary by April 1, even if no changes are made
- Results may not mirror the summary values reported on the DMRs due to the manner in which our database addresses significant figures to the right of the decimal point

- Individual values <LOQ are treated as a zero in the calculated average.
- Reporting limit of 2 mg/L for both LOD & LOQ for BOD5 and TSS
  500 mL of TSS sample for a 2 mg/L reporting limit
  300 mL of BOD sample for a 2 mg/L reporting limit

Lab Info
- Test methods for TP that can be used to analyze concentrations <0.075 mg/L: Standard Methods 4500P B.5 & E using a high quality single long-cell path cuvette will definitely work. Some labs may be able to analyze this low with Hach TNT methods, but there would be some special conditions (like having the low standard be at 0.075 mg/L).
- Traceability. We always say, “if you didn’t document it, you didn’t do it.”
- Labs should be using the new EPA MDL determination.
- There is no LOD for TSS or BOD. TSS and BOD use reporting limits based on volume used.
- As with anything, ask your auditor for help!

DMRs
- Wait to enter/populate LOD/LOQ/Cert until after all results are entered. Repopulate LOD/LOQ/Cert if they change. IF delete a result, individually delete (Show button) LOD/LOQ/Cert for that day
- Click “save” on a regular basis
- Report 0 for days with no flow
- Limit Exceedances, you enter it and response is required,

WET Tests
- Submit hardcopies to address listed on report form AND submit result on DMR

Land App Forms
- 49 Form, remember to change sample date
- If result is <LOD report <LOD instead of 0
- 52/55, need to submit both, leave blank and select “no” if did not apply/haul out
- Remember to change outfall number
- Remember to submit soil tests to the department. In order to land apply on a field, there needs to be a recent soil test on file (taken within the last 4 years).

CMARs
- Available beginning of May
- Submittal due June 30, remember need resolution by board
- Review data first to identify any issues and corrections can be made if necessary
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